UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Molecular Biology Laboratory

2223-3-E1301Q084-E1301Q092M

Aims

The molecular biology module provides skills in the basics molecular biology techniques.

Knowledge and understanding.
At the end of the course, students will gain knowledge on the basic molecular biology techniques and of plasmidic DNA cloning.

Ability to apply knowledge and understanding.
At the end of the course, students will gain the ability to interpret correctly the experimental protocols, to carry out the proposed experimental protocols in compliance with good laboratory practices and safety standards and to collect and process the experimental data.

Making judgements.
At the end of the course, students will be able to process what they have learned, to consider the critical points, to evaluate critically the results obtained and to recognise the contexts of application of the experimental methods of the course.

Communication skills.
At the end of the course, students will be able to process the experimental data obtained and to describe the procedures and the results, using the most appropriate technical language.

Learning skills.
At the end of the course, students will be able to correctly interpret experimental protocols similar to those already performed practically, whose application is required in different and more complex contexts.

Contents

Basic methods for cloning and screening of recombinant plasmid DNA will be illustrated and practically performed.

Detailed program

The practical experiments, for groups of 20-24 students, will take place over several days, preceded by an adequate introduction to both the techniques to be performed and the instrumentation and reagents to be used. As a rule, the experiments are followed by the collection of data and their collective discussion.

More in detail, the programme includes the following practical activities

- Cloning of plasmid DNA by ligation reactions and transformation of *Escherichia coli* cells
- Screening of recombinant plasmid DNA by Polymerase chain reaction (PCR) on DNA from single colonies (colony PCR)
- Screening of recombinant plasmid DNA by restriction profile analysis from extracted DNA (extraction of plasmid DNA by alkaline lysis and precipitation - miniprep; enzymatic digestion; agarose gel electrophoresis)

Prerequisites

Basics of Molecular Biology and Laboratory Techniques.

Teaching form

Description of procedures and practical laboratory experiences, carried out in equipped laboratories.

Textbook and teaching resource

The teaching material includes the handout and protocols applied during the practical activity. All teaching material supporting the theoretical and/or technical content of the laboratory experiences will be accessible from the moodle platform.

Semester

First semester

Assessment method

For the Molecular Biology module, as for all modules of the LIB course, there is no possibility of taking partial or

"module" examinations. The examination for the entire LIB course consists in a single written test aimed at assessing the skills acquired for each of the 6 LIB’s modules.

The written test lasts 2 hours and is held in a computer room, using a PC on a dedicated IT platform. The test consists of:

- closed-ended questions (exercises, multiple-choice questions), allowing a maximum of 10 points for each module
- a single open-ended question on the subject of one of the modules, allowing a maximum of 2 points

The overall result on the closed-ended questions of the 6 modules is converted into a maximum score of 29 (automatically given by the system, at the end of the test); the open-ended question is corrected by one of the teachers. The open-ended question will only be assessed by the teacher of the corresponding discipline if a minimum score is achieved in the closed-ended questions. The overall mark is given in thirtieths and is obtained by adding the two marks (for closed- and open-ended answers). An overall mark of 18 allows passing the examination; an overall mark of ? 30.5 allows for an honours grade.

Office hours

The teachers will receive by appointment requested by e-mail.

Sustainable Development Goals

QUALITY EDUCATION