UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Molecular Genetics

2627-3-I0302D035-I0302D046M

Aims

Provide knowledge related to the use of the main cytogenetic and molecular biology methods, with particular reference to PCR, with application examples in a biomedical laboratory (eg haemato-oncology).
Discuss and exemplify the role of the biomedical laboratory technician in the context of a clinical protocol.
Provide applicative skills of the preferential analytical method according to clinical question.

Contents

Cytogenetics and particular genetic diseases
FISH, aCGH, imprinting diseases, triplet expansion diseases

Molecular Biology:
PCR and its many applications, with examples related to a hemato-oncology laboratory

Detailed program

Cytogenetics: How to Perform and Interpret a Karyotype
Specific Genetic Disorders: Examples
FISH Technique: Applications and Limitations
aCGH (Molecular Karyotyping): Applications and Limitations
Techniques for Analyzing Imprinting Disorders
Techniques for Identifying Disorders Caused by Dynamic Mutations

Molecular Biology:

PCR and its many applications (examples relating to a hemato-oncology laboratory):

- Structure of nucleic acids
- Principles of polymerase chain reaction
- multiple types of PCR for different applications
- applications of PCR in medicine: from diagnostics to molecular monitoring
- mutation analysis
- gene expression analysis
- Quantitative PCR, principles and applications
- Molecular monitoring of minimal residual disease in hemato-oncology
- digital PCR

Prerequisites

Students should know the basic principles of Mendelian genetics, nucleic acid structure and molecular biology

Teaching form

Lectures will be delivered in Italian, with no remote teaching activities planned.
Visit to a molecular biology laboratory.

Textbook and teaching resource

material made available by the teacher

Semester

first semester

Assessment method

written exam with 10 multiple choice questions and 2 open questions

Office hours

on request via email

Sustainable Development Goals

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