Testi del Syllabus

Resp. Did. LEANZA GIAMPIERO Matricola: 007329

Docenti LEANZA GIAMPIERO, 3 CFU LEGNAME GIUSEPPE, 3 CFU MORETTI RITA, 3 CFU

Anno offerta: 2017/2018
Insegnamento: 897SM - NEUROPATOLOGIA
Corso di studio: SM54 - NEUROSCIENCE
Anno regolamento: 2017
CFU: 9
Settore: BIO/09
Tipo Attività: B - Caratterizzante
Anno corso: 1
Periodo: Annualità Singola
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. 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:
Modeling Neuropathology (prof. G. Leanza): Plastic responses of brain tissue to injury and disease; Anatomical and functional CNS plasticity: models and analyses; Neural dysfunctions, possible restorative approaches: Neuroprotection, concept and models; Neural transplantation: concept, models and technical procedures; Neurogenesis in the adult CNS: concept, models, evidences, functional implications and possible clinical use; Neural stem cells: sources, handling and potential for brain repair; Parkinson’s disease: models and experimental therapeutic approaches; Alzheimer’s disease: models and experimental therapeutic approaches
Molecular Neuropathology (prof. G. Legname): Molecular events 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 dementias; Movement disorders, Parkinson’s disease: clinical presentation and diagnostic criteria; dopaminergic pathways; dopamine
Testi di riferimento
Medical. Scientific articles and reviews on specific topics will also be
provided during classes

Obiettivi formativi
The course seeks to provide the basic tools for the understanding of the
physiopathological, symptomatological, diagnostic and therapeutic
aspects of some of the most important neurodegenerative diseases, and
their modeling in animals. The feasibility of these models and the
potential for translating the arising experimental data into sound clinical
practice, will be addressed:
The students will therefore be able to associate the neural pathology
recapitulated by each model to the most suitable/updated strategies for
its diagnosis or therapy.

Prerequisiti
Basic knowledge in subjects such as chemistry, biochemistry, anatomy
and physiology is required

Metodi didattici
Lectures

Modalità di verifica
dell'apprendimento
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

Programma esteso
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. 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:
tissue to injury and disease; Anatomical and functional CNS plasticity:
models and analyses; Neural dysfunctions, possible restorative
approaches: Neuroprotection, concept and models; Neural
transplantation: concept, models and technical procedures; Neurogenesis
in the adult CNS: concept, models, evidences, functional implications and
possible clinical use; Neural stem cells: sources, handling and potential
for brain repair; Parkinson’s disease: models and experimental
therapeutic approaches; Alzheimer’s disease: models and experimental
therapeutic approaches
Molecular Neuropathology (prof. G. Legname): Molecular events 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; neuroinflamation; genetic hypotheses; vascular and subcortical
dementias; Movement disorders, Parkinson’s disease: clinical
presentation and diagnostic criteria; dopaminergic pathways; dopamine
depletion: pathological and therapeutic implications; Reward
mechansms: neural circuits and neurotransmitters involved; Addiction
mechansms: neural circuits and neurotransmitters involved; Sleep and
sleep disorders, dream theory; ARAS system: mono- and polysynaptic
pathways; Down Syndrome; Williams Syndrome; Brain death; Cerebral
metabolism
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**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 dementias; Movement disorders, Parkinson’s disease: clinical presentation and diagnostic criteria; dopaminergic pathways; dopamine depletion: pathological and therapeutic implications; Reward mechanisms: neural circuits and neurotransmitters involved; Addiction mechanisms: neural circuits and neurotransmitters involved; Sleep and sleep disorders, dream theory; ARAS system: mono- and polysynaptic pathways; Down Syndrome; Williams Syndrome; Brain death; Cerebral metabolism

Kandel E.R et al., Principles of Neural Science, 5th Edition McGraw Hill Medical. Scientific articles and reviews on specific topics will also be provided during classes.

The course seeks to provide the basic tools for the understanding of the physiopathological, symptomatological, diagnostic and therapeutic aspects of some of the most important neurodegenerative diseases, and their modeling in animals. The feasibility of these models and the potential for translating the arising experimental data into sound clinical practice, will be addressed. The students will therefore be able to associate the neural pathology recapitulated by each model to the most suitable/updated strategies for its diagnosis or therapy.

Basic knowledge in subjects such as chemistry, biochemistry, anatomy and physiology is required.
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.

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