PhD Advanced Course
Molecular Biomarkers and Technologies
14-18 September 2020
Online Course through Zoom Platform (synchronous)

Course Coordinator: Cecília Rodrigues, Faculty of Pharmacy, University of Lisbon

Course Organizers:
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Short Introduction
Biomarkers are now an integral part of the drug discovery and development process, acting as indicators of drug mechanism of action, efficacy, safety and disease progression, as well as assisting in disease diagnosis, patient selection and clinical trial design. Biomarkers also offer the potential to inform treatment decisions and bring personalized medicine into clinical practice.

Latest advances in clinical and translational biomarkers will be covered, including patient selection and predicting response to therapy, liquid biopsy and cell free DNA, companion diagnostics and personalized medicine, biomarker assay development and validation, and biomarker-based clinical trials. The new frontier of digital health and its impact on drug and diagnostic development will be explored, covering emerging digital biomarkers and their utility in clinical trials, advances in biosensors and wearables as clinical endpoints, integration of mobile health into drug development, and the latest applications in point-of-care testing and remote patient monitoring.

The training program is aimed at PhD students, but welcomes the participation of external academic and scientific community members.

Goals and Learning Outcomes
This course is designed to cover principles and applications of biomarkers and technologies, from identification to validation, to impact in drug discovery, and disease diagnosis, prognosis and treatment.

The following learning outcomes are expected:

- Apply on-target cellular readouts to support drug discovery and development programmes;
- Understand efficacy and safety biomarker assays in model systems;
- Explore biomarker formats ranging from nucleic acids, proteins and metabolites to phenotypic changes;
- Comprehend technological and methodological platforms for identification and validation of candidate biomarkers for translational and back-translational studies.

Assessment

Assessment of the course consists in the preparation and submission of a **2-page long letter of intent** (LOI) for a research project. Students are grouped to build multidisciplinary teams. Each group works throughout the week on a research project that should reflect the topic of the course, including methodologies and strategies to solve an innovative research question. The project is expected to adhere to the following general structure: a) Title; b) Conceptual hurdle and innovative idea to be tested; c) Plan and methods: d) Relevance (scientific and social impact).

The students will select a broad topic of research and are expected to propose a specific project. The resulting LOI will be evaluated according to the following criteria and weight: a) Novelty and relevance (30%); b) approach to the problem (30%); c) multidisciplinary approach of the research plan (40%).

Registration and Fees

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

For other attendees, the registration is through the **FenixEdu Platform** until **September 9, 2020**.

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

PROGRAMME
Molecular Biomarkers and Technologies

MONDAY – 14 September

10:00 Exercise physiology
Jorge Ruas, Karolinska, Stockholm, Sweden
11:00 Immunophysiology
Henrique Veiga Fernandes, Champalimaud, Lisbon, Portugal
12:00 Tumor immunology
Lorenzo Galluzzi, Weill Cornell, NY, USA

14:00 Workshop: How to write a research project
Cecília Rodrigues, iMed.ULisboa, Faculty of Pharmacy, University of Lisbon, Portugal

10:00 Metabolism
Malu Martinez Chantar, CIC bioGUNE, Bilbao, Spain
11:00 Patient-derived models of cancer
Chiara Braconi, University of Glasgow, Scotland
12:00 Systems oncology
Bruno Costa-Silva, Champalimaud, Lisbon, Portugal

14:00 Workshop: Ethics and research
Mara de Sousa Freitas, Lisbon, Portugal

WEDNESDAY – 16 September

10:00 RNA and infection
Ana Eulálio, Biocant, University of Coimbra, Portugal
11:00 Cancer immunotherapy
Helena Florindo, iMed.ULisboa, Portugal
12:00 Chemical biology
Gonçalo Bernardes, iMM, Lisbon, Portugal

14:00 Workshop: Communication
Sofia Sá, IST, University of Lisbon, Portugal

THURSDAY – 17 September

10:00 High-throughput and high-content screenings
Miguel Mano, Biocant, Cantanhede, Portugal
11:00 Epigenetics
Manel Esteller, University of Barcelona, Spain
12:00 Clinical pharmacology
Mark Caulfield, NIHR Barts Biomedical Research Centre, London, UK

FRIDAY – 18 September

10:00 Digital biomarkers: healthcare trends
Hugo Ferreira, Lisbon, Portugal
11:00 Interactive intelligent systems
Alberto Abad, INESC-ID, University of Lisbon, Portugal
12:00 Pathogen evolution, epidemiology, and biology
Colin Russel (TBC), Amsterdam AMC, Netherlands

End of course