UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP137_DIP_STF

Visiting Professor Program
Academic year 2022/2023

TEACHING COMMITMENT: 16 hours

COURSE TITLE

Biophysic in Drug Discovery

TEACHING PERIOD
2nd term

SCIENTIFIC AREA
Medicinal Chemistry

LANGUAGE USED TO TEACH
English

COURSE SUMMARY
Overview of the current range, strengths and limitations of biophysical methods most frequently used in drug discovery, (es. X-ray christallography, nuclear magnetic resonance spectroscopy, positron emission tomography) togheter with the characteristics of typical experiments giving examples of when and how they can have an impact on drug discovery. First summary of the main techniques and their requirements, and then descriptions of the information that they can provide and the stages at which they can be applied in the drug discovery process. Conclusion about the opportunities for new developments in biophysics — for example, methods that are able to operate in more authentic and physiologically complex settings (that is, in a cellular, tissue or organism setting), as is the trend for other assay technologies. Challenges for current technologies and future opportunities to use biophysical methods to solve drug discovery problems.

LEARNING OBJECTIVES
The aim of this course is to provide an outline of the basic principles and biophysical methods most frequently used in drug discovery, and an understanding of the basic physics, engineering and instrumentation underlying these tecnics. This course will emphasize the strengths, usefulness and application of these tecnics, so that any medicinal chemist engaging in a new research program can

judge if, and how, his/her project could potentially benefit from these technology. The knowledge gained from this course will be valuable to any medicinal chemists, particularly those working in the pharmaceutical industry or in hospitals, or those involved in clinical trials, or who have access to medical imaging data.

TUTORSHIP ACTIVITIES

Students performing lab work to prepare their experimental thesis on medicinal chemistry - drug discovery as well as PhD students or postdocs can be tutored by the visiting professor. The aim of their research is to identify hits, for example. The subsequent step will be to learn how to design specific synthetic routes to prepare the required precursor and the reference compounds that are required for future studies.

LAB ACTIVITIES

N/A

OTHER ACTIVITIES BESIDES THE COURSE

Visiting professor will give seminars and conferences addressed to the students of the PhD course in Pharmaceutical and Biomolecular Sciences, as well as to research fellows of the Department of Chemistry and Pharmaceutical Technology of the Turin University.

VISITING PROFESSOR PROFILE

The visiting professor should have a long research experience in the field of structural biology, bioinformatics protein crystallography or in engineering and instrumentation underlying PET imaging structural biology as well as in Drug Discovery. Due to the intermediate level of the background of the students (4rd year of a five-year course), visiting professor should combine the rigorous presentation of the topics with the ability to give the basic information, when required. In tutoring undergraduate and PhD students to generate structure-based pharmacophore models an expertise in Structure-based drug design, Structure-based virtual screening approaches, Fragment-based screening, Lead optimization will be highly appreciated as well as an expertise in drug design, in translation from preclinical to clinical studies, in medical imaging data, will be highly appreciated.

CONTACT PERSON AT THE DEPARTMENT

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