

Workshop 1: Peptide Synthesis and Protein production/labeling (Tentative date: 4/2012)

The workshop aims to provide an overview of current state-of-art methods and developments in the area of sample preparation and isotope labeling of proteins for structural biology. A special focus will be given to alternative expression host, i.e. beyond *E. coli* (*Dichtyostellim discoideum* & *C. elegans*) and to new strategies for (isotope) uniform or selective/specific labeling and to advanced methodologies applied currently in the synthesis of peptide and peptide-like biopolymers in solid and solution-phase (disulfide-rich peptides, like toxins etc., use of microwave-assisted heating technology and others)

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Workshop 2: NMR Basics and Applications in Life Sciences (Tentative date: 04/2013)

A comprehensive workshop, focusing on modern high field NMR spectroscopy in solution, with applications to protein structure, dynamics and functional studies will be organised.

State-of-the-art NMR methodologies to solve biological relevant problems and to drug design will be discussed, starting from basic NMR theory and experimental aspects (NMR data acquisition and processing, heteronuclear multidimensional NMR spectroscopy, paramagnetic NMR, automated projection spectroscopy, unsupervised NMR resonance assignment of multi dimensional data, etc.). Basic principal in solid state NMR will be also presented.

Complementay skill course (1 d) for 30 researchers, on 2D/3D homo-/hetero- nuclear NMR data analysis & structure calculations is also foreseen.

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Workshop 3: Emerging Analytical Techniques in Protein Characterization (Tentative date: 9/2013)

A workshop, focusing on the state-of-the-art Proteomics methodologies has been planned, to cover the basics on proteins and biophysical methods, protocols in protein purification and protein-protein interactions, electrophoresis and chromatography, electrofocusing, FPLC and HPLC, protein sequencing, spectroscopy and calorimetry, along with Biomolecular Simulation

Workshops

Written by Administrator

Thursday, 22 December 2011 14:14 - Last Updated Tuesday, 30 June 2015 15:56

protocols and X-ray Crystallography

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Workshop 4: Live cell imaging, Drug Screening & Preclinical assessment (Tentative date: 4/2014)

A workshop, focusing on state-of-the-art methodologies to drug target identification, validation, live cell imaging techniques and their application in determining protein/protein and protein/lead compound interactions and pharmacokinetics. The workshop will cover the following topics: methods in studying drug target - drug interactions, drug discovery/screening, high-throughput live-cell assays for drug screening, QSAR, fluorescence, confocal, multi-photon, spinning-disc and scanned light sheet microscopy and their applications in live-cell and deep tissue imaging, functional live cell imaging techniques for the determination of in-cell protein-protein interactions and modifications and quantitative characterization of protein function, fluorescence Recovery after photobleaching (FRAP), in-cell FRET (fluorescence resonance energy transfer) measurements, fluorescence Lifetime Imaging Microscopy (FLIM), fluorescence Cross-Correlation Spectroscopy (FCCS), etc.

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