



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Molecular Biology 1

2425-1-H4101D004-H4101D013M

---

#### Aims

The course will provide the essential theoretical knowledge of molecular biology, also focusing on the possible future application in the medical field.

#### Contents

Structure and function of the most important cellular macromolecules; DNA duplication, transcription and RNA processing; 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.

#### Prerequisites

Basic sciences (chemistry, physics)

## **Teaching form**

12 two-hour lectures delivered in person

## **Textbook and teaching resource**

G. De Leo, E. Ginelli, S. Fasano. BIOLOGIA E GENETICA, IV edizione, EdiSES, 2020

other textbooks:

E.Ginelli, M.Malcovati. MOLECOLE, CELLULE E ORGANISMI, II edizione, EdiSES, 2022

H. Lodish, A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore, J. Darnell. MOLECULAR CELL BIOLOGY, FREEMAN, 2021.

Slides employed in the classes will be provided to the students.

## **Semester**

Second semester

## **Assessment method**

See information provided for the whole course

## **Office hours**

By appointment

Please arrange the appointment by writing to Prof. Donatella Barisani at the following address  
donatella.barisani@unimib.it

## **Sustainable Development Goals**

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

---