



LABORATORY OF CELLULAR METHODS

Enrollment year	2018/2019
Academic year	2020/2021
Regulations	DM270
Academic discipline	BIO/13 (APPLIED BIOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	BIOLOGICAL SCIENCES
Curriculum	PERCORSO COMUNE
Year of study	3°
Period	1st semester (05/10/2020 - 14/01/2021)
ECTS	6
Lesson hours	72 lesson hours
Language	Italian
Activity type	WRITTEN TEST
Teacher	RAIMONDI ELENA MARIA CLOTILDE (titolare) - 3 ECTS BOTTIROLI GIOVANNI - 3 ECTS
Prerequisites	Basics of Genetics, Cytology and Histology.
Learning outcomes	Basic knowledge of microscopy and cytogenetics.
Course contents	Module 1. Basic principles of optical microscopy. Main types of optical microscopy (transmitted light, reflected light, dark field, polarization, phase contrast and interference, fluorescence) and their fields of application. Outline of confocal microscopy, two-photon microscopy and atomic force microscopy. The fluorescence phenomenon as photo-physical spectra of excitation / emission, quantum efficiency and decay time. Fluorimetric techniques in the study of cells and tissues: natural fluorescence and fluorescence induced. The fluorophores as markers of cellular structures and functions. Immunofluorescence techniques.

Module 2. In vitro cultures of mammalian somatic cells. In vitro cultures from peripheral blood. Chromosome preparations. Chromosome banding. The normal and pathological human karyotype. Reconstruction of the human karyotype. Differential staining of sister chromatids: SCE. Labelling of DNA probes: nick-translation. Fluorescence in situ hybridization. Probes identification. Analysis of the experimental results by fluorescence microscopy. Use of high definition camera (CCD). Acquisition and processing of digital images.

Teaching methods

Educational workshops

Reccomended or required readings

Dispenses with the slides presented during the course.

Assessment methods

Written test on the experiments carried out.

Further information

Written test on the experiments carried out.

Sustainable development goals - Agenda 2030

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