PhD Advanced Course

Stem Cell Technologies

October 19-23, 2020

Online Course through the Zoom Platform (synchronous)

Course Coordinators:
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Course Organizers:
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Short Introduction

Stem cell-based therapies are thriving. In fact, pharmaceutical companies are increasingly investing in stem cell technology to develop innovative and potentially valuable new treatments for severe human diseases, including cancer and neurological disorders, such as multiple sclerosis, Alzheimer´s and Parkinson´s disease, mood disorders, brain tumors and even stroke. Moreover, although seminal advances have occurred in understanding stem cell biology, further work is still needed to bridge the current gap between stem cell technologies and effective treatments in brain-related disorders. Stimulating the scientific interest on the topic will certainly accelerate and improve the successful transfer of stem cell-based discoveries from the bench to the bedside.

Goals and Learning Outcomes

The overall goal of the Stem Cell Technologies course is to train a new generation of researchers with the knowledge necessary to understand stem cell plasticity and consider innovative stem cell-based strategies for the treatment of a range of devastating disorders.

Specific competencies will be acquired to:

- Understand the biology of stem cells, and their role in tissue homeostasis, cancer and regeneration;
- Discuss their potential in biomedical research and the challenges of developing better stem cell-based therapies;
- Recognize cutting-edge stem cell tools and models to tackle human disease;
- Understand how pharmacology, toxicology and biomedical applications benefit from emerging scale-up stem cell technologies.

Assessment

Assessment will be based on the active participation in the seminars and workshops.
The last workshop on Stem Cell-based business concepts will be an interactive forum in groups, where students will explain and discuss the technology and application of two biotechnology companies with stem-cell based concepts.

Registration and Fees

The registration is made through the **FenixEdu Platform** until October 14, 2020.

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

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

PROGRAMME

Stem Cell Technologies

MONDAY – 19 October

Stem Cells in Tissue Homeostasis and Cancer

10h00	**Stem Cell properties and tissue homeostasis** Adriana Sánchez-Danés Campalimaud Foundation, Lisbon, Portugal
11h00	**Homeostatic and quiescent stem cells: a fly perspective** Christa Rhiner Champalimaud Foundation, Lisbon, Portugal
11h30	Break
12h00	**Stem cells in esophageal cancers and metaplasia** Benjamim Beck Université Libre de Bruxelles, Belgium
13h00	Lunch break
14h30	**Tackling cancer stem cells for anti-cancer therapies** Joana Paredes IPATIMUP, Porto, Portugal
16:00	**Cancer stem cells and tumor heterogeneity** Adriana Sánchez-Danés Campalimaud Foundation, Lisbon, Portugal

TUESDAY – 20 October

Stem Cells in Disease Modelling and Drug Discovery

9h30 **Mitotic fidelity in pluripotent stem cells**
Inês Milagre
IGC, Oeiras, Portugal

10h30 **Cannabinoid actions on adult neural stem cells: implications for pathophysiology**
Sara Xapelli
iMM, Lisbon, Portugal

11h30 Break

12h00 **Working group guidelines**
Research for companies with stem-cell based concepts
presentations will be on Friday

13h00 Lunch break

14h30 **Workshop:**
Translation of tissue engineering products into clinic: practical examples of research developments bridging the gap between benchtop and bedside
Juliana Martinez-Atienza
Andalusian Network for the Design and Translation of Advanced Therapies, Sevilla, Spain

WEDNESDAY – 21 October

Engineering Stem Cells

9h30 **Scalable manufacturing of stem cell-based therapies**
Claudia Lobato
IBB, IST, Lisbon, Portugal

10h30 **3D cell culture strategies for enhanced cell therapies**
Joana Miranda
iMed.ULisboa, Lisbon, Portugal

11h30 Break

12h00 **Stem cells secretome in CNS regenerative medicine**
António Salgado
ICVS/3B´s, UMinho, Braga, Portugal

13h00 Lunch break

14h30 Work group / Self-study

THURSDAY – 22 October

Stem Cells in Neurological Disorders

9h30 **Role of diet and host metabolism in adult neurogenesis and brain function**
Susana Solá
iMed.ULisboa, Lisbon, Portugal

10h30 **Neural stem and progenitor behaviours: lessons from flies**
Rita Sousa-Nunes
Centre for Developmental Neurobiology, London, England

11h30 Break

12h00 **Regulation of regenerative neurogenesis in the adult fly brain**
Christa Rhiner
Champalimaud Foundation, Lisbon, Portugal

13h00 Lunch break
14h30 **Workshop:**
Benefits and risks of stem cell-based therapies in neurological disorders
Christa Rhiner and Susana Solá
iMed.ULisboa and Champalimaud Foundation, Lisbon, Portugal

FRIDAY – 23 October

Emerging Clinical Stem Cell Technologies

09h30 **Organoids and organ-on-chip models for biomedical applications**
William Roman
iMM, Lisbon, Portugal
10h30 **Advanced stroke therapies: targeted recovery through the BBB**
João Sargento Freitas
CNC, University of Coimbra and Hospital da Luz de Coimbra
11h30 Break
12h00 **Stem cells in biotechnology**
Márcia Mata
Catapult, UK.
13h00 Lunch break
14h30 **Workshop: Stem Cell-based business concepts**
Student presentations and discussion round

End of course