UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Molecular Biology 2

2223-2-H4101D006-H4101D018M

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