

941.402 BASIC COURSE 2

13. - 23. February 2017

3 ECTS = 2 SWS; 16 units a' 90 min

A: Biosynthesis and posttranslational modifications of recombinant proteins

13. - 17. February 2017

Monday	Wednesday	Thursday	Friday
2a 9.15-10.45	2c 9.15-10.45	2e 9.00-10.30	2g 9.00-10.30
2b 11.00-12.30	2d 11.00-12.30	2f 11.00-12.30	2h 11.00-12.30

Content:

2a: Biosynthesis of cytosolic and secretory proteins (Wilson)

2b: Protein folding, quality control and co-factor incorporation (heme, flavin) within the cytosol and the secretory pathway (Wilson)

2c: Posttranslational protein modifications I: N- and O-glycosylation in biotechnologically relevant organisms (Wilson)

2d: Posttranslational protein modifications II: role of glycosylation in targeting, turnover and immunology of recombinant proteins (Altmann)

2e: Analysis of post-translational modifications I: chromatographic and electrophoretic techniques (Altmann)

2f: Posttranslational protein modifications III: phosphorylation, hydroxylation, carboxylation, acetylation, methylation etc. and their functional relevance (Wilson)

2g: Analysis of post-translational modifications II: mass spectrometry (Altmann)

2h: Proteomics: concepts and recent developments (Altmann)

Lecturers: Altmann (0.5 SWS), Wilson (0.5 SWS)

Outcomes:

Improved knowledge of protein biosynthesis and posttranslational protein modifications. Profound understanding of the relevance of posttranslational protein modifications for the production and application of recombinant proteins. Instruction in state-of-the-art bioanalytical techniques.

B: Intracellular protein trafficking and its biotechnological relevance

20. - 23. February 2017

Monday	Tuesday	Wednesday	Thursday
2i 9.00-10.30	2k 9.00-10.30	2m 9.00-10.30	2o 9.00-10.30
2j 11.00-12.30	2l 11.00-12.30	2n 11.00-12.30	2p 11.00-12.30

Content:

- 2i:** General concepts of intracellular transport processes (Mach)
- 2j:** The secretory pathway I: the endoplasmic reticulum (Strasser)
- 2k:** The secretory pathway II: the Golgi apparatus (Strasser)
- 2l:** Regulated and non-canonical secretion (Mach)
- 2m:** Endocytosis, endosomes and lysosomes (Mach)
- 2n:** Intracellular protein degradation pathways (Mach)
- 2o:** Protein storage organelles I (Stöger)
- 2p:** Protein storage organelles II (Stöger)

Lecturers: Mach (0.5 SWS), Stöger (0.25 SWS), Strasser (0.25 SWS)

Expected Outcomes:

Profound understanding of intracellular protein trafficking and protein degradation in eukaryotic cells. Comprehensive knowledge of the properties of eukaryotic expression systems with respect to protein secretion and protein sorting.