Contenuti (Dipl.Sup.)

Contents of the course will be discussed in the light of recent theoretical concepts and experimental data about mechanisms regulating signal transduction, electrical membrane properties of excitable cells and the organization of central and peripheral synapses.

The course consists of three Parts and the contents are illustrated hereafter.


Part 2 (Prof. Annalisa Bernareggi): Basic principles of synaptic transmission.
The neuromuscular junction: anatomic organization, role of trophic factors in neuromuscular junction development (agrin, MusK and rapsyn), properties of neuromuscular nicotinic cholinergic receptors (fetal and adult). Disorders in the neuromuscular junction: myasthenia gravis, the Lambert-Eaton myasthenic syndrome, the congenital myasthenic syndrome and the muscular dystrophies.

Part 3 (Prof. Marina Sciancalepore): Synaptic transmission in CNS.
Characterization of ion channels, intrinsic membrane electrical properties of neurons, pacemaker mechanisms. Principles of chemical and electrical
Testi di riferimento

Selected scientific papers or other didactical material could be provided.

Obiettivi formativi

1) Knowledge and understanding
The purpose of the course is to provide a sound basis of membrane biophysics, ion channels and receptors to understand the fundamental molecular processes responsible for chemical and electrical cell communication. In particular, the course will focus on the mechanisms responsible for cellular excitability, in both central and peripheral nervous systems. The students will also learn the principal experimental methods for in vitro studies at the single cell level.
2) Applying knowledge and understanding
The students will acquire the ability to design the most appropriate experimental plan to investigate molecular mechanisms involved in cell signalling in excitable cells.
3) Making judgements
The students will develop abilities for the critical reading of scientific publications, analysis and interpretation of scientific data in the field of cell communication in neurobiology.
4) Communication skills
The written test and the oral examination encourage the students to develop scientific writing abilities and oral communication skills.
5) Learning skills
At the end of the course the students will posses knowledge and critical reading abilities to continue their training independently, adapting themselves to new knowledge and technologies in cell signalling in neurobiology.

Prerequisiti

Knowledge of fundamental cell biology.

Metodi didattici

Lectures and tutorial activities.

Altre informazioni

Any necessary change in the course modalities due to COVID19 emergency will be published at the Department, Master Programme and Course websites.

Modalità di verifica dell'apprendimento

Written test (multiple-choice) on topics covered during the course. The test consists of 30 questions (10 for each Part of the course). The time limit for writing the test is 35 minutes. Each question has 3 or 4 choices and only 1 correct answer. The evaluation rules are the following: for each correct answer 1 point; no answer 0 points; for each wrong answer -0.5 points. The written test is passed if the total is ≥18/30.

Programma esteso

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The contents are about topics for Sustainable Development approved by United Nations Member States (Agenda 2030). Specifically, N.3 Health and wellbeing, N.4 Education of quality

**Obiettivi per lo sviluppo sostenibile**

<table>
<thead>
<tr>
<th>Codice</th>
<th>Descrizione</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Good health and well-being</td>
</tr>
<tr>
<td>4</td>
<td>Quality education</td>
</tr>
</tbody>
</table>