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UE 2.2. Current concepts in Neurosciences

12 ECTS

Parcours *Cellular, Integrative and Translational Neurosciences*

ST2: Pharmacology to understand and treat neurological and psychiatric diseases

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The aim of this seminar is to recall the main pharmacodynamic principles of symptomatic treatments and future neuroprotective treatments or "disease modifiers" in neurological and psychiatric pathologies. A brief reminder of the main physiopathological data will enable us to address pharmacological and therapeutic data in order to understand the avenues of therapeutic research for brain diseases.

Duration: 2 days

Program

- Understanding the difference between symptomatic, neuroprotective, neurorestoratory and disease-modifying treatment
- Reflect on the development of new pharmacological concepts based on examples (iron, programmed cell death, A2a receptors)
- To understand why neurodegenerative diseases are also neurovascular and neurovascular diseases are degenerative diseases and the therapeutic consequences
- To understand the pharmacological modulation of neurotransmission via neurotransmitters and or via brain plasticity by taking the example of depression and dementia and the model of perinatal stress (recalling the major physiopathological aspects).
- Understand the positive and negative pathophysiological consequences of pharmacological modulation of psychosis using clinical, MRI, and metabolic studies.
- Understand the pathophysiological and pharmacological principles of epilepsy and addiction.

Content

This seminar is intended for students with a scientific and medical background who are interested in therapeutic and pharmacological aspects. The teaching will cover the main physiopathological aspects to introduce and reflect on pharmacological strategies to develop new treatments and understand the limits of current treatments. Many diseases will be addressed: Parkinson's disease, Alzheimer's disease, neurovascular diseases, epilepsy, psychosis, depression, addiction.

Speakers are asked to reduce their speaking time to 30 minutes to allow 15 minutes for discussion. Presentations will be aimed at asking questions and opening up exchanges. Students are asked to present a paper related to the themes addressed to practice reading scientific papers and to open the exchanges.

Pharmacology of neurotransmission, plasticity and neuroprotection for "disease modifying" treatments

- Disease modifying approaches in Parkinson's disease: pharmacology of neuronal death
- Disease-modifying approaches in Alzheimer's disease and tauopathies: A2A receptor
- Pharmacology of Neurotransmission and Plasticity in Degenerative Dementia
- Disease modifier" approaches in neurovascular pathologies
- Pharmacology of Neuroplasticity Modulation
- Modulation of excitability in electrogenesis and impact of antiepileptics
- Pharmacology of Neurotransmission and Plasticity in Depression (Bipolar Disease)
- Pharmacology of Addiction: From Vulnerability to Pharmacodynamics

Educational team : David Devos, Jean Christophe Devedjian, David Blum, Luc Buée, Julie Deguil, Régis Bordet, Hervé Devanne, Philippe Derambure, Dominique Deplanque, Louise Carton, Stefania Maccari, Patrick Duriez, Arnaud Leroy, Olivier Menard