

Membrane biophysics

Code: 101899
ECTS Credits: 6

Degree	Type	Year	Semester
2501230 Biomedical Sciences	OT	4	0

Contact

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Use of languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Ramón Barnadas Rodríguez

Prerequisites

General concepts related to physiology and biochemistry.

Objectives and Contextualisation

Study of the components of biological membranes and their molecular organization. Structural and dynamic features of the two main components of biological membranes: lipids and proteins, establishing the links between their molecular structure and physiological functions and possible associated pathologies. Unravel the molecular mechanisms of vital functions like the propagation of nerve impulse and signal transduction through cellular envelopes or the transport of molecules across biological membranes. Methods and techniques used for the study of biomembranes.

Content

1. Introduction
2. Biomembranes
 - 2.1. Structure and function of biological membranes
 - 2.2. Biophysical properties of biological membranes
 - 2.3. Classification and composition of biological membranes
3. Lipids and tensioactives
 - 3.1. Structural and biophysical properties of membrane lipids
 - 3.2. Preparation and types of lipid vesicles

3.3. Tensioactives and detergents: effects on biological membranes

4. Membrane proteins

4.1. Classification and types of membrane proteins

4.2. Structural principles of membrane proteins

4.3. Biogenesis and folding of membrane proteins

4.4. Modification of membrane proteins

4.5. Membrane proteins-biological membranes interactions

4.6. Transport across membranes

4.7. Membrane fluidity and membrane protein function

5. Methods in biomembranes

6. Specialized seminars performed by students