UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Biology and Genetics

2425-1-H4601D066

Aims

Knowledge of the main concepts in the structure and function of prokaryotic cells, eukaryotic and viruses, as well as laws governing the variability and inheritance.

Knowledge of the main concepts of molecular biology, with particular regard to the processes of DNA replication and control of gene expression.

Knowledge of the molecular mechanisms that control cell division and differentiation, with particular regard to the alterations of those mechanisms that are involved in human diseases

Contents

Structure and function of the most important cellular macromolecules; DNA duplication and repair mechanisms; transcription and RNA processing; translation and protein sorting; molecular and cellular mechanisms responsible for gene expression and its regulation, analyzing epigenetic mechanisms, transcriptional and post-transcriptional regulation; signal transduction pathways; molecular and cellular mechanisms which control the cell cycle, cellular growth and differentiation as well as cell-to-cell interactions; basic concepts of heredity and the transmission patterns of inherited traits; mechanisms which can generate phenotypic variants in men; methodologies used in genetic analysis; most important biotechnological applications in medicine (gene-based and cell-based therapy).

Detailed program

See the programm of the different modules

Prerequisites

Aims of the course Scienze Propedeutiche

Teaching form

40 2 hours-lectures composed by:

- a section of delivered didactics (Didattica erogativa, DE) focused on the presentation-illustration of contents by the lecturer.
- a section of interactive teaching (Didattica Interattiva, DI) including teaching interventions supplementary to delivered didactic activities, practical applications and in itinere test
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Didactic activities are conveyed by means of face-to-face lectures

Textbook and teaching resource

Main Textbook

G. De Leo, E. Ginelli, S. Fasano. Biologia e Genetica EdiSES, 2020

More Resources

- H. Lodish, A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore, J. Darnell. Molecular cell biology, Ed. FREEMAN, 9. ed. 2021

- G. Karp. Biologia cellulare e molecolare 6° ed EDISES, 2021

- Strachan.Genetica Molecolare Umana, Zanichelli 2021

- P.J.Russell. Elementi di Genetica, 2 edizione Edises 2016

- B. A. Pierce. Genetica. 2 edizione ZANICHELLI, 2016.

PPt slides form frontal lectures

Semester

2nd semester

Assessment method

One exam for all three sections of the course. Written test multiple choices (around 30) and 2-3 open shorts questions on all three modules. The examination is intended to test students' knowledge acquired in the different modules of the course.

Office hours

On appointment
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Sustainable Development Goals

GOOD HEALTH AND WELL-BEING