UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Enzymes and Antibodies: From Theory To Practice

2122-3-I0302D025

Aims

The course is aimed not only at acquisition of recent knowledge in the field of immunometry and clinical enzimology, but also at experience of these techniques directly by a focused laboratory training.

Contents

Enzimology and immunometry are the base of most laboratory tests. For this reason, the course will show the principles of innovative enzymatic- and immuno-assays in diagnostics and research.

Detailed program

Methodological approaches to clinical biochemistry. Enzime-, immunometry-, and pcr-based assays; signal detection and amplification; different analytical formats; advantages and disadvantages; 1d and 2d electrophoresis; western blotting; protein arrays.

Practical training in laboratory:

1 - study of specific proteins in biological samples by antibodies: separation of proteins from biological samples by polyacrylamide gel electrophoresis (SDS-PAGE), transfer of proteins from gel to filter (Western Blotting), immunodecoration with specific antibodies for identification and quantification of proteins of interest, detection of the signal coming from the protein of interest by chemiluminescence assay, image acquisition by a CCD camera;

2 - use of enzymes in diagnostics: use of the spectrophotometer to study the absorption spectrum of optically active substances (NAD+ and NADH/H+); measurement of the concentration of an optically active substance

(NADH/H+) by Lambert&Beer law and the molar extinction coefficient; measurement of the concentration of lactic dehydrogenase enzyme in serum samples, evaluating the variation of NADH/H+ concentration in time (kinetic mode). Enzymatic measurement of a substrate: glucose assay by colorimetric method (Glucose Oxidase Horseradish Peroxidase) using the spectrophotometer.

Prerequisites

3rd year of the Course in Biomedical Laboratory Techniques

Teaching form

In the Covid-19 emergency period the lessons will be performed in mixed modality:

- video recorded synchronous lessons
- laboratory training organized for groups of a few students

Textbook and teaching resource

Material and bibliographic references supplied by the professor

Semester

First semester

Assessment method

Attendance

Office hours

On appointment requested by mail to francesca.raimondo@unimib.it