Universidad de Navarra | M' PROGRAMAS MÁSTER

Research Project Proposal
Academic year 2019-2020

Project Nº 19	
Title: *Immunogenicity of neoantigens in hepatocellular carcinoma*	
Department/ Laboratory *Laboratory 3.01, Program of Immunology and Immunotherapy, CIMA.*	
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Summary

Neoantigens are new sequences present in tumors created as a consequence of non-synonymous mutations and with potential capacity to be recognized by T cells and induce an immune response. Next generation sequencing technologies have led to the identification of mutated sequences selectively expressed in tumors but not in normal tissue. However, the capacity of a given mutated sequence to behave as a neoantigen and its immunogenicity is not always clear. Hepatocellular carcinoma (HCC) is a tumor with an intermediate tumor mutational load, far from those of melanoma or lung cancer, where a high number of immunogenic neoantigens have been identified. In tumors from HCC patients we have identified mutations, which have been further selected, based on their capacity to bind to HLA molecules and their immunogenicity in transgenic mice expressing human HLA molecules. Therefore, characterization of their potential immunogenicity in humans is an objective of paramount relevance in order to use them for futures immunotherapies, like personalized vaccines or adoptive T-cell therapy. To achieve this main goal, we will test in vitro the immunogenicity of mutated peptides by using human cells. Results will be analyzed with regard to data available about HLA binding capacity of peptides and their immunogenicity in transgenic murine models, in order to refine the identification and characterization methods of new neoantigens with potential application to HCC immunotherapy. The project includes the use of common techniques of cellular Immunology such as flow cytometry, cell culture, Elispot, Elisa, binding to HLA molecules, vaccination, generation of tumor cell lines and recognition by T cells.

yes	**x**	**Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?**
no		