Doctoral School: **Biology Doctoral School**
Doctoral Program: Neuroscience and Human Biology

Subject code: **BIO/7/19**
Subject title: **In vitro cell technology PR**
Teacher and Neptun code: **Dr. Madarász Emília (LLBFJT)**
Credits: 4
Class hours: 2 hours/week, practical

Aim of the course

The course aims to provide an overview of methods for isolating, maintaining, and propagating mammalian cells. Students will become acquainted with the theoretical foundations and possibilities of modern cell biology, biochemistry and molecular biology studies that can be performed on cells maintained in vitro. Cell and tissue culture demonstrations and / or practicals (depending on the number and request of the applicants) present the basic methods for the creation, maintenance and use of primary cell cultures and cell lines in experiments.

Course content

1. Short history of tissue culturing; types of cultures and their applications
2. The fluid environment of cultured cells
3. The solid environment of cells in vivo and in vitro
4. Cell adhesion and cell migration; Factors determining the shape of cells
5. Isolation of cells and tissue samples for cultivation; methods of cell separation
6. Primary cell cultures, cell proliferation, apoptosis
7. Explant- aggregate and tissue slice cultures
8. Cell lines; isolation, cloning, geno- and phenotype stability
9. Methods for identification of cultured cells
10. Intercellular communication, in vitro. Growth factors
11. Physiological and pharmacological assays on cultured cells I.
12. Physiological and pharmacological assays on cultured cells II.
13. Gene technology on cultured cells

Requirements

written exam

Literature

lecture slides are available