



UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP25\_DIP\_ONC

## **Visiting Professor Program Academic year 2020/2021**

**DEPARTMENT OF ONCOLOGY**

**TEACHING COMMITMENT: 48 hours**

**COURSE TITLE**

**Biochemistry of Cancer Metabolism and Biochemistry-driven Identification of Anti-cancer Pathways and Drugs**

**TEACHING PERIOD**

2nd term

**SCIENTIFIC AREA**

Biochemistry, cell biology, molecular oncology

**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 cell proliferation, death, responses to environmental changes. One of the most common pathology with a predicted increasing incidence in the next decades is cancer. A student of Medical School should have a solid background on the biochemical changes occurring during carcinogenesis and cancer progression, and should understand the rationale of using anti-cancer drugs targeting specific metabolic pathways in tumor treatment.

The course of the Visiting Professor will be entirely dedicated to the biochemistry of cancer and cancer therapeutics, providing to the students additional and not-overlapping notions to those given in the remaining part of the course. The course will be focused on the following topics:

-Biochemical differences between cancer cells and not transformed cells;

- Biochemical cross-talks between cancer cells and tumor environment;
- Biochemical circuitries determining resistance to the currently available anti-cancer drugs;
- Metabolic pathways that can be targeted in order to improve the efficacy of currently used or future anti-cancer drugs.

### **LEARNING OBJECTIVES**

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

- why specific metabolic disorders and clinically-associated signs occur in oncological patients, encountered in the future clinical practice of the student;
- why specific anti-cancer treatments are prescribed to the oncological patients;
- why specific anti-cancer treatments fail and/or are substituted by other treatments, in consideration of:
  - a) the metabolic effects produced on cancer cell and its environment;
  - b) the mechanisms of resistance adopted by tumors.
- why a more personalized and tumor-targeting medicine represents the future of the oncological treatments, in consideration of the peculiarity of cancer cell metabolism that differs:
  - a) between each oncological patient;
  - b) between cancer cells from healthy tissues.

### **TUTORSHIP ACTIVITIES (IF APPLICABLE)**

### **LAB ACTIVITIES (IF APPLICABLE)**

### **OTHER ACTIVITIES (IF APPLICABLE)**

- 1 seminar to undergraduate students (School of Medicine), focused on the organizations of the Schools of Medicine in foreign Countries
- 3 seminar to 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)
- 3 seminar to research fellows and professors on her/his research topic
- 1 seminar to research fellows and professors on possible joint applications to international funding and exchange programs

### **VISITING PROFESSOR PROFILE DESCRIPTION**

The Visiting Professor is expected to have a multidisciplinary portfolio of research and teaching expertises, including - but not limited - to: basic research in oncology (biochemistry- and cell biology-oriented), mechanisms of cancer therapeutics and drug resistance in cancer cells.

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

Other preferential titles are:

- high-quality research in the field of teaching (e.g H-index > 30);
- international reputation as eminent scientist (e.g. awards received for her/his research at Institutions different from the Home Institution);
- scientific career documenting research or teaching periods in Institutions abroad from the home country;
- documented ability of translating the results of her/his research into tools exploitable into clinical practice (e.g. patents).

#### **CONTACT PERSON AT THE DEPARTMENT**

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