

COURSE SCHEDULE: Structural Biology

Monday (Jan 13th) Auditorium B

10:00-10:20 Welcome address (S. M. R.)

10:20-12:00 Structural Biology: Overview (S. M. R. / P. P.)

LUNCH

14:00-16:30 Recombinant protein expression and purification (F. F. S.)

17:00-17:30 CLASP2 purification strategy– a practical example (A. F.)

Tuesday (Jan 14th) Auditorium B

10:00-11:30 Protein Crystallography: Overview (P. P.)

11:45-13:00 Structural analysis of a Htr protease: How to read a protein crystallography paper (M. M.)

LUNCH

15:30-16:30 **PRACTICAL 1:** PROTEIN CRYSTALLIZATION (Groups I and II)

PRACTICAL 2: PROJECT PREPARATION (Groups III and IV)

16:30-17:30 **PRACTICAL 1:** PROTEIN CRYSTALLIZATION (Groups III and IV)

PRACTICAL 2: PROJECT PREPARATION (Groups I and II)

Wednesday (Jan 15th) Meeting Room 0.33

10:00-11:15 Polyglutamine disorders: a structural perspective (S. M. R.)

11:30-12:00 Brain-predominant ataxin-3 isoform SUMOylation: aggregation trigger? (B. A.)

12:00-12:30 Structural and functional aspects of codon ambiguity in *C. albicans* (A. S.)

LUNCH

14:00-14:30 Solution structure and self-assembly properties of soluble RAGE (Z. S.)

14:30-15:30 **PRACTICAL 3:** DIFFRACTION DATA COLLECTION (Groups I and II)

15:30-16:30 **PRACTICAL 3:** DIFFRACTION DATA COLLECTION (Groups III and IV)

16:30-18:00 **PRACTICAL 4:** PROJECT PREPARATION (All Groups)

Thursday (Jan 16th) Auditorium A (morning) / B (afternoon)

10:00-11:15 Natural anticoagulants (P. P.)

11:30-12:30 Mass Spectrometry-more than just a mass (A. A.)

LUNCH

14:30-15:30 **PRACTICAL 5:** MODEL BUILDING (Groups I and II)

PRACTICAL 6: PDB AND PYMOL (Groups III and IV)

15:30-16:30 **PRACTICAL 5:** MODEL BUILDING (Groups III and IV)

PRACTICAL 6: PDB AND PYMOL (Groups I and II)

16:30-18:00 **PRACTICAL 7: PROJECT PREPARATION** (All Groups)

Friday (Jan 17th) **Auditorium B**

10:00-11:00 Project presentation (Groups I, III)

11:00-12:00 Project presentation (Groups II, IV)

LUNCH

14:30-15:30 Using ESI-IMS-MS to monitor amyloid formation and inhibition (A. A.)

Course Tutors:

Sandra de Macedo Ribeiro, PhD (Protein Crystallography Group, IBMC, Porto)
Pedro J. B. Pereira, PhD (Biomolecular Structure Group, IBMC, Porto)
Alison Ashcroft, PhD (The Astbury Centre for Structural Molecular Biology, Leeds University, UK)
Frederico Ferreira da Silva, PhD (UP³, Protein Production and Purification Unit, IBMC)

Ana Carvalho Figueiredo, PhD (Protein Crystallography Group, IBMC, Porto)
Bruno Miguel Almeida, PhD (Protein Crystallography Group, IBMC, Porto)
Matthew Merski, PhD (Protein Crystallography Group, IBMC, Porto)
Maria Alexandra Oliveira Silva, PhD (Protein Crystallography Group, IBMC, Porto)
Zsuzsa Sarkany, PhD (Protein Crystallography Group, IBMC, Porto)
Joana Fraga, MSc (Protein Crystallography Group, IBMC, Porto)
Tatiana Barros Cereija (Biomolecular Structure Group, IBMC, Porto)

Suggested bibliography:

Protein crystallography and structure analysis:

International Tables for Crystallography (2006). Vol. F, Chapter 1.1, pp. 1–63

G. Rhodes. *Crystallography Made Crystal Clear: A Guide for Users of Macromolecular Models* (2006). Academic Press, Burlington. ISBN 9780125870733.

<http://www.ncbi.nlm.nih.gov/pubmed/17521566>

<http://www.ncbi.nlm.nih.gov/pubmed/17497239>

Structural Biology Methods:

<http://www.ncbi.nlm.nih.gov/pubmed/18755272>

<http://www.ncbi.nlm.nih.gov/pubmed/22835744>

<http://www.ncbi.nlm.nih.gov/pubmed/16459078>

<http://www.ncbi.nlm.nih.gov/pubmed/22835744>

Structural Mass Spectrometry:

<http://www.ncbi.nlm.nih.gov/pubmed/21917446>

<http://www.ncbi.nlm.nih.gov/pubmed/18075576>

Interactions and dynamics:

<http://www.ncbi.nlm.nih.gov/pubmed/23235262>

X-ray lasers:

<http://www.sciencedirect.com/science/article/pii/S0959440X12001406>

<http://www.sciencedirect.com/science/article/pii/S0959440X12001261>