



## PhD Advanced Course

### Advances in Neuropharmaceutics

July 6-10, 2020

Online Course through the Zoom Platform

**Course Coordinator:** Adelaide Fernandes, Faculty of Pharmacy, University of Lisbon

#### Course Organizers:

Adelaide Fernandes, Faculty of Pharmacy, University of Lisbon

Dora Brites, Faculty of Pharmacy, University of Lisbon

Ana Rita Vaz, Faculty of Pharmacy, University of Lisbon

Andreia Barateiro, Faculty of Pharmacy, University of Lisbon

Maria Alexandra Brito, Faculty of Pharmacy, University of Lisbon

Rui Silva, Faculty of Pharmacy, University of Lisbon

#### Teaching staff:

Course organizers and Invited speakers as detailed in programme

#### Short Introduction

Neuropharmaceutics focuses on the identification of therapeutic targets in nervous system diseases, and then translating those discoveries into drug and therapy development. Neurological disorders have a crucial impact on our society accounting for increased health costs, while drug development to central nervous system (CNS) disorders represents the second investment priority of pharmaceutical industry, following cancer. Thus, advances in neuropharmaceutics is a key area for students of a PhD programme aiming to target discovery, drug design, medicine development and usage.

The course intends to improve PhD students' knowledge in the discovery of potential CNS-disease targets leading to the development of new neuroactive drugs, and the improvement of methods to deliver those drugs to the brain, under restricted safety and efficacy requirements.

#### Goals and Learning Outcomes

Development of new medicines to treat prevalent and emerging neurological conditions is a state-of-the-art research field. This course will cover the fundamentals in neurobiology, dissecting the cellular and molecular players in health and disease, highlighting the new advances in CNS targeting and discussing innovative medicines and current clinical trials. Students will have the opportunity to enrich their education in the major concepts needed for drug development in the neuroscience area. They will also contact with advanced in vitro or in vivo systems used to discover new targets and/or assay potential neuropharmaceutical strategies. At the end of the course the PhD students must be able to demonstrate an integrated knowledge concerning the multidisciplinary of neuropharmaceutics and be able to design a new therapeutic strategy to fulfill a specific unmet need of a neurological disorder.

## Assessment

The students attending the course will be evaluated by the preparation and submission of a brief research project. This project should describe the design of a new therapeutic strategy to fulfill a specific unmet need of a given neurological disorder, using a multidisciplinary and advanced approach with scientific and social impact. The project description (10000 characters, including spaces) will be evaluated according to the following criteria: novelty and originality of the proposal in relation to current knowledge (30%); clarity and appropriateness of the project development strategy (30%); potential for translation to clinical practice (20%); interdisciplinarity of the research plan (20%). Students will have a workshop on the “Guidelines for preparation of scientific projects”, will benefit from group discussion slots and a pitch presentation of their idea, followed by brief discussion prior to project writing.

## Registration and Fees

The registration is made through the [FenixEdu Platform](#) until **June 29, 2020**.

- Registration with evaluation: 125€
- Registration without evaluation: 100€

This course is free for 1<sup>st</sup> year PhD students of FFUL Doctoral Program.

## PROGRAMME

### Advances in Neuropharmaceutics

#### MONDAY – July 6<sup>th</sup>

**9h00**            **Welcome**  
Course organizers

#### Fundamentals in Neurobiology and Neuro-immunology

**9h30**            **Central Nervous System: from cells to tissue** – Rui Silva  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal

**10h30**          **Neuronal function: Basics of neuronal excitability and neuronal communication**–  
Sandra Vaz  
iMM, Faculty of Medicine, University of Lisbon, Lisbon, Portugal

**11h30**          **Break**

**12h00**          **Glia reactivity and neuroinflammation** – Adelaide Fernandes  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal

**13h00**          **Lunch Break**

**14h00**          **CNS-immune system interplay** – Dora Brites  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal

**15h00**          **Workshop - Guidelines for preparation of scientific projects** – Adelaide Fernandes  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal

## TUESDAY - July 7<sup>th</sup>

### Cellular and Molecular players in CNS disorders

- 9h30**            **Stress and Neurodevelopmental diseases** – Ana Luísa Cardoso  
CNCB, University of Coimbra, Coimbra Portugal
- 10h30**           **Cellular and Molecular players in Alzheimer’s disease** – Dora Brites  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal
- 11h30**           **Break**
- 12h00**           **Multiple Sclerosis pathogenesis and therapeutic targets**– Adelaide Fernandes  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal
- 13h00**           **Lunch Break**
- 14h00**           **Workshop - Advanced in vitro models for target discovery and neuropharmaceutic screening assays**  
Ana Rita Vaz  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal  
Margarida Diogo  
iBB, Instituto Superior Técnico, University of Lisbon, Lisbon Portugal

## WEDNESDAY - July 8<sup>th</sup>

### Central Nervous System targeting

- 9h30**            **The blood-brain barrier as an obstacle to therapeutics**– Maria Alexandra Brito  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal
- 10h30**           **Drug design to target the Central Nervous System** – Rita Guedes  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal
- 11h30**           **Break**
- 12h00**           **Drug formulation to overcome the Blood-Brain Barrier** – Helena Florindo  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal
- 13h00**           **Lunch Break**
- 14h00**           **Group discussion**  
Adelaide Fernandes, Dora Brites, Ana Rita Vaz, Andreia Barateiro, Maria Alexandra Brito, Rui Silva  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal

## THURSDAY - July 9<sup>th</sup>

### Considerations in pharmacokinetic, pharmacology and innovative medicines for Central Nervous System targeting

- 9h30**            **Pharmacokinetic considerations for drugs acting in the Central Nervous System** -  
Maria José Diógenes  
iMM, Faculty of Medicine, University of Lisbon, Lisbon Portugal
- 10h30**           **Neuropharmacology: current clinical practice** – João Rocha

iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal

- 11h30**            **Break**
- 12h00**            **Challenges and pitfalls in drug development for Central Nervous System diseases**  
– João Rocha  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal
- 13h00**            **Lunch Break**
- 14h00**            **Workshop - *In vivo* models for pre-clinical tests of neuropharmaceutical strategies**  
Andreia Barateiro  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal  
Joana Coelho  
iMM, Faculty of Medicine, University of Lisbon, Lisbon, Portugal

**FRIDAY - July 10<sup>th</sup>**

**New clinical trials in the neuroscience field: clinician and patient perspectives**

- 9h30**            **Round Table**
- Advances in clinical trials in Neurodevelopmental diseases** – Sofia Temudo Duarte  
Hospital Dona Estefânia, CHULC, Lisboa Portugal
- Advances in clinical trials in Alzheimer’s disease** – Alexandre Mendonça  
iMM, Faculty of Medicine, University of Lisbon, Lisbon Portugal
- Advances in clinical trials in Multiple Sclerosis** – João Cerqueira  
ICVS, Faculty of Medicine, University of Minho, Braga Portugal
- Patient demands for neuropharmaceutics** – Beatriz Lima  
IMI, EUPATI, iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal
- 11h30**            **Discussion**
- 12h00**            **Lunch Break**
- 14h00**            **Workshop – Scientific projects pitch presentation - Students**  
Adelaide Fernandes, Dora Brites, Ana Rita Vaz, Andreia Barateiro, Maria Alexandra Brito, Rui Silva  
iMed.Ulisboa, Faculty of Pharmacy, University of Lisbon, Lisbon Portugal