

BIOENG-433 **Biotechnology lab (for CGC)**

Pick Horst

Cursus	Sem.	Type
Biotechnology minor	E	Opt.
Ing.-chim.	MA2, MA4	Opt.

Language of teaching	English
Credits	4
Withdrawal Session	Unauthorized Summer
Semester Exam	Spring During the semester
Workload	120h
Weeks	14
Hours	6 weekly
TP	6 weekly

Number of positions

It is not allowed to withdraw from this subject after the registration deadline.

Summary

Students apply basic techniques in molecular biology to clone a cDNA of interest into an expression plasmid in order to produce its protein product in mammalian cells. They purify the recombinant protein and characterize it biochemically.

Content

- Growth of E.coli in simple shaker flasks and in small biore-actors.
- Isolation of plasmid DNA from overnight E.coli cultures and analysis by restriction digest.
- Basic mammalian cell culture techniques.
- Cell lysis and extraction of intracellular fluorescent protein.
- Analysis of a recombinant product by ELISA (*enzyme-linked immunosorbent assay*).
- Analysis of (*recombinant*) protein by SDS-PAGE.
- Peptide mapping of proteins and analysis by chromatography.
- Detection and quantification of DNA by fluorescent dye.
- Bioinformatic: computer-based analysis of DNA sequences.

Learning Prerequisites**Required courses**

Pharmaceutical Biotechnology (BIOENG-437)

Learning Outcomes

By the end of the course, the student must be able to:

- Interpret experimental results
- Analyze DNA and proteins
- Assess / Evaluate data obtained in wetlab experiments
- Hypothesize the underlying causes of observed phenomena
- Produce a scientific report

Transversal skills

- Use a work methodology appropriate to the task.
- Write a scientific or technical report.
- Collect data.
- Demonstrate the capacity for critical thinking

Teaching methods

Practical course
Biotechnology Laboratory

Assessment methods

Continuous control
Lab Reports / Tests / Lab notebook

Resources

Bibliography

"Molecular Biology of the Cell", Alberts et al

Ressources en bibliothèque

- [Molecular Biology of the Cell / Alberts](#)

Notes/Handbook

Protocols for Biotechnology Laboratory