

Consortium Instruct.SI is kindly inviting to a three-day workshop

Basics of Methodological Approaches in Structural Biology

where attendees will be able to obtain or refresh **basic knowledge** on high-resolution structural biology approaches: **macromolecular crystallography (MX)**, **nuclear magnetic resonance (NMR)**, and **cryogenic electron microscopy (cryo-EM)**.

 **5th–7th November 2024**  **National Institute of Chemistry, Hajdrihova 19, Ljubljana**
(main location)

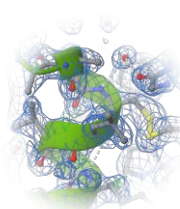
Fee: There is no fee!

Registration is obligatory, [via this link](#), **deadline is Thursday, 24th October 2024**).

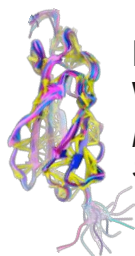
Language: The official language is English.

Who can attend? Students and researchers, interested in structural biology.

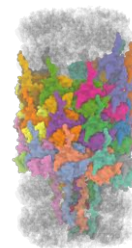
Programme overview (every day approx. 9⁰⁰–17³⁰; see next page for details)



MX
Tue, 5th November
lectures + a tour of the protein production & crystallization facility



NMR
Wed, 6th November
lectures + a tour of the Slovenian NMR Centre



Cryo-EM
Thu, 7th November
lectures + a tour of the cryo-EM facility

We will address questions like...

How does a particular method work? When to apply it? What kind of samples are appropriate? How to prepare samples? How do I know if the samples are optimally prepared? Which equipment do I need? Is it available in Slovenia, and if not—what then? How to conduct measurements? What are the raw data? How to process data? How to arrive from processed data to an atomic-resolution model of a biological macromolecule/complex?

 **Free coffee/tea** during breaks & **free lunch** every day + a **get-together** on Thursday evening!

Organising team of the Instruct.SI consortium is looking forward to see you at the workshop!



For more info visit the workshop website instruct-eric.si/bmasb2024 or write to us at instruct.si@ki.si.


The workshop is organised by co-workers from the Instruct.SI member institutions:




and with the financial support of:




Day 1 (Nov 5): Macromolecular Crystallography (MX)


9.00–9.15	<i>Welcome & general info</i>
9.15–9.45	Introduction to macromolecular crystallography
9.45–10.15	Target selection and construct design
10.15–10.45	<i>coffee break</i>
10.45–11.30	Protein production and purification
11.30–12.00	Characterization of macromolecular samples
12.00–13.00	<i>lunch break</i>
13.00–13.45	Crystallization, crystal harvesting, and preparation for data collection
13.45–14.15	Diffraction data collection and processing
14.15–14.30	<i>coffee break</i>
14.30–15.30	Hands-on: Introduction to structure model building and refinement 
15.30–15.35	<i>survey</i>
15.35–15.55	<i>walk to IJS</i>
15.55–16.55	Tour: Crystallization robot and chamber, in-house X-ray machine (IJS)

Day 2 (Nov 6): Nuclear Magnetic Resonance (NMR)

9.00–9.15	<i>Welcome & general info</i>
9.15–9.45	The basics of NMR
9.45–10.15	Introduction to 1D and 2D NMR spectra
10.15–10.30	<i>coffee break</i>
10.30–11.00	Production of DNA/RNA and protein molecules suitable for NMR structural characterization
11.00–11.40	Strategies for assignment of DNA/RNA NMR spectra
11.40–12.20	Strategies for assignment of protein NMR spectra
12.20–13.20	<i>lunch break</i>
13.20–14.05	Tour: NMR spectrometers and laboratories (KI)
14.05–14.35	NMR's time to shine: dynamics and conformational changes of molecules
14.35–15.05	High-resolution structures of biomolecules constructed from NMR derived structural restraints
15.05–15.20	<i>coffee break</i>
15.20–16.50	Hands-on: NMR spectra recording (demo) and evaluating ligand-protein/DNA/RNA interactions 
16.50–16.55	<i>survey</i>

Day 3 (Nov 7): Cryo-Electron Microscopy (Cryo-EM)

9.00–9.15	<i>Welcome & general info</i>
9.15–10.05	Transmission electron microscopy – a look into structure from molecules to tissues
10.05–10.30	<i>coffee break</i>
10.30–12.00	Cryo-electron microscopy
12.00–13.00	<i>lunch break</i>
13.00–14.30	Tour and hands-on: sample preparation labs, vitrification lab, cryo-electron microscope 
14.30–15.00	<i>coffee break</i>
15.00–16.15	Data analysis, structure determination I
16.15–16.25	<i>break</i>
16.25–17.30	Data analysis, structure determination II
17.30–17.35	<i>survey</i>
17.35–	<i>get-together</i>

 To follow the hands-on part, please bring your own laptop, mouse is recommended. Wireless internet connection will be provided.

