



PhD Advanced Course

Advances in Neuropharmaceutics

December 13th-17th, 2021

ECTS: 6

Online Course through the Zoom Platform (synchronous). If possible we intend to have the sessions concerning group work, case-study discussions and pitch presentations on site, at FFUL.

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

Course Organizers:

Adelaide Fernandes, Faculty of Pharmacy, University of Lisbon

Ainhoa Alberro, iMed.ULisboa, Faculty of Pharmacy, University of Lisbon

Ana Rita Vaz, Faculty of Pharmacy, University of Lisbon

Andreia Barateiro, Faculty of Pharmacy, University of Lisbon

Dora Brites, iMed.ULisboa, 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 the 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 most relevant areas of study in the neuroscience field, 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 innovation and entrepreneurship in drug development within the neuroscience area. They will also contact with advanced in vitro or in vivo systems, as well as human sample analysis 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 along the week based on their participation in seminars and workshop discussion, involvement in case-study debate and preparation/ presentation of a scientific project in an Impact-to-Research Canvas model. The 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 students will have to fill-in a pre-designed 1-page template of Research-to-Impact Canvas, an innovative adaptation of the Business Model Canvas to be used by researchers. This planning tool will encourage the students to think about the usefulness of their research, in conjunction with their knowledge transfer and/or implementation plan with income revenue. Upon pitch presentation of their project, the students will submit a 2-page report for final project description. Students will have a workshop on the "Guidelines for preparation of assignment", will benefit from group discussion slots and a pitch presentation of their idea, followed by brief discussion prior to project writing.

Registration and Fees

This course is free for 1st year PhD students of FFUL

For other attendees, the [registration](#) is made through the FenixEdu Platform until **December 6, 2021**.

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

PROGRAMME

MONDAY – December 13th

9h00 **Welcome**
Course organizers

Neuro-immunology

Moderator: Dora Brites, iMed.Ulisboa, FFULisboa

9h30 **TBA**
Frauke Zipp
*University Medical Center of the Johannes Gutenberg University, Mainz,
Germany*

10h30 **Neuronal regulation of immune fitness**
Henrique Veiga-Fernandes
Champalimaud Foundation, Lisboa, Portugal

11h30 **Break**

- 12h00** **How vitamin D impacts on the immune system in Multiple Sclerosis**
Anne Astier
Infinity-Toulouse Institute for Infectious and Inflammatory Diseases, INSERM, Toulouse, France
- 13h00** **Lunch Break**
- 14h00** **Workshop - Guidelines for preparation of assignment** – Adelaide Fernandes
iMed.Ulisboa, Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal
- 15h00** **Group work**
Group discussion with organizing committee
- 16h00** **Why neuroscientists should learn immunology**
Jonathan Kipnis
Center for Brain Immunology and Glia (BIG); Washington University in St. Louis, School of Medicine, Missouri, USA

TUESDAY - December 14th

Neuro-oncology

Moderator: Rui Silva, FFULisboa

- 9h30** **Patient-derived orthotopic xenografts for precision medicine in brain tumors**
Anna Golebiewska
NORLUX Neuro-Oncology laboratory, Department of Oncology, Luxembourg Institute of Health, Luxembourg
- 10h30** **Using genomics for drug discovery in brain tumors - from patient samples to preclinical trials**
Claudia Faria
Department of Neurosurgery, Centro Hospitalar Universitário Lisboa Norte - Hospital de Santa Maria (CHULN-HSM); Instituto de Medicina Molecular João Lobo Antunes (iMM-Lisboa); Faculdade de Medicina da Universidade de Lisboa, Lisboa, Portugal
- 11h30** **Break**
- 12h00** **Brain Tumours: what the blood can tell us about?**
Valdo Moura-Neto
Instituto Estadual do Cérebro Paulo Niemeyer (IECPN), Rio de Janeiro, Brazil.
- 13h00** **Lunch Break**
- 14h00** **Workshop - Advanced models for target discovery and neuropharmaceutic screening assays**
Moderator: Ana Rita Vaz and Andreia Barateiro, FFULisboa
- In vitro and in vivo models to study nerve cell interplay**
Ana Rita Vaz
Andreia Barateiro
iMed.Ulisboa, Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal

