

Course syllabus

Protein Engineering Protein Engineering

KBKN05, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED B/K

Date of Decision: 2023-04-18

General Information

Main field: Biotechnology.

Elective Compulsory for: MBIO2

Elective for: B4-mb, MLAK2

Language of instruction: The course will be given in English on demand

Aim

The aim of the course is to give a deeper understanding of protein structure and function.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to describe, formulate and evaluate methods for mutations of proteins
- be able to describe and evaluate information about protein structures on primary, secondary and tertiary levels.
- be able to describe technical and medical applications of mutated proteins

Competences and skills

For a passing grade the student must

- be able to prepare a site-directed mutation of a protein.
- be able to use software for structure modelling at a low level of complexity.
- in oral and written form be able to govern and utilise commonly used forms of nomenclature in protein engineering.

Judgement and approach

For a passing grade the student must

- be able to analyse and critically examine scientific reports and articles in protein engineering.
- in a group be able to design a modification of a protein in order to achieve a desired chemical or physical property.

Contents

Random and site-directed mutations of proteins using genetic methods are described. Combinatorial methods using biological and chemical approaches are treated. The course also includes a practical task where the student independently design a modified protein.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Written and problem-oriented home exam. Written and oral presentation in group of material taken from the scientific literature. Reports from exercises and practicals are also required.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: KBK041 / KBKF01 Genetechnology

The number of participants is limited to: No

The course overlaps following course/s: KBK050

Reading list

- Berg, Tymoczko, Gatto, Stryer: Biochemistry. W.H. Freeman and Company, 2015, ISBN: 978-1-4641-2610-9.
- Brändén, C-I., Tooze, J.: Introduction to Protein Structure. Garland Publishing Inc, 1999, ISBN: 0-8153-2305-0.
- Laboratory compendium, distributed during the course.
- Computer exercise compendium, distributed during the course.

Contact and other information

Course coordinator: Johan Svensson Bonde, johan.svensson_bonde@tbiokem.lth.se

Course homepage: <http://www.tbiokem.lth.se>