Visiting Professors
Academic year 2018/2019

1st term

COURSE TITLE
Integrated course of laboratory techniques

Scientific area
Cell Biology

Department of Molecular Biotechnology and Health Sciences

Language used to teach
English

Teaching Commitment: 16 hours

Course summary

Cell Culture
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: i.e. seminars and conferences addressed to PhD students and research fellows, dissemination conferences
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 particular, we will be interested in an expert in the components of the integrin adhesion complexes and their role in tumor cell resistance to antitumor drugs.

Contact person at the Department
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