



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Biologia Molecolare

2425-1-H4601D066-H4601D011M

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#### Aims

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

#### Contents

Structure and function of the most important cellular macromolecules; transcription and RNA processing; pathological implications. molecular biology techniques used in research and in molecular diagnostics.

#### Detailed program

Chemical composition and molecular organization of the cell – water, carbohydrates, lipids, proteins and nucleic acids. Identification of the chemical compound carrying the genetic information – Molecular basis of inheritance – DNA replication. Telomerases – Mechanisms of DNA repair. Correlation with human diseases, aging and cancer. - RNA, structure and function – Transcription and RNA maturation – The genetic code, and its biological implication (redundancy, frameshift). - Molecular genetic tools (restriction enzymes, vectors, Southern blotting, PCR, sequencing, microarrays). Molecular cloning. Strategies for the diagnosis of genetic diseases (direct and indirect) – The human genome project: future implications – Gene therapy: general concepts and applications.

#### Prerequisites

Aims of the course Scienze Propedeutiche

## Teaching form

15 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

Didactic activities are conveyed by means of face-to-face lectures

## Textbook and teaching resource

Main Textbook

TESTO UNICO PER BIOLOGIA E GENETICA:

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. del 2021
- G. Karp. Biologia cellulare e molecolare 3°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 from frontal lectures

## Semester

2° 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

## **Sustainable Development Goals**

GOOD HEALTH AND WELL-BEING

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