

Training School

In Vitro and In Vivo Models for Functional Genomics

**Biomedical Research Center of the Slovak Academy of Sciences, Bratislava, Slovakia,
18–20 May 2026**

Day 1 – Monday, 18 May 2026

09:00–12:00

Opening session and organizational briefing.

Four structured lectures introducing the core methodologies:

- Patient-Derived Xenograft (PDX) models
- Patient-Derived Xenograft Organoids (PDXO)
- Organotypic Tumor Slice Culture (OTSC) model
- Chorioallantoic Membrane (CAM) model

Participants will receive standardized experimental protocols and methodological guidelines.

12:00–13:00 Lunch

13:00–17:00 – Practical laboratory session (In vivo models)

- Orthotopic tumor cell implantation
 - Establishment of subcutaneous tumor models
 - Tumor harvesting and necropsy procedures
 - Biological sample collection and toxicity monitoring
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Day 2 – Tuesday, 19 May 2026

09:00–13:00 – Practical laboratory session (parallel groups, rotational format)

Participants will be divided into two groups:

- Group A: OTSC preparation and treatment administration
- Group B: PDXO establishment and drug treatment

Groups will rotate to ensure exposure to both methodologies.

13:00–14:00 Lunch

14:00–17:00 – Practical laboratory session (CAM model)

- Egg preparation and windowing procedure
 - Tumor cell grafting onto the chorioallantoic membrane
 - Monitoring and documentation of tumor growth
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Day 3 – Wednesday, 20 May 2026

09:00–11:00 – Functional viability assessment

- Viability analysis of PDXO samples using a 3D luminescence assay
- Resazurin-based OTSC viability assay (parallel group work)

11:00–15:00 – Histology workshop (12:00–13:00 Lunch break)

- Tissue fixation and paraffin embedding
- Microtome sectioning
- Hematoxylin and eosin (H&E) staining
- Microscopic evaluation and interpretation of results

15:00–16:00

Final discussion, recap of methodologies, Q&A session, and official closing.

Learning Outcomes

Upon completion of the Training School, participants will be able to:

- Understand the principles, applications, advantages, and limitations of key in vitro and in vivo models used in functional genomics research (PDX, PDXO, OTSC, CAM).
- Describe the workflow of orthotopic and subcutaneous tumor implantation in preclinical models.
- Understand the procedures involved in tumor harvesting, tissue dissociation, and the establishment of patient-derived organoids.
- Gain practical insight into the setup and treatment of organotypic tumor slice cultures and CAM-based tumor models.
- Understand the principles of functional viability assays, including 3D luminescence-based and resazurin-based methods.
- Recognize the key steps in histological processing, including paraffin embedding, sectioning, and hematoxylin and eosin staining.
- Interpret experimental outputs generated from complementary preclinical models at a conceptual level.
- Critically evaluate which model system is appropriate for specific translational research questions.