



UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP01\_DIP\_BIOTEC

## **Visiting Professor Program Academic year 2021/2022**

**DEPARTMENT OF MOLECULAR BIOTECHNOLOGY AND HEALTH SCIENCES**  
**TEACHING COMMITMENT: 12 hours**

### **COURSE TITLE**

**Developmental Biology**

### **TEACHING PERIOD**

2nd term

### **SCIENTIFIC AREA**

Biological Science, Cell and Molecular Regulations

### **LANGUAGE USED TO TEACH**

English

### **COURSE SUMMARY**

The rhythmic activities - circadian circaannual etc  
Oscillatory activities within cells and tissues  
Neuronal networks with rhythmic activity, and the clocks in the mammalian brain  
Development of the circuits  
Interactions between the environment, the oscillatory activities and the internal clock  
Clock and oscillation in physiology and pathology  
Methods and experiments in studying rhythmic activities. .

### **LEARNING OBJECTIVES**

Students will be exposed to fundamental concepts in developmental biology focusing on the molecular and genetic determinants of rhythmic activities and oscillations in the animal organism. They will learn about the neuronal networks representing the core clock systems and the molecular

regulations underlying oscillatory cellular activities. They will learn how the system is organized and developed. Links with our normal physiology and with disorders associated with altered rhythms will be illustrated and discussed in molecular, cellular and organizational terms. Students will be exposed to the scientific experimental approach whenever possible, so they will become confident on the hypothesis-driven approaches in experiment

### **TUTORSHIP ACTIVITIES**

Students will be invited, as extracurricular activity and with no obligation, to present orally, shortly (15 min maximum) and in English their comprehension of a scientific article linked to the topic of the course. The quality of the presentation and of the following discussion will be considered as a part of the final evaluation. They will also held a “simulation of experimental strategy” in which a question will be addressed experimentally, with discussion on methodology issues, stimulated by the Visiting Professor. These activities will be extended also to the students of the course Biology of Regeneration and Development (BIO/0175 Master Degree), which is the follow-up and extension of the Developmental Biology course.

### **LAB ACTIVITIES**

No laboratory training is available for this course. The Visiting Professor will assist the students, together with the main lecturer Prof. Merlo in developing specific competences:

- 1) the comprehension of embryonic and adult brain structures with rhythmic activities;
- 2) the interpretation of raw experimental data, with the discussion about their interpretation.

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

The Visiting Professor will give two main lectures for the whole department, in English, presenting his/her recent advancements in topics related to the course. Student of the Developmental Biology course will attend as extracurricular activity, and will spend 1 hour after these for a question-answer session.

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### **VISITING PROFESSOR PROFILE**

The Visiting Professor should have an excellent publication record (at least 8) in developmental biology, endocrinology and animal behaviour and should have strong familiarity with the zebrafish and the mouse models as tools to study rhythmic activities. The professor should be expert in rhythmic activities and how to study them experimentally, and ideally should have previous teaching experience of this or related subjects. The Visiting Professor is expected to raise interest in the students, by illustrating first-hand approaches to questions central clock generators.

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

Prof. Giorgio Roberto Merlo  
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