



MASTER'S DEGREE IN BIOMEDICAL RESEARCH

Research Project Proposal

Academic year 2024-2025

Project Nº 12

Title: Unravelling the complexity of drug resistance development in ovarian cancer: analysis of cellular and molecular mechanisms involved in acquired PARP inhibitors resistance.

Department/ Laboratory Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc.

Translational Oncology Lab, Solid Tumors Department, Laboratory 2.04, Cancer Division

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Summary

Ovarian cancer is one of the leading causes of death among women and the leading cause of death from gynecological cancer due to its late detection. Current therapeutic strategies based on PARP inhibitors (PARPi) allow temporary control of the disease, but most patients develop resistance. Therefore, the development of new therapies to improve the overall survival of ovarian cancer patients is an urgent clinical need. The interaction between genetic alterations resistance development to PARPi is one of the most interesting fields of research increasing the chances of predicting the appearance of resistances. This study is based on the results obtained from our RNA-seq performed in PARPi resistance cell line (ID-8 VEGF). In this line, changes in the transcriptome have been identified in cellular processes as glucose metabolism, cytokine secretion, and the IFN pathway, which could be potentially linked to PARPi resistance development. The aim of this study focuses on the identification and validation of these variants in ID-8 VEGF cell cultures with the objective of establishing a genetic footprint associated with resistance. At the end of this project, the student will have developed competencies in various techniques of both cellular and molecular biology, including cell cultures, cellular pharmacological treatment, RNA extraction, reverse transcription, primer design, qPCR, and statistical data analysis. Alternatively, depending on the time available, the student may carry out animal validation studies, which would include manipulation of C57BL6 syngeneic mouse models, to test drugs potentially capable of reversing the PARP inhibitor resistance.

yes	x
no	

Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?