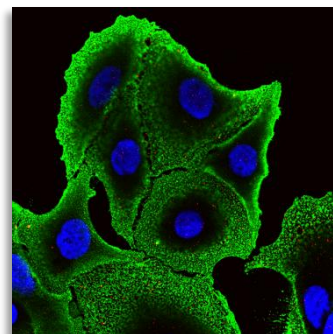


PANDORA-Pan-European Educational Platform on the Personalized Treatment of Multidrug Resistant Tumors



An **ERASMUS+ BIP (Blended Intensive Programme)** project with participation of the following institutions:

- University of Torino (Department of Oncology), Italy (Coordinator Institution)
- Medical University of Vienna (Center for Cancer Research), Austria
- **National and Kapodistrian University of Athens (Faculty of Biology), Greece**
- University of Porto (Faculty of Pharmacy), Portugal
- Akdeniz University, (Department of Medical Pharmacology), Antalya, Turkey

Improving the diagnosis and treatment of oncological patients with multidrug resistant (MDR) tumors, which are unresponsive to most therapies, is a challenge in oncology. The research in this complex field requires multidisciplinary skills. At the moment there is a distinct lack of a multidisciplinary educational program to train master and PhD students in the different disciplines required to improve the management of MDR tumors. Indeed, master's degrees and PhD Programs in specific aspects of oncology are focused on specific research aspects or techniques, have mainly fixed curricular units and pay limited attention to trans-disciplinarity. We propose to create a prototype of a continuous education program for master and PhD students that will make use of freely accessible online courses and workshops, practical-theoretical schools and staff exchanges.

The PANDORA Erasmus BIP program will include:

1) **online activities**, providing a comprehensive multidisciplinary and interdisciplinary overview of MDR, including: artificial intelligence, big-data and single-cell analysis, biological models, advanced imaging, OMICs techniques, computational and medicinal chemistry, molecular docking; intellectual property right (IPR)-related issues; clinical trial design and management, drug-regulation, ethical issues and relation with patients advocacies, shared-decision making applied to medicine. The online activities include the possibility to attend specific workshops and to present and discuss research activities with the tutors of the program, in order to get suggestions and feedback in a friendly and constructive environment.

2) **an on-site training school at University of Torino** (25 students max.), from July 7 to July 11 2025, focused on learning basic techniques associated with the study of MDR, such as: chemoresistance/chemosensitivity assays (spectro-fluorimetrically assays, flow-cytometry based assays) to measure cell death, apoptosis and senescence; 3D and organotypic culture, to mimic the complex interaction between tumor cells and the tumor microenvironment, as *in vitro* tools to be exploited for drug screening; principle of OMIC-based techniques and big data analysis applied to chemosensitive/chemoresistant tumors.

Teaching methods include webinars based on lectures, problem solving and flipped classroom, to integrate cell biology, molecular biology and biochemical techniques in addressing the molecular basis of chemoresistance and immunoresistance.

The students will acquire theoretical and practical skills to work with different models of drug-resistant tumors, and to design the most appropriate experiments to solve their biological question.

The total number of **ECTS** will be 3, which will be attributed to the 25 students who attend the on-site training school together with the online activities.

Students who are not selected (or do not apply) to the on-site training school may still attend the online activities but will not get a certificate of attendance corresponding to 3 ECTS.

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