FROM PROTEIN CHARACTERIZATION TO DRUG DISCOVERY AND ENZYME ENGINEERING
— services and collaborations provided by Biocenter Oulu core facilities

**Introduction**

The Biocenter Oulu core facilities for proteomics and protein analysis, protein crystallography, and biocomputing and bioinformatics form together a center of expertise for protein characterization, drug discovery and biocatalysis research.

**Protein quality control and characterization**

- Mass spectrometry
- Gel-based proteomics
- Circular dichroism spectroscopy
- Static light scattering (SLS)
- Dynamic light scattering

**Amino acid analysis**

**Protein quality control and characterization**

- Crystallization screening, imaging, and data tracking
- Crystal testing and data collection
- Protein structure determination and ligand binding studies

**State-of-the-art instruments + Expertise**

- **Protein structure determination and modeling**
  - Mass spectrometry
  - Gel-based proteomics
  - Circular dichroism spectroscopy
  - Static light scattering (SLS)
- **Protein-ligand interaction and bioassay detection**
  - Surface plasmon resonance
  - Isothermal titration calorimetry
  - Spectrophotometry for enzyme kinetics study
- **Multimode plate reader for enzyme kinetic and affinity measurements**
- **In silico modeling and simulation**

**More information and contact E-mail addresses**: http://www.oulu.fi/biocenter/core-facilities; http://www.oulu.fi/biocenter/instruct-nac; http://www.oulu.fi/biocenter/strucbiocat

**Responsible persons:**
- Johanna Myllyharju (Biocenter Oulu Director)
- Lloyd Ruddock (Biocenter Oulu Proteomics and Protein Analysis Core)
- Lari Lehtiö (Biocenter Oulu Crystallography Core and Tecan Multimode microplate reader Infinite M1000)
- Rik Wierenga (EU-projects iNEXT and Instruct-ULTRA)
- Andre Juffer (Biocenter Oulu Biocomputing and Bioinformatics core: molecular dynamics, quantum mechanics/molecular mechanics, protein modelling)
- Stefan Ohlmeier (gel-based proteomics: IPGphor3, MultiphorII, Ettan DALTII for protein separation; Typhoon 9400, MolecularImager FX for protein detection; Delta2D and Melanie for proteomic analysis)
- Ulrich Bergmann (mass spectrometry: Synapt G2 HDMS for small molecule analysis and study of full length protein; UltrafleXtreme for Protein identification and proteomics)
- Hingmee Ts (Chirascan™-plus CD Spectrometer; Shimadzu Prominent HPLC for AAL; Microcal T200 for isothermal titration calorimetry; Biacore T200 and F200A for surface plasmon resonance)
- Tiila Klemi (structural enzymology, data collection, Microfocus X-ray generator, M水源X Protein, crystal testing and modeling, structure determination)
- Kiratam Kukki (protein purification, DLS, SLS, remote data collection, Strucbiocat activities)
- Ville Ratase & Ed Daniel (Tecan Microlit Pipetting robots and Formulatrix Crystallization plate hotels for crystallization; statPIMS software for viewing crystallization results and data tracking)
- An-Pakka Kristi (computing: Windows and Linux data management and system setup)

The infrastructure is located at the Faculty of Biochemistry and Molecular Medicine, University of Oulu. It provides a wide range of state-of-the-art instruments and techniques for academic and bio-industrial researchers. It is a service cluster for protein studies covering protein bioinformatics, biocomputing, purification, ligand screening, structure determination and modeling.

The core facilities are part of the Biocenter Finland infrastructure networks and technology platforms, and belong also to the Finnish Instruct-NAC, known as Instruct-Fi. This infrastructure is also associated with iNEXT (Infrastructure for NMR, EM and X-rays for Translational Research) and Diamond Light Source.