



UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP23_DIP_MED

Visiting Professor Program Academic year 2021/2022

DEPARTMENT OF MEDICAL SCIENCES

TEACHING COMMITMENT: 50 hours

COURSE TITLE

Gaseous Transmitters and Intracellular Redox Regulation in Health and Disease

TEACHING PERIOD

2nd term

SCIENTIFIC AREA

Biochemistry

LANGUAGE USED TO TEACH

English

COURSE SUMMARY

The Biochemistry course at the University of Torino, School of Medicine, provides an in-depth knowledge of the structures and functions of biomolecules and of the metabolic pathways of eukaryotic cells involved in proliferation and death, migration, responses to environmental changes, in physiological and pathological conditions.

Gaseous transmitters such as NO and CO, and reactive oxygen species (ROS) are double-edge sword molecules. Indeed, depending on the amount and tissue, they can exert cytotoxic effects or act as physiological mediators of vasodilation, neurotransmission, cell proliferation and migration.

The course will describe in depth:

- the physiological effects of gaseous transmitters and ROS in epithelial cells, cardiovascular system, central nervous system, kidney, immune system;

- the pathological effects of gaseous transmitters and ROS as mediators of diseases such as cancer, neurodegenerative diseases, cardiovascular diseases.

Considering the increasing life expectancy, these pathologies will become very frequent in the next future.

We believe that for a future medical doctor it will be useful understanding how a shift from physiological to pathological role of small molecules endogenously produced may contribute to the onset and progression of such diseases. This knowledge will pave the way to identify new biomarkers for early diagnosis and will help to understand the molecular bases for the new treatments that are now under clinical trials.

LEARNING OBJECTIVES

Biochemistry course aims at providing a basic knowledge of metabolic processes occurring at cellular and tissue levels, under physiological conditions or occurring during the most common pathologies.

The learning objectives of the course of the Visiting Professor are to provide the necessary biochemical background knowledge that allows to understand:

- how a fine modulation of the production of the same molecule can produce physiological or pathological effects;
- how a deregulated production of endogenous molecules may induce the onset of common diseases (Cancer, neurodegenerative disorders, cardiovascular diseases);
- how a better knowledge of the above-mentioned events can be exploited to identify novel biomarkers for early diagnosis and new therapeutic approaches.

TUTORSHIP ACTIVITIES

Flipped classroom activities will be prepared: about 10 hours of lessons will be used to explain a specific topic to the students and provide the required material. Students will be then divided in different small groups and involved in activities of problem-solving, under the tutorship of the visiting professor.

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;

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

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

VISITING PROFESSOR PROFILE

The Visiting Professor is expected to have a multidisciplinary portfolio of research and teaching expertises, including - but not limited to - basic and translational research focused on cell signalling in physiological and pathological conditions (i.e. cancer, neurodegenerative and cardiovascular diseases).

A documented experience of teaching these subjects to undergraduated, graduated and PhD students, the enrolment as faculty member (full professor) at the Home Institution, the tutoring of undergraduated, graduated and PhD students are highly desirable.

Other preferential titles are:

- a high-quality research in the field (e.g. H-index > 30);
- an international reputation as eminent scientist in the field (e.g. inviting lectures at international meetings, international awards);
- a scientific career documenting research or teaching periods in Institutions abroad from the home Country;
- a documented expertise in innovative teaching methods (e.g. flipped classrom).

CONTACT PERSON AT THE DEPARTMENT

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