UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# General Physiology Laboratory

**2526-3-E1301Q084-E1301Q083M**

## Aims

The aims of the Physiology module are:

1. the acquisition of the basic procedures of cell biology and of the basic concepts for the functional analysis of a biological phenomenon
2. the application of the acquired theoretical concepts to neuroblastoma cell culture maintenance, morphological analysis, viability assay and functional characterization
3. the acquisition of independence in laboratory practice maintaining the capability of sharing opinions and work in a group
4. the promotion of critical thinking and of discussing results with a technical and scientific language
5. learning to perform complex protocols and to discuss unexpected outcomes.

## Contents

The study of neuronal differentiation by measurement of intracellular calcium signals will be proposed.

## Detailed program

The physiology module includes 4 practical experiences in the laboratory. The activities will be distributed as

follows:

1) after an introduction on the basic practices of cell biology and cellular differentiation, we will proceed to the preparation of culture media for the maintenance of a neuroblastoma cell line; in parallel, cells of the same line will be differentiated by the use of chemical agents.

2) differentiation at 24 hours from the addition of the differentiating agent will be evaluated by microscopy visualization and by viability assay. Moreover, functional analyses will be performed (fluorescence analysis of the intracellular calcium content and electrical activity recordings) .

3) cell differentiation at 48 hours from the addition of the differentiating agent will be evaluated by microscopy visualization and by viability assay. Furthermore, the data acquired on this day and the previous one will be analyzed using special softwares in the computer laboratories.

4) cell differentiation at 72 hours from the treatment with the differentiating agent will be evaluated by microscopy visualization and viability assay. The data will be analyzed with appropriate softwares in the computer labs. At the end of the experience the results obtained will be discussed also referring to the theory presented during the first day of the physiology module.

## Prerequisites

Basic knowledge of cytology and physiology.

## Teaching form

Experimental activities performed by groups of 35-40 students in equipped labs. The teaching form will be interactive for 20 hours. Each activity will be introduced by a theoretical lesson, showing the goals and the experimental design. Slides and experimental protocols will be provided to students at the beginning of the teaching activity, and uploaded on the moodle teaching platform.

## Textbook and teaching resource

Slides and experimental protocols will be provided to students at the beginning of the teaching activity, and uploaded on the moodle teaching platform.

## Semester

First semester

## Assessment method

For the Physiology module, as for all LIB teaching modules, there is no possibility of taking partial or "module" exams. The method of verifying the entire teaching is a single written test aimed at assessing the skills acquired for each of the 6 modules that make up the course.

The written test lasts 2 hours and takes place in the computer laboratories, using a PC on a dedicated computer platform. The test consists of closed questions (exercises, multiple choice questions) on the disciplinary contents of all the modules, and a single open question on the disciplinary contents of one module. The closed questions of each module allow to acquire a maximum of 10 points. The overall result on the closed questions of the 6 modules is converted into a maximum score of 29 (automatically assigned by the system at the end of the test); the score of the open question is from 0 to 2 points, following a correction by one of the teachers. The open question will be evaluated only upon reaching a minimum score assigned to the closed questions. The overall score is given in thirtieths and is obtained by adding the two scores (for "closed" answers and for "open" answer). An overall score ?30.5 allows to obtain honors.

## Office hours

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

## Sustainable Development Goals

QUALITY EDUCATION | GENDER EQUALITY | REDUCED INEQUALITIES