

# Exam Guidelines

## LISV I - Autumn semester 2025

December 16<sup>th</sup> 08:00-10:00

The exam starts at 08:15.  
Target completion time: 1h45

Room assignment will be posted on Moodle the week before the exam.

### OBJECTIVE

To show that you understood the course material, know how to design an experiment, are able to interpret your results and are aware of the value of right control(s).

### FORMAT

Written exam.

Multiple Choice Questions (MCQ; one correct answer per question, no negative points)

### COURSE MATERIAL

- Overview of LISV I
- Basic theory
- Methods / experimental procedures and equipment
- Lab safety and good lab practice
- Design of experiment
- Data interpretation
- How to write a laboratory notebook
- Scientific figures and figure legends

### SPECIFIC TOPICS (Laboratory session 1–5)

- Isolation of total RNA from mouse tissues / Quality control
- cDNA cloning by reverse-transcription + polymerase chain reaction (PCR)
- Analysis of PCR amplicons by agarose gel electrophoresis
- Cloning strategies: design primers based on a provided cDNA sequence. Be aware of reverse-complement for reverse primers / Kozak sequence / in frame cloning / restriction enzyme sites etc.
- Benchling software (primers, virtual cloning, annotations, restriction enzymes)
- NCBI database (retrieve nucleotide sequence and annotations)
- Ligation and transformation, selectable markers, controls
- Plasmid DNA isolation from *E. coli* using alkaline lysis procedure
- Restriction digestion of plasmids
- Experimental controls (positive and negative, where applicable)

### IMPORTANT

- Please bring your ID (EPFL rules: each student must have their student card or otherwise show a valid ID with photo)
- When you arrive and leave, sign the presence list
- Calculators, compPuters and laptops are forbidden
- Closed book, no scribbling pads or loose papers
- Cell phones and other electronic equipment must be switched off