



UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP135\_DIP\_STF

## Visiting Professor Program Academic year 2022/2023

**TEACHING COMMITMENT:** 16 hours

### COURSE TITLE

**Advanced drug delivery technologies**

### TEACHING PERIOD

2nd term

### SCIENTIFIC AREA

Pharmaceutical technology

### LANGUAGE USED TO TEACH

English

### COURSE SUMMARY

The course will develop the recent advances in the field of precision oncology.

- 1) Tumor and microenvironment: in the last ten years comprehensive studies pointed out the importance of the microenvironment in cancer development and the fundamental role of the immune system. The course will give an overall description of the main phenomena of cancer–microenvironment interaction and the therapeutic strategies (therapeutic antibodies revolution) applied to counteract tumor progression and resistances;
- 2) Microbiota and cancer: recently, several relations have been found between microbiota and cancer. Exogenous as well as intestinal bacteria have been discovered to play an important role in cancer development, progression and, more particularly, to cancer treatment responsiveness. The course will present the new discoveries in this field and the future therapeutic strategies;
- 3) Delivery of therapeutics at sub-cellular level: several therapeutic agents vectorized by nanosystems are now marketed and others in advanced clinical phases for the treatment of cancer. In fact, nanovectors can improve the bioavailability and pharmacokinetics of active molecules, reduce toxicity and enable combination therapy in a single system. Nanosystems can be functionalized to target specific tissues and cells. The next frontier is to target sub-cellular

compartments and to combine nanotechnologies with physical methods to deliver therapies in the right place and also at the right time.

### **LEARNING OBJECTIVES**

Students will have an overall view of the cutting-edge discoveries and related therapies in the field of oncology. Future medicine will account more and more specific personalized treatments and by the end of this course the students will be informed on the three main research fields where the new discoveries are aimed at developing custom-made therapies.

Each section of the course will include theoretical notions meant to make the students confident with the reading of scientific articles in each of the three fields. Then, they will learn how to use basic bioinformatics tools and discussions about recent research articles in each field will complete their understanding.

### **TUTORSHIP ACTIVITIES**

Students will be invited to read and present scientific articles related to each of the three fields developed during the course. Questions will be raised and discussion will be opened on the scientific approach and the methodology of the articles.

Practical sessions will be organized to manipulate the informatics tools.

Experimental session in the laboratory can be also organized.

Experimental thesis of Master students and Ph.D. students can be co-tutored by the visiting professor.

### **LAB ACTIVITIES**

N/A

### **OTHER ACTIVITIES BESIDES THE COURSE**

The candidate Visiting Professor will present research seminars based on recent results from his/her laboratory in the area of discovering new molecular targets leading to a pre-clinical development of new vectorised molecules.

Focused dissertations with researchers and professors will be organized to build up future collaborative projects for competitive grant applications.

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### **VISITING PROFESSOR PROFILE**

The candidate should have a Ph.D. degree or equivalent and research experience in the field of oncology and nanotechnologies applied to Health Science. The candidate should be confident in dealing with interdisciplinary domains from molecular biology to pharmaceutical science. More particularly, the candidate should have work experience in developing new anticancer strategies. Additional knowledge in bioinformatics is appreciated.

The candidate should account several first-name peer review publications.

Working experiences in several different Countries is highly appreciated as the candidate must present a certain aptitude in interacting with people with different points of view.

**CONTACT PERSON AT THE DEPARTMENT**

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