

Research Project Proposal
Academic year 2017-2018

Project Nº 16 ASIGNADO
Title: DEVELOPMENT OF IN VITRO AND IN VIVO MODELS TO STUDY METASTASIS IN SQUAMOUS CARCINOMAS OF THE LUNG
Department/ Laboratory Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc. PROGRAM IN SOLID TUMORS AND BIOMARKERS. Center for Applied Medical Research (CIMA).
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Summary Lung cancer constitutes the first cause of cancer-related death in Western countries and survival after 5 years is ~18%. There are two main types of lung cancer: non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). Adenocarcinomas (AC) and squamous cell carcinomas (SCC) are the two main histological types of NSCLC. Genetic changes and therapeutic targets are better known in AC than in SCC; therefore, there is a need for understanding SCC biology. Mutational load for SCC is higher than that of AC, and these tumors respond better to immunotherapy using check-point inhibitors, such as nivolumab and pembrolizumab. Nonetheless, the biological reason for this response is not well understood. One of the key aspects of tumor biology is metastasis, which is the main cause of patient's death. This process usually involves an epithelial to mesenchymal transition of cancer cells, with an escape from the primary tumor and colonization of distal organs. The process of metastasis in SCC has been poorly addressed, in particular in immunocompetent mouse models, which limits the study of immunotherapy. The aim of this project is to develop in vitro and in vivo models to study metastasis in SCC, with the future goal of: a) identifying novel key genes/targets in metastatic SCC; b) testing targeted therapy/immunotherapy in immunocompetent SCC models. Methodology and techniques that will be used: cell culture, molecular biology techniques (PCR, western blot, cloning...), flow cytometry, genetic cell modification, 3D invasion assays, metastatic models of SCC and luminometry.