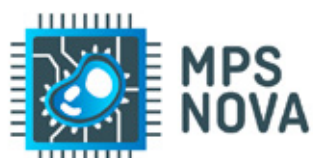
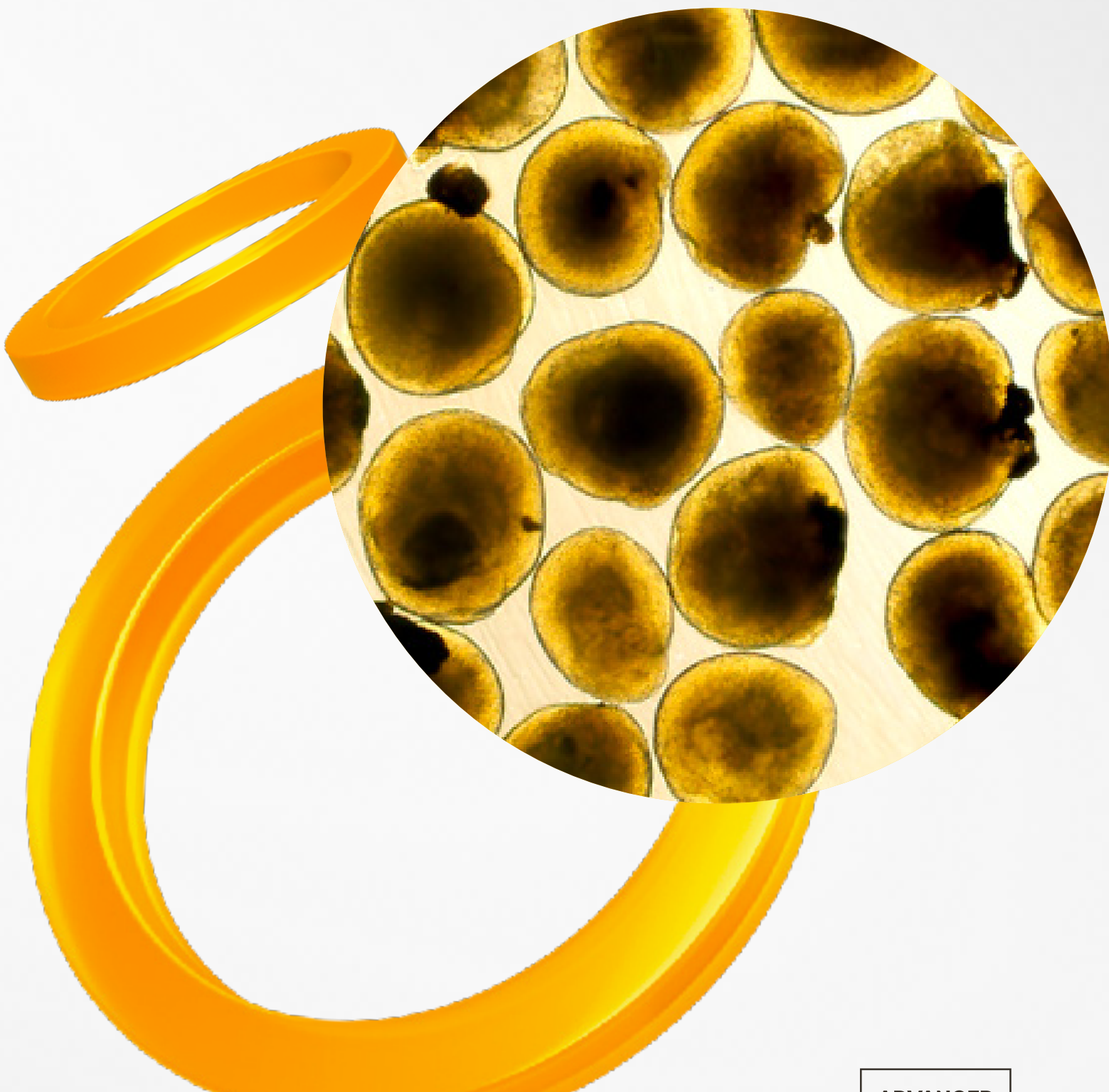


16 NOV. 2026 — 09 DEC. 2026

**ADVANCED  
EDUCATION**  
NOVA MEDICAL SCHOOL

ADVANCED TRAINING  
**NEW IN VITRO MODELS: ALTERNATIVES  
TO ANIMAL MODELS IN RESEARCH**  
3 EDITION



**NOVA** INNOVATION **HUB**  
PRECLINICAL TO CLINICAL

**ADVANCED  
EDUCATION  
FOR THE  
FUTURE**

SINCE 1977

# WHY TRAINING IN NEW IN VITRO MODELS?

This course is the first in Portugal specifically dedicated to this topic.

It brings together 18 researchers from 8 national institutions and 3 top international institutions, with unique knowledge and actively involved in the development and application of various alternative models to animal experimentation.

From the derivation of human induced pluripotent stem cells from healthy or diseased donors, to organoid models, microphysiological systems, bioprinting for fundamental or preclinical studies involving different organs (retina, brain, intestine, liver, lung, skin, breast, heart, amygdala, vascular system, among others).

**3RD EDITION**

**3 ECTS**

Application deadline: **November 11, 2026**

## LEARNING OBJECTIVES

1. Identify and describe the main alternative models to animal experimentation used in biomedical research
2. Recognize and explain the applications of alternative models in fundamental and preclinical research contexts
3. Critically compare alternative models with animal models, considering scientific, ethical, and regulatory aspects
4. Assess the current state of development of alternative strategies and the challenges associated with their implementation
5. Demonstrate critical awareness of the need to replace, reduce, and refine the use of animals in research
6. Apply the acquired knowledge to propose solutions or experimental approaches that prioritize the use of alternative models.

