

5th TRAINING COURSE, COST ACTION 17-112 PRO EURO DILI NET

Advance course | Novel Challenges in Toxicology

September 27-29, 2022

The course will be held at FFUL in a hybrid-mode, with both in-person and virtual lectures (zoom platform).

Course Coordinators: Joana Miranda
Nuno Oliveira

Location: Main building, amphitheater B

ZOOM link: [\(to be announced\)](#)

Goals and Learning Outcomes:

Toxicological concepts are of utmost importance for all steps involved in drug discovery & development. Moreover, the new challenges associated with Toxicology are determinant for many other aspects of the biomedical sciences. By the end of this course it is expected that the students integrate the acquired knowledge towards complex toxicological phenomena and understand the impact of Toxicology in our modern society.

It is also expected that the students understand the adverse effects associated with the exposure of toxic xenobiotics from different classes and modes of action (MoA) as well as the inter-individual variations in biotransformation enzymes and membrane transporters, including the importance of genetic polymorphisms. Particular attention will be devoted to genotoxicity issues and their impact in carcinogenesis and in drug development. Safety issues in novel medicines, including biologicals, will also be highlighted.

Moreover, the application and translation of advanced *in vitro* models (e.g. 3D cellular models) in the drug development process in the research and industry will be a key topic of the advanced course. Finally, the students should also understand the role of the *Omics* and potential of stem cell technology in predictive toxicology towards personalization.

PROGRAMME

TUESDAY – 27th September

9h30-10h| **Opening Session**

[Nuno Oliveira](#) and [Joana Miranda](#)

Module 1: Toxicology concepts and challenges

1. Overview of key concepts, applications, and challenges of toxicology

10h-11h| [Nuno Oliveira](#), FFUL, PT

11-11h30| **Coffee Break**

2. Mechanisms of target and non-target organ toxicology

11h30-12h30| Drug-Induced liver injury: towards precision medicine

Isabel Lucena, Univ. Malaga, ES

12h30-13h30| Cytochrome P450 enzymes in xenobiotic metabolism and their role in chemical genotoxicity.

Michel Kranendonk, NOVA Medical School/UNL, PT

13h30-15h| **Lunch break**

3. Applied toxicology in pharmaceutical sciences

15h-16h| Redox toxicology

Ana S. Fernandes, Univ. Lusófona, PT

16h-17h| Food and environmental toxicology: from xenobiotics exposure to cancer.

António Sebastião Rodrigues, NOVA Medical School/UNL, PT

WEDNESDAY – 28th September

Module 2: Emerging technologies in toxicology

1. Advanced models in toxicology

9-10h| 3D liver models for drug metabolism and toxicology studies

Joana Miranda, FFUL, PT

10-11h| Development of Zebrafish Models for studying DILI

Ozlen Konu, Bilkent University, TK

11-11h30| **Coffee Break**

2. Stem cell toxicology

11h30-12h30| Generation of functional liver cells from human induced pluripotent stem cells for toxicological applications

Pau Sancho-Bru, FCRB-CERCA, ES

12h30-13h30| Eye-on-chip in vitro platforms for drug development

Madalena Cipriano, Faculty of Medicine, Univ. Tübingen, DE

13h30-14h30| **Lunch break**

3. Systems toxicology: the “omics” era

14h30-15h30| Systems toxicology: Cellular stress responses and prediction of adverse drug responses

Bob Van Der Water, Leiden University, NL

15h30-16h30| Omics-technologies applied to exosomes and body fluids for biomarkers identification in toxicology.

Juan M. Falcon-Perez, CIBERehd, ES

16h30-17h30| Advances in predictive toxicology

Christopher Goldring, Univ. of Liverpool, UK

THURSDAY – 29th September

Module 3: Impact of Toxicology in the new era

1. Safety issues in novel medicines

9-10h| Toxicological issues in advanced therapies

Isabel Vieira, Infarmed, PT

10-11h| Regulatory acceptance of 3R methods for non-clinical testing of human medicinal products: challenges and opportunities.

Sonja Beken, FAMHP, BE

11-11h30| **Coffee Break**

11h30-12h30| Regulatory toxicology

Beatriz S. Lima, FFUL, PT

12h30-14h| **Lunch break**

2. Milestones of toxicology and contemporary issues

14h-15h| New insights on the bioavailability of xenobiotics

Fernando Remião, FFUP, PT

15h-16h| Occupational exposure and human biomonitoring

João P. Teixeira, INSA, PT

16h-17h| Impact of toxicology in modern society

Félix Carvalho, EUROTOX & FFUP, PT

17h-17h30| Guidelines for learning assessment & closing session

Nuno Oliveira and Joana Miranda

Learning Assessment:

Preparation and submission of an extended abstract in which the trainee is invited to address an emerging issue/challenge considered determinant for the development of toxicology or, in alternative, a pertinent concern related to a toxicological event going on in our days. The work will be done individually and should include not only the scientific background but also an opinion on the chosen topic.

The proposed work with a limit of 1 to 3 A4 pages written in Arial font size 11 and 1.5 spacing (including references) should be sent in a PDF format to jmiranda@ff.ul.pt and ngoliveira@ff.ul.pt until October 15th 2022