Testi del Syllabus

Resp. Did.  
CESCA FABRIZIA  
Matricola: 031484

Docenti
CESCA FABRIZIA, 3 CFU  
LEGNAME GIUSEPPE, 3 CFU  
MORETTI RITA, 3 CFU

Anno offerta:  
2019/2020

Insegnamento:  
897SM - NEUROPATOLOGIA

Corso di studio:  
SM54 - NEUROSCIENZE

Anno regolamento:  
2019

CFU:  
9

Settore:  
BIO/09

Tipo Attività:  
B - Caratterizzante

Anno corso:  
1

Periodo:  
Secondo Semestre

Sede:  
TRIESTE

Testi in italiano

Lingua insegnamento  
English

Contenuti (Dipl.Sup.)  
The Neuropathology course combines core teaching of fundamental aspects of major neuropathological diseases, with emphasis on the cellular and molecular causes of neurodegeneration and their clinical presentation, and on the role of glial cells in neurodegenerative pathologies and disorders of cognition. The course will also address how hypotheses can be tested in relevant model systems and utilised to develop novel therapeutic strategies.

The course contents will be organized as follows:

Glial Neuropathology (prof. F. Cesca): Classification and evolution of glia and astroglia; membrane channels, receptors and transporters; ion signaling; gliotransmission; functions of astroglia. Glial pathology: A1/A2 activated astrocytes, glial scar, Alexander disease, epilepsy, Huntington’s disease. Improved in vivo calcium imaging techniques; pre-synaptic astrocytic processes (PAPs), astrocyte-to-neuron communication in synaptic plasticity and neural circuit activity. Humanized mice; astrocytes and cognitive disorders: Rett syndrome, MDD.

Molecular Neuropathology (prof. G. Legname): Molecular mechanisms in neurodegeneration; Prion diseases; Prion-like events in major neurodegenerative diseases; Proteinopathies; Protein changes in physiological and pathological conditions: Prion protein, alpha-synuclein and Lewy bodies, TDP-43, Beta-amyloid, Tau protein; Alzheimer’s Disease; Parkinson’s Disease; Creutzfeldt-Jakob Disease, Multiple Sclerosis; Bovine Spongiform Encephalopathy; Drug screening.

Clinical Neuropathology (prof. R. Moretti): Alzheimer’s Disease: clinical presentation and diagnostic criteria; neuronal loss, amyloid cascade hypothesis, tau hyperphosphorilation, APOE4, altered glutamate, calcium theory; neuroinflammation; genetic hypotheses; Vascular and subcortical...
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<table>
<thead>
<tr>
<th>Testi di riferimento</th>
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<tbody>
<tr>
<td>Aminoff. MJ .Neurology and General Medicine, Churchill and Livingsotne, 7 Ed.</td>
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<td>Scientific articles and reviews on specific topics will also be provided during classes.</td>
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<td>CD-ROM with slides could be provided.</td>
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<th>Obiettivi formativi</th>
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<td>1. Knowledge and understanding: main brain pathologies starting from basic neurophysiological up to cellular and animal models arriving to clinical context, focusing on both the neuronal and glial contribution to the onset and development of the various diseases;</td>
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<td>2. Applying knowledge and understanding: the students should be able to understand and implement experimental strategies in order to investigate specific mechanisms of different pathologies;</td>
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<td>3. Making judgments: the students should be able to develop critical capacities to read and understand or criticize scientific papers, to organize and implement strategies to obtain or critically analyze scientific data;</td>
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**Modalità di verifica dell'apprendimento**

Profs Cesca and Legname: students will undergo a final oral examination (mandatory), where the various issues covered in the course will be addressed and discussed. The exam may also entail the critical presentation of a scientific paper (in the form of a Journal Club) chosen by the candidate. Marks for the single modules will be attributed for a maximum of 30/30. To pass the exam (18/30) the student should show sufficient knowledge of the subjects addressed during the lessons. To get the maximum score (30/30 lode) the student should demonstrate to have acquired an excellent knowledge of the topics addressed during the lessons, and a remarkable ability to expose and critically discuss the various subjects.

Prof. Moretti: the evaluation will consist in 2 partial written examinations in itinere, or in a single final written examination. The examination will include 15 multiple-choice questions. Marks will be attributed for a maximum of 30/30 lode. To pass the exam (18/30), the student should answer correctly to at least 7 questions, to get the maximum score (30/30 lode) the student should answer correctly to all the questions. The final mark will be the average of the marks of the three modules.

**Programma esteso**


Molecular Neuropathology (prof. G. Legname): Molecular mechanisms in neurodegeneration; Prion diseases; Prion-like events in major neurodegenerative diseases; Proteinopathies; Protein changes in physiological and pathological conditions: Prion protein, alpha-synuclein and Lewy bodies, TDP-43, Beta-amyloid, Tau protein; Alzheimer’s Disease; Parkinson’s Disease; Creutzfeldt-Jakob Disease, Multiple Sclerosis; Bovine Spongiform Encephalopathy; Drug screening. The course covers all major aspects at the molecular level of neurodegenerative diseases. Students should have a strong background in biochemistry and molecular biology.

Clinical Neuropathology (prof. R. Moretti): Clinical and neuroimaging aspects of different forms of dementia, with clinical presentation and diagnostic criteria of Alzheimer’s Disease; neuropathology of neuronal loss, amyloid cascade hypothesis, tau hyperphosphorilation, APOE4, altered glutamate, calcium theory; neuroinflammation; genetic
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