Newsletter – December 2023

The 3rd MOSBRI scientific conference will be held in Ljubljana, Slovenia

Scale Biophysics 👷 😹 🕷

Research Infrastructure

Registration is now open for the 3rd **MOSBRI** conference, which is being organised by the National Institute of Chemistry, Ljubljana (Slovenia). The conference will start in the early afternoon of the 10th of June and end at noon on the 13th of June 2024.



The 3rd **MOSBRI** conference follows in the footsteps of the first two **MOSBRI** conferences in Paris 2022 and Zaragoza 2023, both of which attracted almost 200 participants from across Europe. The 3rd **MOSBRI** conference will continue to provide a carefully curated overview of the latest advances in biophysics, bringing together the new generation of young European biophysicists with established experts in the field. The conference continues to strengthen the connection within a wider community of researchers from the fields of structural biology, biochemistry, synthetic biology and biophysics, building bridges between different disciplines and engaging the audience in a multidisciplinary dialogue.

Lectures will include plenary talks by Lynne J. Regan (University of Edinburgh, UK), Roman Jerala (NIC, Slovenia), Harald Schwalbe (Goethe University, Germany) and Andrej Sali (UCSF, USA), as well as 18 presentations by invited renowned experts from 12 countries worldwide. As at the two previous **MOSBRI** conferences, beneficiaries of **MOSBRI** transnational access (TNA) will give presentations on their work facilitated by access to the **MOSBRI** infrastructure. To ensure that the audience is informed about the latest advances in the innovative tools available, several presentations will be given by company representatives. To promote the visibility of young researchers, about 20 short presentations will also be selected from the abstracts of early bird registrants. The full list of confirmed speakers can be found at <u>https://www.mosbri.eu/events/conferences/ljubljana-2024/speakers-ljubljana/</u> and the full conference program will be announced shortly.

Please note that we will grant 15 bursaries to PhD students and early stage post-doctoral fellows. The bursaries will cover the registration fee and accommodation for 3 nights. Apply by the 31st of March 2024 and upload a single pdf file containing a short CV, a letter of motivation and a letter of support (max. 1 page for each).

Visit the conference website for more details and to register:

https://www.mosbri.eu/events/conferences/ljubljana-2024/



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004806

MOSBRI now offers products through its Trans-National Access scheme



Pasteur-PFBMI provides, in remote access mode, protein standards for testing instruments, evaluating procedures, training, instrument calibration, benchmarking and more. The first standard is an anti-lysozyme nanobody, which is now available for distribution through the **MOSBRI** TNA scheme: see <u>https://www.mosbri.eu/apply-for-tna/</u> and for more information on the

product go to https://www.mosbri.eu/services/products/.

Studies of the cause of fire blight disease in the Rosaceae family: a trans-national access project at MOSBRI partner MoB-IBT

Erwinia amylovora, belonging to the Enterobacteriaceae family, is a major bacterial phytopathogen and the causal agent of the fire blight disease that poses a major threat to commercial apple and pear cultivation worldwide. For developing novel specific chemical inhibitors against this pathogen, it is crucial to understand their biology and pathogenicity factors at the molecular level.

Structural and functional studies of proteins involved in the pathogenicity of *E. amylovora* are carried out by a group



at the Faculty of Agricultural, Environmental and Food Sciences at the Free University of Bozen-Bolzano in Italy. The group visited **MOSBRI** partner MoB-IBT near Prague to benefit from their wide range of biophysical instruments and expertise for finding the most suitable buffer for storing *E. amylovora* proteins. The visit also resulted in promising conditions for generating crystals for future

structure determinations. (Images by I, Paethon, CC BY-SA 3.0)

The MOSBRI TNA site ISMB-BIOPHYSX - Biomolecular characterization, optimisation and interactions

Access to comprehensive studies of your bio-molecular samples



The Protein Crystallography and Biophysics Centre (BiophysX) is a core facility of the UCL/Birkbeck Institute of Structural and Molecular Biology (ISMB). The facility, located at Birkbeck in central London, provides access to a wide range of instrumentation and expertise covering the characterization of protein stability, crystallization and biomolecular interactions. Amongst the Centre's instruments are state-of-the-art liquid handling equipment, automated imaging systems for monitoring crystal growth and aggregation, temperature-controlled CD and fluorescence spectrometers, a UV-fluorescence plate reader, isothermal and differential scanning calorimeters, biolayer interferometry, dynamic light scattering, and multi-angle light scattering attached to size exclusion chromatography for accurate sizing of molecular species.

The Centre is experienced in working with a wide range of users. In addition to structural biologists, we have users engaged in protein engineering, ligand discovery, antibody therapeutic development, chemical kinetics in confined environments and the characterization of membrane proteins and protein/nucleic acid complexes. We encourage prospective users interested in specific techniques and those who wish to take advantage of our broad range of equipment for earlier stage characterisation of their biomolecules aimed at optimisation for future detailed study.

