



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Molecular Biology 2

2223-2-H4101D006-H4101D018M

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#### Aims

The module aims to describe the biochemical and molecular language, the correlation between function and molecular structure, the complex patterns of communication, interaction and control of cell and tissue functions

#### Contents

Regulation of blood glucose: liver and muscle glycogen. Insulin, glucagon.  
Hormones and hypothalamic pituitary. Hormones in the adrenal cortex. Hormones Sex hormones. Regulation of body weight. Nervous tissue biochemistry.  
Blood biochemistry. Hemoglobin and myoglobin oxygen transport. The blood coagulation cascade.  
Biochemistry of the liver: mechanisms of liver detoxification.  
Biochemistry of skeletal muscle and myocardium.  
Biochemistry of connective tissue. Homeostasis and the regulatory role of Calcium and Phosphorus: Calcitonin, Vitamin D, Parathyroid hormone.  
Biochemistry of the tumor cell  
Effect of air pollution on human health

#### Detailed program

Regulation of blood glucose: liver and muscle glycogen. Insulin, glucagon. Hormones and hypothalamic pituitary. Hormones in the adrenal cortex. Hormones Sex hormones. Regulation of body weight. Nervous tissue biochemistry. Blood biochemistry. Hemoglobin and myoglobin oxygen transport. The blood coagulation cascade. Biochemistry of the liver: mechanisms of liver detoxification. Biochemistry of skeletal muscle and myocardium. Biochemistry of connective tissue. Homeostasis and the regulatory role of Calcium and Phosphorus: Calcitonin,

Vitamin D, Parathyroid hormone. Structure and function of proteins. Hemoglobin, prion proteins, amyloid. Folding, denaturation and renaturation, stability, cooperativity. Biochemistry of connective tissue: proteoglycans, glycoproteins, collagen, elastin. - Structure-function concept pathologies from misfolding. Molecular biology of the cell membrane. Lipid rafts. Biochemistry of the tumor cell. Effect of air pollution on human health

## **Prerequisites**

Knowledge concerning the introductory courses indicated in the degree program regulations

## **Teaching form**

Face to face lessons; During the period of the lessons, presence groups will be organized to discuss topics and group exercises in presence

## **Textbook and teaching resource**

1. Devlin Biochimica V ed – EDISES
2. Siliprandi and Tettamanti V ed Biochimica Medica- Piccin.
3. Ferrier Le basi della Biochimica 2ed Zanichelli

## **Semester**

Second year, I semester

## **Assessment method**

Written and oral

## **Office hours**

By appointment

## **Sustainable Development Goals**

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION

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