Submodule Organoids

Interreg North-West Europe — Co-funded by the European Union

STEP4NAMs

Module No.	Lecture Title	Content / Educational Objective	Expert Lecturer
1. Introducing organoid-based in vitro modeling			
1.1 How to: Generation and culturing	Organoid-based cellular modeling: Main approach	- Introduction to *in vitro* modeling using organoids, generation and culturing, advantages and drawbacks, application potential	Giulia Moreni, PhD – University of Luxembourg (LU)
1.2 Personalized medicine concept	Disease modeling using patient-derived material	- Demonstrate the potential of organoids for increased disease modeling relevance	
2. Presentation of different type of organoids			
2.1 Midbrain	Implementation of midbrain organoid PD models for compound screening and drug dicsovery	- Showcase that human-derived organoids generated from patients affected by a particular disease replicate the clinical and cellular pathology characteristics	Javier Jarazo, PhD – Organotherapeutics (LU)
2.2 Retinal	Modeling retinitis pigmentosa using retinal organoids	- Present the relevant experimental pipelines used for phenotyping the different disease models	Christina Bombieri, PhD – University of Verona (IT)
2.3 Kidney	Adult human kidney organoids represent an advanced model for adult polycystic kidney disease	- Showcase the key experimental outputs/readings relevant for drug development in each disease model	Rafael Kramann, MD PhD – University Hospital Aachen (DE)
2.4 Pancreas	The application of pancreatic duct-like organoids to model diabetes and pancreatic cancer	- Provide a wide variety of different organoids modeling different diseases and organs - Discussion on the benefits, drawbacks and future evolutions of the organoid technology	Alexander Kleger, MD PhD - University of Ulm (DE)
3. Planning a project	Guidelines on planning a project based on the usage of organoids	- Introduce and detail statistical and power analysis guidelines for implementing organoids in a research proposal	Matthieu Gobin, PhD – University of Luxembourg
4. Ethical and regulatory aspects	Ethical and GDPR compliance when working with patient-derived cell lines and organoids	- Demonstrate the regulatory aspects to take into account when working with organoids: ethical compliance and GDPR	Matthieu Gobin, PhD – University of Luxembourg
5. Future outlooks	The future advancements of organoid modeling	- Present different more complex organoid models including assembloids, aged organoids,...	Elisa Zuccoli, PhD – University of Luxembourg