UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Immunology II

2324-2-H4102D011-H4102D034M

Aims

The Immunology II course provides students with the theoretical knowledge of some basic cell and molecular immunology laboratory techniques. The course will provide skills on immunology techniques. At the end of the course the student will be able to understand how some laboratory techniques work.

Contents

• Isolation of leukocytes from blood samples

• Antibody production. Monoclonal antibodies and their applications.

• Antigen-antibody interaction, direct and indirect immunofluorescence. Immunohistochemistry.

• Immunoassay: immunoblotting, immunoprecipitation. ELISA test.

Detailed program

Agglutination reactions: Hemagglutination and blood typing, The Coombs direct and indirect tests, Hemolytic disease of the newborn (HDN), pretransfusion compatibility tests.
Immunoassays: enzyme-linked immunosorbent assay (ELISA), ELISA detection of ADAMTS-13 and anti-ADAMTS-13 antibodies in thrombotic thrombocytopenic purpura, ELISA assay for detection of heparin-induced PF4 antibodies and their functional characterization: a case description.
Isolation of leukocytes from blood samples: Cluster of differentiation, isolation of peripheral blood lymphocytes and polymorphonuclear leukocytes by density-gradient fractionation, lymphocyte isolation using antibody coated

magnetic beads, leukapheresis and CAR-T
Flow cytometry and FACS analysis: principles and applications: immunophenotyping of leukocytes, imuunophenotyping of platelets for rare bleeding disorders, lymphocyte subpopulations in peripheral blood samples, lymphocyte subpopulations in bronchoalveolar lavage fluid, fetal hemoglobin detection, HLA-B27 typing.
Precipitation reactions : Antibody titration in serum, Flocculation Assays and VDRL, Precipitation in agar and The Ouchterlony test, Radial immunodiffusion (RID) and its application to antithrombin measurement in plasma.
Immunoblotting (western blotting): principles and applications, Western Blot assay for HIV proteins.

Prerequisites

Knowledge related to basic immunology

Teaching form

Presentation of classroom techniques.

Textbook and teaching resource

Scientific and technical publications.

Semester

First semester

Assessment method

The exam includes a written test with multiple choice questions on the topics covered during the lessons, administered together with the immunology I test

Office hours

The appointment for students will be set by email to the Prof.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY