



UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP24_DIP_MED

Visiting Professor Program Academic year 2021/2022

DEPARTMENT OF MEDICAL SCIENCES

TEACHING COMMITMENT: 16 hours

COURSE TITLE

Biochemical Cross-talks between Cell and Surrounding Environment: Uptake, Metabolism and Excretion of Nutrients, Xenobiotics and Drugs

TEACHING PERIOD

2nd term

SCIENTIFIC AREA

Biochemistry

LANGUAGE USED TO TEACH

English

COURSE SUMMARY

The Biochemistry course provides an in-depth knowledge of the metabolic pathways involved in the homeostatic responses to environmental changes, under physiological and pathological conditions. These responses include cellular import of nutrients and drugs, absorption, metabolism and excretion of catabolites, drugs and xenobiotics.

The topics of the course will be the following:

- Biochemical mechanisms of absorption and excretion of solutes and drugs in physiological barriers and excretory organs;
- Phase I and phase II metabolism of drugs, xenobiotics and catabolites;
- Alterations in drug uptake, metabolisms and excretion in cancer cells, determining drug resistance, with a particular focus to the alterations in SLC and ABC transporters, phase I and phase II metabolism;

- Biochemical approaches correcting alterations able to reverse drug resistance and avoid uninsured drug-drug interaction.

A specific knowledge of these processes will help the students of Medical School in:

- a) understanding why unexpected drug-drug interactions, drug toxicities, poor efficacy /resistance or hyper-sensitivity to specific treatments may occur in the clinical practice;
- b) rationally planning a change in the patient treatment to maximize the benefit/side-effect ratio.

LEARNING OBJECTIVES

The learning objectives of the specific course of the Visting Professor are to provide to the students the necessary biochemical background that allows to:

- understand how the homeostasis of ions, nutrients, xenobiotics and drugs is important in physiological processes, such as digestion, bile and urine excretion, delivery of substances to the central nervous system and to the foetus during pregnancy;
- predict the most common alterations in absorption, metabolism and excretion occurring during pathological conditions (e.g. inflammatory intestinal diseases, infections in biliary tract, kidney or placenta, meningitis, cancer);
- understand the basis of lower drug efficacy - or resistance, unexpected drug-drug interactions, heavy side-effects, as a consequence of the alterations in the drug absorption, metabolism and excretion, in particular in cancer treatment;
- understand the strategies used to improve the drug efficacy and reduce the toxicity on healthy tissues in oncological patients.

TUTORSHIP ACTIVITIES

Tutorship activities include problem-solving activities (1 h of tutorship every 4 h of teaching, for small groups of students)

LAB ACTIVITIES

Not applicable

OTHER ACTIVITIES BESIDES THE COURSE

1 seminar for undergraduate students (School of Medicine), focused on the organizations of the Schools of Medicine in foreigner Countries;

1 seminar for PhD students on her/his research topic (PhD programs in: Molecular Medicine; Biomedical Sciences and Oncology; Pharmaceutical and Biomolecular Sciences; Biological Sciences and Applied Biotechnology; Complex Systems of Life);

1 seminar for research fellows and professors on her/his research topics;

1 seminar for research fellows and professors on possible joint applications to international funding programs.

VISITING PROFESSOR PROFILE

The Visiting Professor is expected to have a long-standing teaching expertises including - but not limited to - the following areas: biochemistry, pharmacology, toxicology, molecular oncology.

A documented experience in teaching these subjects to undergraduated, graduated and PhD students, the enrollment as faculty member (associate or full professor) in Pharmaceutical School or Medical School of the Home Institution, the tutoring of undergraduated, graduated and PhD students, are highly desirable.

Other preferential titles are:

- a documented teaching experience of the indicated subjects in Countries different from the Home Country, including Italy;
- competitive awards and fellowships received to perform her/his research and/or teaching at Institutions different from the Home Institution;
- recognized awards for the quality of teaching received by the Home Institution or other Institutions;
- a scientific production on the topics of the course.

CONTACT PERSON AT THE DEPARTMENT

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