

Quality control for Integral Membrane Proteins

12rd-14th September 2022

EMBL Hamburg (c/o DESY), Hamburg, Germany (EMBL-SPC)

Integral membrane proteins (IMPs) are known to be challenging proteins to purify and characterise due to their native membrane conformation. For electron cryo-microscopy (cryo-EM) and Macromolecular crystallography (MX), the biophysical characterisation of sample purity, homogeneity and integrity, as well as biochemical activity are a prerequisite for the preparation of good quality grids, as these factors impact the result of the computational reconstruction.

The main goal for this course is to address the sample preparation of IMPs and its complexes using a biophysical quality control pipeline prior to performing structural biology experiments.

The course will contain tutorial lectures, instrument demonstrations and practical sessions.

Tutorial lectures will be given by: Inga Hänel, Misha Kudryashev, Christian Löw

Instrument demonstrations and practical sessions will cover:

- Nano- differential scanning fluorimetry (NanoDSF)
High-throughput assay for buffer and detergents screen optimisation of membrane proteins
- Mass Photometry (MP) and Dynamic Light Scattering (DLS)
Oligomerisation state, aggregation behaviour and reconstitution for EM samples preparation
- Electron microscopy (EM) preparation
Negative- stain EM of membrane proteins sample preparation for single particle analysis of membrane proteins

Other details: The course is aimed at researchers who already have some experience in membrane protein purification as part of sample preparation, who are eager to acquire new scientific and technical skills on quality control and electron microscopy. Registration to the course will be free of charge, with limited financial support available for participants.

Visit the website to find out more and to apply to take part in the course.

<https://www.mosbri.eu/training/end-user-short-courses/esc3/>