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MOSBRI courses in the second half of 2023

In the second half of 2023, **MOSBRI** organised 3 courses, one Advanced Level School (ALS) and two End-user Short Courses (ESC).

ALS1: Protein Stabilization: Design, Experiments and Assessment (ProteSta)

This 5-day school was held at the Institute BIFI, Zaragoza, Spain (BIFI-LACRIMA) from the 3rd to 7th of July 2023. Twenty participants from 14 countries (Austria, Belgium, Czech Republic. Denmark, France, Germany, Italy, Malta, Norway, Portugal, Slovakia, Spain, Sweden, and the United Kingdom) attended. The course covered fluorescence spectroscopy, circular dichroism and differential scanning calorimetry, as well as different approaches for protein engineering directed at improving stability. The sessions included practical tutorials on data analysis and computational calculations and further discussion of the results. Participants had the opportunity to describe their own projects related to protein stability.



Participants and organisers of the **MOSBRI** ALS1 course in Zaragoza

ESC4: Advanced kinetics approaches to unravel protein structure and function

The Sapienza University of Rome, Italy (DSB-UROM) held this course focused on kinetic and spectroscopic techniques from the 2nd to the 4th of October 2023. Nine participants from 5 countries (Italy, Czech Republic, Germany, France,



Participants and organisers of the **MOSBRI** ESC4 course in Rome.

and The Netherlands) learned about techniques such as stopped-flow, T-jump and Forster resonance energy transfer (FRET). The programme included a half day of theoretical sessions and 1 ½ days of practicals.

The knowledge acquired by the participants during this 2day course will allow them to dissect kinetic mechanisms involving protein-protein interactions, protein (un)folding, enzyme activity, ligand binding, and FRET.

ESC7: Single Molecule Approaches

The **MOSBRI** course on Single Molecule Approaches took place in Groningen from the 6th to 8th November 2023. Eleven participants from 7 countries (Italy, Germany, Belgium, Turkey, Spain, France, Sweden) attended this 2day course at the Rijksuniversiteit Groningen (RUG-BP). Its main goal was to teach the participants about the fundamental background and operational procedures of the techniques, as well as performing hands-on practice including sample preparation, set-up operation, data gathering and data analysis. The programme included theoretical sessions on the three techniques, as well as practicals where each participant focused mostly on one of the techniques, with short excursions to the other two techniques.



Participants and organisers of the **MOSBRI** ESC7 course in Groningen



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Upcoming MOSBRI Courses



The basic level school, BLS2, on **Techniques to study single molecules/particle interactions** will be held from the **13th to 16th of May 2024** in Prague. Read more about this course and **apply** at: https://www.mosbri.eu/training/basic-level-schools/bls2/

The end-user short course, ESC8, on **Basic and advanced protocols in biological calorimetry** will be held from the **8th to 10th of July 2024** in Zaragoza. More information will be available soon.

The end-user short course, ESC9, on **Correlative microscopy: from cells to single molecules**, will be held in **November 2024** in Genoa. The final dates are still to be confirmed and more information will be available in 2024.

In other news...

MOSBRI publications in 2023

Since January 2023, members and beneficiaries of the project have produced 18 scientific publications acknowledging **MOSBRI**, 16 of them published in open access journals. These publications include projects from TNA users (14), results from JRA activities (1) and conference proceedings (1). You can find the list of publications and the links to access them in our webpage <u>https://www.mosbri.eu/news-and-output/publications/</u>

Participation of MOSBRI in events

MOSBRI and the ARBRE association co-organised the session "Breakthrough methods in molecular biophysics" during the EBSA 2023 conference in Stockholm on the 4th of August. The session chaired by Isabel Alves (Bordeaux) and Tomasz Kobiela (Warsaw) was attended by ~100 people. You can find more information about this joint session at <u>https://www.mosbri.eu/news-andoutput/mosbri-arbre-session-at-ebsa2023</u>



Speakers at the **MOSBRI**-ARBRE organised session at EBSA 2023

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Coming up in 2024:

XXVIII School of pure and applied biophysics, 5th to 9th of February 2024 in Venice. Organized by the Società Italiana di Biofisica Pura e Applicata, the school thematic will be Molecule in(ter)action: from nano to macroscale. Three **MOSBRI** Partners (Valérie Belle, Daniel Aili and Claudio Canale) will participate as invited speakers. **MOSBRI** will be advertised during their talks, through the SIBPA webpage and **MOSBRI** brochures distributed to the attendees. Find more information about this school here: <u>https://venice2024.ibf.cnr.it/</u>

XXIII Annual Linz Winter Workshop 2024, 2nd to 5th February in Linz, Austria. The event will focus on biological singlemolecule research, nanoscience, nanomedicine, cell science, and bio-nanotechnology and include force and optical microscopy/spectroscopy techniques. Claudio Canale (University of Genoa) will be one of the invited speakers and will advertise **MOSBRI** during his presentation and with a poster. Find further information and registration details here: https://www.jku.at/institut-fuer-biophysik/veranstaltungen/linz-winterworkshop/

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