



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Genomica Funzionale

2021-1-F0901D040

Aims

The aims of the Course are to provide the student with up to date knowledge of technics instruments and strategies normally employed in post-genomics, focusing on genome sequences functions, interactions and mechanisms regulating their expression.

Contents

Chromatin and human genome organization; Expression and gene regulation; Epigenetics; Developmental genetics; Mutations, DNA repair and genetic variability; Mapping of variants and diseases genes; Evolutionary and population genetics.

The Human Genome Project and subsequent technological developments are to be considered an indispensable tool for understanding study strategies.

Detailed program

Organization of the human genome - Chromosome structure and function - Model Organisms, comparative genomics and evolution - Sequencing genomes - Identifying and analysis of the functional components of the genomes - Human gene expression - Epigenetics - noncoding RNAs - Next generation sequencing - Single cell analysis - Genetic variability and its consequences - Studying gene expression and function models: • in vitro models: cell lines, primary lines, stem cells and reprogramming • expression vectors, plasmidic and viral, and their use for the study of protein-protein DNA-protein interaction, and possible therapeutic applications • gene targeting,

gene editing, post-transcriptional modifications for the knock-out or downregulation of genes.

Prerequisites

Advanced knowledge in genetics, biology and molecular biology.

Teaching form

In the Covid-19 emergency period, the frontal lessons will take place remotely in asynchronous mode with some videoconferencing events (Webex) regarding the discussion of scientific papers.

Textbook and teaching resource

-videotaped lessons

-ppt

videoconferences (Webex)

-Review and articles published in international journals will be indicated during the course.

-Genetica e Genomica nelle scienze mediche; T. Strachan, J. Goodship, P. Chinnery. Prima Edizione Italiana - Zanichelli

- Epigenetics; L. Armstrong. Garland Science

Semester

I Semester

Assessment method

Office hours

on appointment
