UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Proteomics

2425-1-F0802Q056

Aims

This course describes the main goals, experimental strategies and techniques of proteomics. Specific examples taken from the scientific literature will be discussed.

Knowledge and understanding.
The students will gain knowledge of the fundamental principles at the basis of the main proteomics techniques, as well as their implementation and application.

Applying knowledge and understanding.
The students will be able to apply the acquired knowledge to the subsequent courses, laboratory and research activities, as well as to understand and interpret the scientific papers reporting proteomics data in high impact factor journals.

Making judgements.
The students will be able to process the acquired knowledge, in order to interpret and critically discuss results from the literature and their own work, obtained by the described methods.

Communication skills.
The students will be able to use an appropriate scientific language in the description of the acquired methods and in the discussion and interpretation of experimental results.

Learning skills.
The students will have the skills in reading and understanding to face autonomously the subsequent studies that require knowledge in proteomics and will be able to apply the acquired study method also to other matters.

Contents

Protein identification, post-translational modifications, quantitative proteomics, interactomics, structural proteomics.

Detailed program

Issues and strategies in biomarker discovery
Protein microarrays
2D gels
Mass-spectrometry-based proteomics
High-throughput protein identification
Quantitative proteomics
Protein post-translational modifications
Phosphoproteomics
“Top down” e “bottom up” approaches
Interactomics
Structural proteomics

Prerequisites

Background: basic notions of protein biochemistry
Prerequisites. None

Teaching form

FRONTAL LESSONS
Twentyone 2-hour lectures composed by:
a section of delivered didactics, focused on the presentation-illustration of contents by the lecturer.
a section of interactive teaching, including teaching interventions supplementary to delivered didactic activities, short interventions by trainees, demonstrations of practical
applications (case study, journal club, etc.).
Didactic activities are conveyed by means of face-to-face lectures
Teaching language: italian.

Textbook and teaching resource

Learning material (slides of the lessons) is available at the e-learning web page of the course.
Scientific papers for each topic will be given. They have to be used for exam preparation.

Semester

First semester

Assessment method

Written examination (1h and 30 min).
The written exam will range on the entire course content, with one more general and conceptual question and one more technical question. The evaluation will focus on the understanding of the specific matter, knowledge of methods and techniques, and critical interpretation of the experimental results.

Office hours

Contact: Upon request by e-mail to lecturer.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING