

MOLECULAR INTERACTIONS

in the Centre for Molecular Interactions and Structural Biology (CMISB)



NATIONAL INSTITUTE
OF CHEMISTRY



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Molecular cloning



Protein production



in bacterial,
yeast,
insect, and
mammalian cells

Protein purification

- Äkta systems
- analytical HPLC and UPLC systems



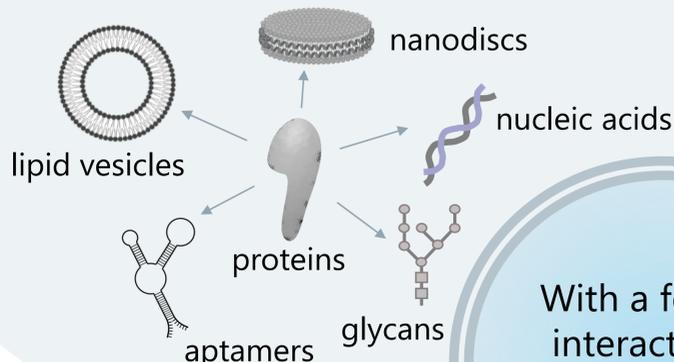
Protein quality control

- Circular dichroism
- Dynamic light scattering
- Differential scanning fluorimetry
- Fluorescence and UV/VIS spectroscopy

Protein characterization

Molecular interactions

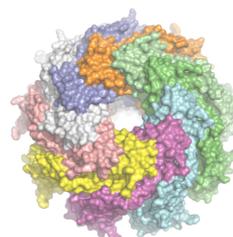
- Surface plasmon resonance: Biacore T200, Biacore X100
- Isothermal calorimetry: MicroCal VP-ITC
- Microscale thermophoresis: Monolith NT.115
- Other: Quartz crystal microbalance OpenQCM



With a focus on
interactions of
PROTEINS with LIPID
MEMBRANES

Structural characterization

- Cryo-transmission electron microscopy
- X-ray crystallography



Other

- Fluorimeter
- Electrophysiology measurements (Orbit mini system, MinION systems)
- Flow cytometry
- Fluorescence microscopy, light microscopy, confocal microscopy

References

- Pirc *et al.* An oomycete NLP cytolysin forms transient small pores in lipid membranes. *Science Advances*. 2022; 8.
- Lauria *et al.* SMN-primed ribosomes modulate the translation of transcripts related to spinal muscular atrophy. *Nature Cell Biology*. 2020; 22:1239-1251.
- Omersa *et al.* Design of Protein Logic Gate System Operating on Lipid Membranes. *ACS Synthetic Biology*. 2020; 9:316-328.
- Šakanović *et al.* More than one way to bind to cholesterol: atypical variants of membrane-binding domain of perfringolysin O selected by ribosome display. *RSC Advances*. 2020; 10:38678-38682.
- Lenarčič *et al.* Eudicot plant-specific sphingolipids determine host selectivity of microbial NLP cytolysins. *Science*. 2017; 358(6369): 1431-1434.

The equipment is partly financed by Slovenian research agency, other departments of the National Institute of Chemistry (Theory department, Department of Polymer Chemistry and Technology, Department of Materials Chemistry, Department of Synthetic Biology and Immunology, Slovenian NMR Centre), University of Nova Gorica, Faculty of Pharmacy at University of Ljubljana, Faculty of Chemistry and chemical technology at University of Ljubljana, National Institute of Biology, European infrastructure for translational medicine, Elixir Slovenia, and European Regional Development Fund. MOSBRI project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004806. Images in the poster were created with BioRender.com.

Access to the research infrastructure

MOSBRI TNA: mosbri.eu/apply-for-tna

Molecular interactions consortium:
molecular-interactions.si

Centre for Molecular Interactions and Structural
Biology (CMISB): www.ki.si/en/cmisb

CRYO-EM: cryoem@ki.si

Welcome to Ljubljana for

MOSBRI TNA visits (all European researchers),
MOSBRI staff exchange visits (MOSBRI partners only),
MOSBRI scientific conference in 2024,
MOSBRI end user short course on protein-membrane interactions in 2025,
other events organized by our department, National Institute of Chemistry,
Slovenian biochemical society, Slovenian biophysical society, and others,
stunning nature and excellent food!

