

Updates from the Centre of Molecular Structure

Hottest information: We are part of a new Horizon 2020 Infrastructure MOSBRI



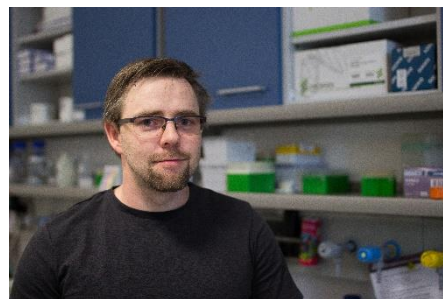
The European Union's **Horizon 2020 INFRAIA programme** has awarded a 5 M€ infrastructure grant to **MOSBRI** (Molecular-Scale Biophysics Research Infrastructure), a consortium of 13 academic centres of excellence and 2 industrial partners from 11 different European countries, coordinated by Institut Pasteur (Paris, France). One of the partners is the **Institute of Biotechnology of the Czech Academy of Sciences** with its facilities: Biophysical techniques and Diffraction techniques.

The MOSBRI project will enable to create a **research infrastructure** combining the distinct instrumentation and expertise of the individual partner laboratories, thus allowing to tackle an unusually wide variety of life science research questions. It will also **disseminate its knowhow** through an ambitious programme of training **workshops and meetings**, particularly suited to early career researchers and others new to the field. You can find more information at <https://www.mosbri.eu>.

CF Protein Production facility

The Centre of Molecular Structure has started a pilot operation of a **new Protein Production facility**. This initiative follows the preliminary interest from potential users and will result in a platform covering three main steps to **produce purified proteins of interest**. We offer:

- 1) The **cloning services** comprising both traditional restriction enzymes system and restriction-free (seamless cloning) methodology.
- 2) The **expression of proteins** in bacterium *Escherichia coli* as our standard expression system. We are in the process of establishing the baculovirus FlexiBAC expression system.

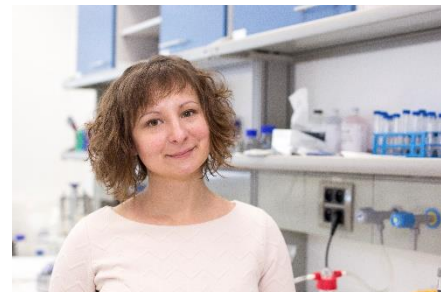


- 3) The **purification of proteins** using various types of chromatography. The most common are affinity (NiNTA, StrepTactin) and size exclusion chromatography.

Our current team consists of **Pavel Mikulecký** and **Tereza Nepokojová**. They are ready to help you with both routine large-scale protein production and demanding small-scale development of methods in semi high-throughput format.

CF Biophysical Techniques

At the start of the year the Biophysical Techniques facility welcomed its **new member Olga Dzmitruk**. With her MSc degree in physics and PhD in biophysics Olga is an expert in characterization of biomolecules and their interactions by biophysical techniques. She has **10 years of scientific research experience**. Olga has joined the CMS team with the focus on providing user support amongst others with the **FTIR technique**.



CF Diffraction Techniques

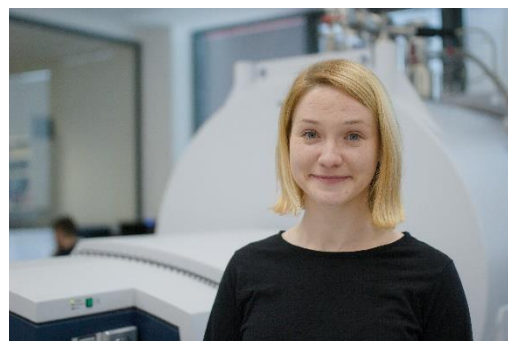
Our single crystal diffractometer D8 Venture received a new batch of upgrades. The most significant one was an upgrade of the detector to **Photon III (Bruker AXS)**. The detector hosts a bigger detection area, which allows faster high-resolution data acquisition, and higher sensitivity. The second item is an **automatic goniometer head (Bruker AXS)** which helps with high precision centering of the samples. Older accessories of the diffractometer, such as the in-situ stage and crystal dehumidifier, have registered increased popularity with our users and are bringing some interesting results.

CF Structural Mass Spectrometry



A new mass spectrometer **timsTOF Pro from Bruker Daltonics** was installed in the Structural mass spectrometry core facility. The mass spectrometer is mostly used for **high throughput shotgun proteomics, hydrogen-deuterium exchange and covalent labelling experiments, and native mass spectrometry with ion mobility separation**. The high sensitivity and sequencing speed allow identification of more peptides and their post-translational modifications.

A big congratulation is in order to **Pavla Vaňková** from the Structural Mass Spectrometry facility who successfully achieved her **PhD!** She has expertise in techniques of hydrogen/deuterium exchange MS and chemical protein cross-linking MS.



We are looking forward to you in CMS,

Tatsiana Charnavets (Biophysical Techniques), **Olga Dzmitruk** (Biophysical Techniques), **Jiří Pavlíček** (Crystallization of Proteins and Nucleic Acids), **Petr Pompach** (Structural Mass Spectrometry), **Pavla Vaňková** (Structural Mass Spectrometry), **Jan Stránský** (Diffraction Techniques), **Michal Strnad** (IT), **Lubica Škultétyová** (technician), **Magdalena Schneiderová** (admin), **Jan Dohnálek** (CMS Head)

You can realize your projects at CMS via an online application at ciisb.org/open-access/proposal-submission.

Find out more information at ciisb.org, ibt.cas.cz/core-facility/CMS/ or contact magdalena.schneiderova@ibt.cas.cz, jan.dohnalek@ibt.cas.cz