



Research Project Proposal

Academic year 2019-2020

Project Nº 36

Title: *Identification of tumor exosomes from humanized-Patient-Derived-Xenograft (PDX) model*

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

Laboratory of Biochemistry. Clínica Universidad de Navarra

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Summary

Exosomes are extracellular vesicles of 50–140 nm that carry specific cargos characteristic of the producing cell. Almost all cells can release exosomes, but tumor cells are especially active at releasing exosomes that subsequently reach circulation. In this regard, circulating tumor derived exosomes are potential biomarkers that could provide relevant clinical and biological information. However, the main problem of analyzing tumor specific exosomes as liquid biopsy is the difficulty of isolating them from all circulating exosomes. For this reason, the aim of this project is to develop and apply a methodology to isolate and characterize tumor exosomes from humanized-Patient-Derived-Xenograft (PDX) model. We will select kidney cancer patients with resectable primary tumors. Tumoral and normal tissue from surgical removed kidney will be implanted in engineered immunodeficient mice. We have tested previously that both tumoral and normal tissue remain viable after engraftment. Thus, blood samples will be obtained at a baseline, 1 week and 2 weeks after engraftment. After centrifugation, plasma samples will be kept frozen until analysis. Exosomes will be separated using commercial kits through two steps: An initial physicochemical separation, followed by a specific human exosomes separation by an immunocapture method. Human exosomes will be characterized by size and exosome markers (CD63 and CD9). Exclusive human exosome markers will be used. Exosomes profile from normal and tumoral tissue will be analyzed by mass spectrometry and specific tumor tissue exosomes will be selected. These exosomes will be then validated in plasma samples obtained from kidney cancer patients.

yes

X

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

no