Research Project Proposal
Academic year 2019-2020

Project Nº 02	
Title: *Next-generation immune monitoring in multiple myeloma*	

Department/ Laboratory *Myeloma Laboratory, CIMA.*

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Summary

Novel immunotherapies are considerably interesting to harness the immune system and help preventing disease progression in multiple myeloma (MM). However, these are also expensive, and better biomarkers to optimize treatment interventions are needed. Because immunotherapies rely on different mechanisms of action as compared to other anti-MM drugs, not only there is need for better biomarkers but in fact, for new concepts in patient stratification towards precision medicine in MM. In this research project, we aim to combine next-generation flow cytometry and sequencing to identify key immune cell subsets behind the efficacy of different immunotherapies, and develop next-generation immune monitoring methods for MM. Namely, we aim to identify key T-, NK-, B-, myeloid derived suppressor- and macrophage-cell subsets that mediate the efficacy of immunomodulatory drugs, monoclonal antibodies, bispecific antibodies and checkpoint inhibitors. We will also define immune signatures with prognostic significance in a large series of patients enrolled into a well-controlled clinical trial that compares two maintenance regimens for two versus five years, according to patients' minimal residual disease (MRD) status. This will allow us to establish the complementary value of MRD and immune monitoring for improved patient stratification. Using the combined data from all the above, we aim to develop and provide state-of-the-art standard operating protocols (SOPs) with scientific rational based on in-depth knowledge on the mechanism of action of currently available immunotherapies, towards next-generation immune monitoring in MM. Our goal is to promote their global use and develop worldwide big-datasets of patient' immune profiles collected in between and after as many different treatment regimens as possible. Developing such big datasets is a critical step to bring next-generation immune monitoring from bench to bedside.

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