

# Scientific Tools in Biological Assays

## Principles of Cell Cultures and Genetics

Faculty of Pharmacy (FF), University of Lisbon (UL), Portugal  
March 17-19, 2022

**Fully online sessions**

Theoretical (T): 9.75 h

Practical (P): 4.5 h

Virtual Lab (VL): 2.25 h

Total: 16.5 h

### Day 1 – 17<sup>th</sup> March

8:45 Welcome *Alexandra Brito, FFUL, Portugal*

9:00 Human genome: from basics to disease (T) *Isabel Rivera, FFUL, Portugal*

9:45 Epigenetics in health and disease (T) *Paul Peixoto, Université Bourgogne Franche-Comté, France*

10:30 **Break**

11:00 Pharmacogenetics: from principles to biomarkers and personalized medicines (T) *Elsa Rodrigues, FFUL, Portugal*

11:45 Proteogenomics and its applications to biology and precision medicine (T) *Rahman Jamal, Universit Kebangsaan, Malaysia*

12:30 **Lunch**

13:45 Challenges and emerging directions in single-cell analysis (T) *Guo-Cheng Yuan, Harvard Chan School of Public Health, USA*

14:30 Genome editing: tools and principles (T) *Manuel Gonçalves, Leiden University Medical Center, The Netherlands*

15:15 High-throughput and high-content screening technologies for RNA-based therapies (T) *Miguel Mano, University of Coimbra, Portugal*

16:00 **Break**

16:30 Why Networks Matter: Embracing Biological Complexity (T) *John Quackenbush, Harvard TH Chan School of Public Health, USA*

17:15 Bioinformatic tools in genome analysis (P) *Filipa Vale, FFUL, Portugal*

18:00 End of session

### Day 2 – 18<sup>th</sup> March

9:00 MicroRNAs: small but powerful regulators of gene expression (T) *Marta Olejniczak, Polish Academy of Sciences, Poland*

9:45 MicroRNAs as biomarkers and therapeutic targets (T) *Alexandra Brito, FFUL, Portugal*

10:30 **Break**

11:00 MicroRNAs as players in brain pathology (T) *Eleonora Aronica, University of Amsterdam, The Netherlands*

11:45 RNA interference technology to overcome cancer chemoresistance using non-viral vectors for assisting siRNA uptake by malignant cells (T) *Amália S Jurado, University of Coimbra, Portugal*

12:30 **Lunch**

13:45 Next generation sequencing analysis of miRNAs (P) *Jessy Slota, University of Manitoba, Canada*

14:30 Basics onto genetic tools: genetic engineering and recombinant plasmid construction (P) *Madalena Pimentel, FFUL, Portugal*

15:15 Bacterial plasmid production: competent bacteria transformation and plasmid DNA purification (P; VL) *Inês Figueira, CEDOC, Portugal*

16:00 **Break**

16:30 Basics in cell cultures: human and mouse cell lines (P; VL) *Rafaela Silvestre, FFUL, Portugal*

17:00 Gene modulation: siRNA and plasmid transfection (P; VL) *Sara Caetano, FFUL, Portugal*

17:30 Molecular biology tools: RNA extraction and quantification, cDNA synthesis and RT-qPCR (P; VL) *Joana Godinho-Pereira, FFUL, Portugal*

18:00 End of session

### Day 3 – 19<sup>th</sup> March

9:00 Evaluation of genetic modulation efficiency: immunocytochemistry (P; VL) *Ana Rita Garcia, FFUL, Portugal*

9:45 Evaluation of genetic modulation efficiency: in situ hybridization (P; VL) *Joana Godinho-Pereira, FFUL, Portugal*

10:30 **Break**

11:00 Evaluation of genetic modulation safety and efficacy: viability and migration (P; VL) *Ana Rita Garcia, FFUL, Portugal*

11:45 Genomic assay: single cell and spatial transcriptomics (T) *Kyoung Jae Won, University of Copenhagen, Denmark*

12:30 Course assessment and closing *Alexandra Brito, FFUL, Portugal*

Contact: Alexandra Brito (Coordinator) – [mariabrito@campus.ul.pt](mailto:mariabrito@campus.ul.pt)

Website: <https://www.ff.ulisboa.pt/> <https://www.ff.ulisboa.pt/?lang=en>

Official language: English

Timetable: Western European Time

Recorded sessions: available 1 week

U

LISBOA

UNIVERSIDADE  
DE LISBOA



FACULDADE DE  
FARMÁCIA  
Universidade de Lisboa

iMed.  
ULisboa

FARM-ID  
Associação da Faculdade de Farmácia  
para a Investigação e Desenvolvimento



NEUROVASCULAR LABORATORY

### Organization

Alexandra Brito  
FFUL

Joana Pereira  
FFUL

Rita Garcia  
FFUL

### Sponsors

FCT

Fundação para a Ciência e a Tecnologia