Direct conversion from skin fibroblasts to induced neuronal progenitor cells as a useful new tool to study neurological diseases and testing of novel therapeutics in vitro

Kathrin Meyer

*Center for Gene Therapy, Nationwide Children's Hospital, Columbus, Ohio, USA;
College of Medicine, The Ohio State University, Columbus, Ohio, USA*

BrainSpheres: Applications and future

David Pamies

University of Lausanne, Lausanne, Switzerland; Swiss Centre for Applied Human Toxicology, Basel, Switzerland

WEDNESDAY - December 15th

Cognitive and Behavioural Neuroscience

Moderator: Adelaide Fernandes, FFULisboa

9h30

TBA

João Cerqueira

Life and Health Sciences Research Institute (Instituto de Investigação em Ciências da Vida e Saúde), School of Medicine, University of Minho, Braga, Portugal

10h30

Targeting neuroinflammation in drug abuse

Teresa Summavielle

i3S, Universidade do Porto, Porto, Portugal

11h30

Break

12h00

Synaptic and Circuit Dysfunction in Neuropsychiatric Disorders

João Peça

Centro de Neurociências e Biologia Celular e Departamento de Ciências da Vida, Universidade de Coimbra, Coimbra, Portugal

13h00

Lunch Break

14h00

Case-study discussion

Moderators: Adelaide Fernandes, Ainhoa Alberro, Ana Rita Vaz, Andreia Barateiro, Dora Brites, Maria Alexandra Brito, Rui Silva

iMed.Ulisboa, Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal

16h00

Group work

Group discussion with organizing committee

THURSDAY - December 16th

Central Nervous System targeting

Moderator: Alexandra Brito, FFULisboa

9h30

Targeted Nanotechnology

Sonia Pinho

Escola Universitária Vasco da Gama, Coimbra; UC-Biotech, Cantanhede, Portugal

- 10h30** **Nanobiomaterials at the service of neuroregeneration**
 Ana Paula Pêgo
i3S - Instituto de Investigação e Inovação em Saúde, Porto, Portugal
- 11h30** **Break**
- 12h00** **TBA**
- 13h00** **Lunch Break**
- 14h00** **Workshop – Human sample analysis**
 Moderator: Ainhoa Alberro, iMed.Ulisboa, FFULisboa
- “mTORopathies” - where we are and where we need to go**
Opportunities and Challenges
 Eleonora Aronica
Amsterdam UMC, University of Amsterdam, Amsterdam, Netherlands
- CNS blood biomarkers: where we are?**
 David Otaegui Bichot
Biodonostia Health Research Institute, San Sebastián, Spain
- Brain imaging**
 Miguel Castelo-Branco
CIBIT - Coimbra Institute for Biomedical Imaging and Translational Research, University of Coimbra, Coimbra, Portugal; Faculty of Medicine, University of Coimbra, Coimbra, Portugal

FRIDAY - December 17th

Innovation in neuropharmaceutics

Moderator: Adelaide Fernandes, FFULisboa

- 9h30** **Pharma vignettes of neuroscience pipeline/portfolio**
- New horizons in the treatment of Multiple Sclerosis
 Ricardo Blum, Merck - Medical Director, Portugal
- Neuroscience is the next Frontier
 Rita Lau, Biogen - Head of Medical, Western, Central and Eastern Europe and Portugal
- TBA
 Inês Iglésias, Teva - Medical Affairs Manager, Portugal
- 11h00** **Break**
- 11h30** **Round Table**
Academia
 Miguel Castanho
Instituto de Medicina Molecular, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal

Research

Dora Brites

iMed.Ulisboa, Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal

Regulatory affairs

João Rocha

iMed.Ulisboa, Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal

Patient association

Alexandre Silva

Sociedade Portuguesa de Esclerose Múltipla, SPEM

13h00

Lunch Break

14h00

Workshop – Research to Impact Canvas pitch presentation - Students

Moderators: Adelaide Fernandes, Ainhoa Alberro, Ana Rita Vaz, Andreia Barateiro,
Dora Brites, Maria Alexandra Brito, Rui Silva

iMed.Ulisboa, Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal