Universidad de Navarra
Facultad de Ciencias

MÁSTER EN INVESTIGACIÓN BIOMÉDICA
Research Project Proposal
Academic year 2026-2027

Project Nº 17

Title: *Dissection of immune-resistance in mutant-specific lung cancer models*

Department/ Laboratory
Program in *Solid Tumors. Lab of Adhesion and Metastasis 2.07 (CIMA).*

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Summary
Integrative genomic analyses of human lung adenocarcinoma have revealed that distinct mutational profiles shape different immune landscapes, clinical courses, and responses to immunotherapy (IT). We hypothesize that acquired resistance to IT differs across these mutational and immune–tumor contexts, and that tailored therapeutic combinations can overcome such resistance.

Project goals: 1) Identify therapeutic vulnerabilities that enhance IT and define mechanisms of IT resistance in refined models with known mutational backgrounds.
2) Characterize response pathways to reveal shared and mutation-specific effectors and nominate actionable targets for personalized immunotherapy.

Approach and methods: This multimodal project uses state-of-the-art techniques while preserving tumor–immune and stromal interactions: immunophenotyping, spatial transcriptomics, bulk and single-cell RNA-seq, viral transduction (lentivirus), and computational analyses. Familiarity with Python and R is advantageous.

Candidate profile: We seek an open-minded, highly motivated Master's student with strong organizational ability, excellent communication skills, and interest in cancer immunology, genomics, and computational biology.
Impact: Defining mutation-specific resistance mechanisms will inform novel combination therapies and advance personalized immunotherapy for lung adenocarcinoma.

References
1. D. Ajona, (…) **F Lecanda,** LM Montuenga, R Pío Cancer Discovery (2017)
2. B. Ruiz. (…) **F. Lecanda**. Cancer Discovery (2022)

yes	X
no	

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