

Biophysics of biological macromolecules (HS 11)

HPK D3, Monday 15⁴⁵–18³⁰

Lecturer: Prof. Dr. Fred Allain (FA), Dr. Mario Schubert (MS), Dr. Peter Lukavsky (PL),
Prof. Dr. Gerhard Wider (GSW)

- 26.9. GSW Introduction
 - . MS Lab visits
- 3.10. GSW Stereochemistry of nucleotides and nucleic acids [K 9-12 + U 2-6]
Structure und conformation of nucleic acids (DNA/RNA) [K 12-22 + U 7-15]
- 10.10 GSW Stereochemistry and properties of amino acids [K 37-43]
Proteins: structures, examples, classification [K 43-48]
- 17.10. GSW Basics of NMR spectroscopy
[U: Magnetische Resonanz (S. 1-12) und NMR Spektroskopie (S. 1-36)]
- 24.10. GSW NMR spectroscopy
Product Operator Formalism
- 31.10. MS Spectroscopy von biopolymers: UV, Vis., CD, Fluorescence, ESR, light scattering, MS
[U: H. Galla, Spektroskopische Methoden , Thieme]
- 7.11. MS X-ray of macromolecules [U and powerpoint file of lecture]
- 14.11. FA Transcription [K 49-65, 173-175, PCR [K 318-319, S 132-136 (U), Paper Gibbs1990 (U)]
- 21.11. PL Translation [K 65-78, Genetic Code [K 78-84]]
- 28.11. FA Structure-function relations of proteins [S 181-196 (U), S 147-177 (U)]
- 5.12. PL Microbiology, Viruses / E. coli [K 87-123]
- 12.12. PL Biotechnology (cloning, Expression, gen regulation, sequencing) [K 297-318]
- 19.12. MS Protein (bio)chemistry (incl. purification, analytic, SDS-PAGE, Edman degradation, AA-analysis)
[Stryer 45-58(U) + weitere U]

Compulsory textbook for the lecture:

“Molekular Genetik”, R. Knippers, 9. Auflage, Georg Thieme Verlag, 2006, ISBN 3-13-477009-1

The textbook [“K”] will be used during the lectures. In parts the topics presented in the lecture will be more detailed than the textbook. For this reason, you will get additional material [U] (S: Biochemistry (4th ed.), L. Stryer).

As starting point for the **preparation of the exam** the table of content above list the important topics with reference to the additional material [U] and/or the page in the textbook, e.g. [K 17–18].

GSW, 09/09/11