



UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP01_DIP_BIOTEC

Visiting Professor Program Academic year 2019/2020

DEPARTMENT OF MOLECULAR BIOTECHNOLOGY AND HEALTH SCIENCES

TEACHING COMMITMENT: 16 hours

COURSE TITLE

Cell Culture Techniques in Cell Biology

TEACHING PERIOD

1st term

SCIENTIFIC AREA

Cell Biology

LANGUAGE USED TO TEACH

English

COURSE SUMMARY

Basic Cell Culture Techniques.

Specialized cells culture techniques: primary cultures from specialized tissues

3D cultures

Organoids from normal tissues or from tumors.

In vivo Protein Analysis

Intracellular localization of endogenous and exogenous proteins

Biochemical and microscopy assays for protein co-localization: pull-down, FRAP, FRET.

Functional assays in cell biology:

Cell proliferation

Cell migration

Cell viability

Cell survival (apoptosis and anoikis)

Cell polarization

Cell-matrix adhesion assays (adhesion, spreading, focal adhesion organization)

Integrin-dependent functional assays (i.e. cytoskeleton organization)

Cancer models:

Cell invasion

In vitro and in vivo tumorigenesis assays (soft agar, in vivo tumor growth, experimental metastasis, spontaneous metastasis)

Patient-derived xenografts

LEARNING OBJECTIVES

The purpose of this teaching is to provide wide-date overview of essential experimental cell biology methods in basic research and applied biotechnology. In particular, the Cell Biology module will provide the knowledge necessary to learn the basis of cellular and biochemical technologies for the study of proteins into the main cell biological processes. The module will also offer a focus on primary cell culture in cancer and neuroscience. A key aspect of teaching will be highlighting how different technologies can be integrated to address complex biological questions. To this aim several case studies from recent literature will be analyzed.

OTHER ACTIVITIES BESIDES THE COURSE

Seminars to research fellows and PhD students:

We will organise seminal work on cell-matrix adhesion receptors and related signalling, focusing on tumor cell resistance to chemotherapeutic drugs.

VISITING PROFESSOR PROFILE

We look for an expert in the cell biology field, with specific focus on the techniques shown above in the Course Summary. We wish to have a scientist whose main research interest is the mechanism of integrin-mediated signaling in cell proliferation and migration. In particular, we will be interested in an expert in the components of the integrin adhesion complexes and their role in tumor cell resistance to antitumour drugs.

CONTACT PERSON AT THE DEPARTMENT

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