

We invite all interested scientists and technicians to this presentation:

A brief overview and introduction to expansion microscopy by Ihor Arkhynchuk

Abstract

Expansion microscopy (ExM) is a super-resolution imaging technique that enables nanoscale resolution imaging on conventional light microscopes through physical, rather than optical, magnification. First introduced in 2015 by Chen, Tillberg, and Boyden, ExM circumvents the diffraction limit by isotropically expanding biological specimens embedded within a swellable hydrogel polymer network.

The fundamental principle involves synthesizing a dense, cross-linked polyelectrolyte hydrogel throughout preserved biological specimens, covalently anchoring biomolecules and fluorescent labels to this polymer network and then swelling the hydrogel in water to achieve physical magnification. This approach enables effective lateral resolution of approximately 70 nm using conventional confocal microscopes, comparable to specialized super-resolution techniques. There are five general steps: 1) Fixation and Labelling; 2) Molecular Anchoring; 3) Hydrogel Polymerization; 4) Mechanical Homogenization; 5) Expansion.

The presentation will be given at the beginning of the user meeting of the core facility and is open for all interested listeners.

Time: 27.10.2025 at 11:15 h

Location: Seminarroom in W37

Online access: <https://meeting.uol.de/rooms/drl-pfm-n6d-h3l/join>