

General Principles of Medicinal Chemistry

Lecture-Nr.: 53812

Type: seminar

Duration: 2 hours per week (winter)

Method of Assessment: optional written examination

ECTS Credit Points: 2

Topics:

The lecture is organized in three parts: fundamentals of medicinal chemistry, drug targets and theoretical medicinal chemistry. In the first part, basic principles of drug research and design are explained, including terms and definitions from general pharmacology and models of ligand-receptor interactions like occupation theory. The part 'drug targets' covers structure, function and cellular signaling of the most important classes of biological targets, for instance, membrane receptors such as G-protein coupled receptors and receptor tyrosine kinases, ligand-activated transcription factors (nuclear receptors), enzymes, ion channels and transporters. The part 'theoretical medicinal chemistry' provides an introduction into computer methods in drug research and design: Fundamentals, methods and examples of quantitative structure-relationships (QSAR), approaches in structure- and ligand-based design as well as handling and calculation of structures by molecular modeling.

Literature:

1. Wermuth (Ed.): The Practice of Medicinal Chemistry. Elsevier, Amsterdam.
2. Silverman: The Organic Chemistry of Drug Design and Drug Action. Elsevier, Amsterdam.
3. Klebe: Drug Design, Methodology, Concepts and Mode-of-Action. Springer, New York.
4. Klebe: Wirkstoffdesign, Entwurf und Wirkung von Arzneistoffen. Spektrum Akademischer Verlag, Heidelberg.
5. Krauss: Biochemistry of Signal Transduction and Regulation. Wiley-VCH, Weinheim
6. Voet/Voet, Biochemistry, Wiley.
7. Steinhilber; Schubert-Zsilavec; Roth: Medizinische Chemie, Targets und Arzneistoffe. Deutscher Apotheker-Verlag, Stuttgart.
8. Mutschler; Geisslinger; Kroemer; Menzel; Ruth: Arzneimittelwirkungen. Wissenschaftliche Verlagsgesellschaft, Stuttgart.

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