## AUDIENCE

PhD students in the fields of Medicine and Health Sciences

Master's graduates (or pre-Bologna Licenciates) or PhDs in the fields of Medicine and Health Sciences

## EVALUATION

Assessment will focus on participation in sessions as well as on assignments and presentations by the students, in which they will be expected to apply the knowledge acquired to concrete research situations and interpret experimental data, in addition to being tested on their fundamental knowledge.

The assessment will therefore consist of three components:

- the presentation and discussion of one or two scientific articles
- the writing of a brief research project proposal on one of the priority topics addressed (focused on the problem to be solved, the hypothesis, and the objectives), and participation in the sessions

## COORDINATION



**Sandra Tenreiro**



**Guadalupe Cabral**

## FACULTY

**Andreia Teixeira Castro (UM)**

**Agnieszka Rybak-Wolf (MDC, Germany)**

**Bruno Sarmento (i3S)**

**Cristina Barrias (i3S)**

**Duarte Barral (NMS)**

**Evguenia Bekman (IST)**

**Giacomo Domenici (iBET)**

**Guadalupe Cabral (NMS)**

**Helena Soares (NMS)**

**Inês Figueira (NIMSB, NMS)**

**Joana Miranda (Faculdade de Farmácia, UL)**

**Jorge Carvalho (ITQB)**

**José M. Inácio (NMS)**

**Kevin Achberger (Tübingen, Germany)**

**Madalena Cipriano (Tübingen, Germany)**

**Sandra Tenreiro (NMS)**

**Sarela Garcia-Santamarina (Leibniz-HKI, Germany)**

# PROGRAMME

**DISTANCE LEARNING**

**35H**

**ONLINE SYNCHRONOUS SESSIONS**

**16/11/2026**

**16H00 - 19H30**

- Introduction to stem cells and iPSCs
- Quality control of iPSCs and generation of isogenic lines

**18/11/2026**

**16H00 - 19H30**

- Microphysiological systems (MPS)
- Applications of MPS – barriers and vasculature

**20/11/2026**

**16H00 - 19H30**

- Multi-organ chips
- Organ-on-chip models for studying microbe-host

**23/11/2026**

**16H00 - 19H30**

- Retinal organoids as disease models
- Organ-on-chip models

**25/11/2026**

**16H00 - 19H30**

- 3D models for breast cancer research
- 3D models of high-grade gliomas

**27/11/2026**

**16H00 - 19H30**

- *Caenorhabditis elegans*: a model system for biomedical research
- Cerebellar organoids

**30/11/2026**

**16H00 - 19H30**

- Midbrain and cortical organoids
- Chip fabrication technologies and (bio-)3D printing

**02/12/2026**

**16H00 - 19H30**

- 3D liver models
- Cardiac organoid models



# PROGRAMME

**DISTANCE LEARNING**

**35H**

**ONLINE SYNCHRONOUS SESSIONS**

**04/12/2026**

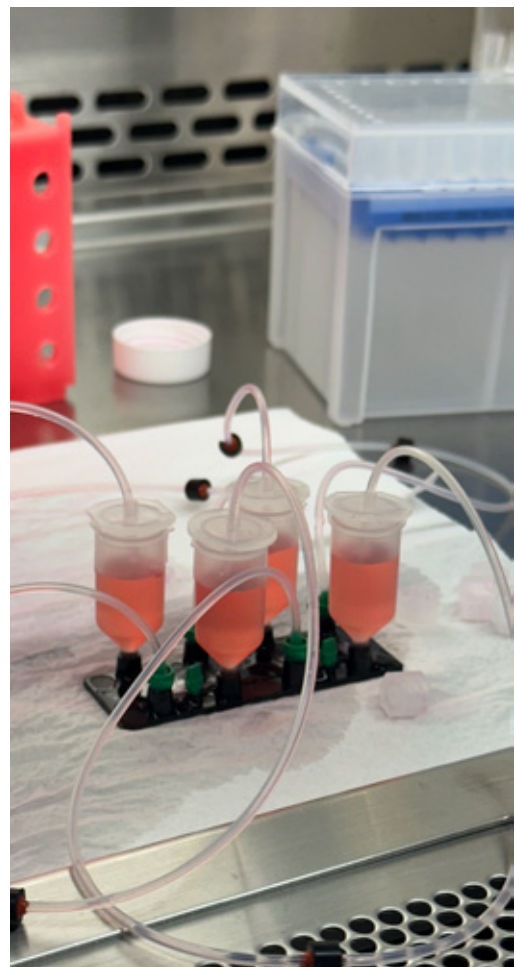
**16H00 - 19H30**

- Reconstructed models of pigmented skin/epidermis
- 3D models of the tonsils

**09/12/2026**

**16H00 - 19H30**

- In vitro 3D models of vascularization
- 3D models of the intestine and pulmonary mucosa



## APPLICATION REQUIREMENTS

PhD students in the fields of Medicine and Health Sciences  
Master's graduates (or pre-Bologna Licentiates)  
or PhDs in the fields of Medicine and Health Sciences

## APPLICATION DOCUMENTS

CV  
Certificate of qualifications

## NUMERUS CLAUSUS

30

## ADMISSION CRITERIA

Curriculum evaluation  
Order of application

## ATTENDANCE

Compulsory attendance of at least 24 hours

## LANGUAGE

English

## TUITION

Application fee: **51 €**  
Course fee: **270 €**

## PROGRAM MANAGER



**EDUARDO PARREIRA**

## ADDITIONAL INFORMATION

**For more details, please contact the Program Manager:**

T: (+351) 910 959 816  
formacaoavancada@nms.unl.pt  
R. Luanda, 166 Parede – Portugal

**[www.nms.unl.pt](http://www.nms.unl.pt)**