UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

General Physiology Laboratory

2021-3-E1301Q077-E1301Q083M

Aims

The aims of the Physiology module are:

- the acquisition of the basic procedures of cell biology and of the basic concepts for the functional analysis of a biological phenomenon

- the application of the acquired theoretical concepts to neuroblastoma cell culture maintenance, morphological analysis and functional characterization by cytofluorimetry

- the acquisition of independence in laboratory practice maintaining the capability of sharing opinions and work in a group

- the promotion of critical thinking and of discussing results with a technical and scientific language

- learning to perform complex protocols and to discuss unexpected outcomes.

Contents

The study of neuronal differentiation by cytofluorimetry 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 neuronal 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) cytofluorimetric analysis will be performed on proliferating cells to highlight the intracellular calcium content. In parallel, differentiation at 24 hours from the addition of the differentiating agent will be evaluated by microscopy visualization and by cytofluorimetric analysis of the intracellular calcium content.

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

4) the cell differentiation at 72 hours from the treatment with differentiating agent will be evaluated by microscopy visualization and the data will be analyzed with appropriate software 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

Lab experimental activities in equipped labs.

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.Text books:

Semester

First semester

Assessment method

Written test focussed on all teaching modules: the exam will be aimed at the evaluation of acquired competences in all disciplines involved. The ability to elaborate and integrate the experimental work with the theoretical basis of the experiments, and the development of interdisciplinary links will be evaluated.

The assessment will be organised in six sections, with open questions and multiple choice tests. The duration of the assessment will be 2 hours.

Office hours

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