Universidad de Navarra
Facultad de Ciencias

MASTER'S DEGREE IN BIOMEDICAL RESEARCH
Research Project Proposal
Academic year 2023-2024

Project Nº 02

Title: Discovering pathways for immunogenicity in Liver Cancer through hampering protein folding

Department/ Laboratory
Hepatology Program, CIMA

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Summary

Liver cancer is the third cause of cancer-related death worldwide. The standard treatment has been evolving through the last few years and currently, the immunotherapy-based regimes are first line treatments. The treatment with Immune Checkpoint Inhibitors provokes intense responses in some patients, with some cases of complete responses which is unprecedented in Liver Cancer patients. Still, this efficacy is seen in only a minority of patients. Two third of patients with Liver Cancer do not respond to immunotherapy, and the causes of this immune evasion are mostly unknown. One of the ways the cancer cell evades the immune surveillance is through the expression of transmembrane receptors and ligands that provide of negative signals to the immune CD8 T cells when entering in contact with them, hampering the immune response and even kidnapping this response by provoking immune exhaustion and an immunosuppressive environment. Our hypothesis is that one of the mechanism the cancer cell needs to have in place to generate immune evasion is the proper folding and exposition of several transmembrane receptors and ligands. These proteins are folded in an organelle called Endoplasmic Reticulum, and depends on a series of pathways leading to adequate glycosylation, structural organization, trafficking trough the Golgi apparatus, been correctly exposed to the cell surface, and having a precise interaction with the extracellular matrix. In this project we will test how the deficiency of this sequence of steps can alter the immunogenicity of liver cancer cells. The candidate will work with cell cultures, learn to perform analysis of RNA expression, Protein abundance, immunoprecipitation, and will have contact with sequencing data and bioinformatics. She/he will also be exposed to animal work with the adequate supervision.

yes	X
no	

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