



UNIVERSITY: University of Navarre (UNAV)

WIT PROGRAMME'S RESEARCH LINE NAME: Pediatric oncology

DOCTORAL PROGRAMME: Doctoral Program of applied medicine and biomedicine <https://en.unav.edu/web/doctoral-program-of-applied-medicine-and-biomedicine>

COMPLETE DESCRIPTION OF THE LINE

High-grade tumors of the central nervous system are the most frequent malignant solid tumors during the pediatric age that, together with osteosarcomas, lead the causes of infant mortality due to cancer. It is, therefore, obvious that the management of these pathologies is suboptimal, and that new targeted therapies are required. The main objective of our laboratory is the development of new therapeutic strategies for childhood brain tumors and sarcomas, exploiting the immune system through the use of tumor-specific oncolytic adenoviruses and combining it with other strategies that can enhance this effect. Our project uses novel and relevant models of childhood brain tumors and osteosarcomas, both in vitro and in vivo with the idea of implementing these strategies in pediatric patients.

RESEARCH GROUP NAME: Advanced Biological Therapies for Pediatric Solid Tumors

COORDINATOR:



- Last and first name; link to the “Portal of scientific production”:
Marta M Alonso
<https://www.unav.edu/web/investigacion/nuestros-investigadores/detalle-investigadores-cv?investigadorId=56249>
- Department: **Pediatrics**
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MEMBERS OF THE LINE RESEARCH:

Jaime Gállego MD PhD; Clínico Asociado colP
Ana Patiño PhD; Clínico Asociado colP
Marisol González Húarriz PhD; Lab Manager
Lucía Marrodan, Laboratory Technician
Marta Zalacaín, PhD, Research Associate
Marc García-Moure, PhD, Postdoctoral Fellow
Sara Labiano; PhD, Postdoctoral Fellow
Virginia Laspisdea; PhD Student since 2018
Iker Ausejo; PhD Student since 2019
Daniel Ausejo, PhD Student since 2020
Guillermo Herrador, PhD student since 2020
Javier Marco Sanz; PhD Student since 2021
Reyes Hernandez; Ms Student since 2021

ANOTHER RESEARCH LINES OF THE GROUP:

- **Search for new biomarkers:** The search for biomarkers that help diagnose high-grade childhood brain tumors at an early stage is a key factor that can determine the success of therapy. Therefore, one of our lines of research is to



find non-invasively (mainly blood samples) molecules derived from the tumor microenvironment or produced by the immune system in response to the presence of a tumor before children show clear symptoms of the disease. In turn, these biomarkers will help us determine both the prognosis and the most appropriate therapy for each case.

- **Understanding the underlying biology of childhood brain tumors:** The tumor microenvironment, which comprises not only malignant cells but also the surrounding stroma such as endothelial cells, microglia, and the immune infiltrate, is key to tumor progression. In our laboratory, we study the role of these populations in tumor development in order to generate new therapeutic strategies that to get rid of the tumor cells and modify the microenvironment creating an essential pro-inflammatory scenario in the anti-tumor response.

- **Development of new radiotherapy strategies that increase survival and improve the quality of life of patients with a childhood brain tumor:** Advances in treatments against childhood brain cancer such as radiotherapy have increased survival in recent decades. However, such survival is usually accompanied by adverse neurocognitive side effects that include deficits in learning, memory and attention, and mood disorders, which limit the quality of life of patients and their environment. Therefore, in this project we propose to study the molecular and cellular mechanisms that underlie the cognitive deficit after overcoming a pediatric brain tumor, as well as to develop new treatments in combination with radiotherapy to minimize these side effects and improve both the quality of life of these patients like that of his family.

- Entities involved in research lines and contact person:

✓ Academic entities:

Clínica Universidad de Navarra (CUN) y Centro de Investigación Médica Aplicada (CIMA). Marta Alonso



MD Anderson Cancer Center (Colaboración Drs. Fueyo y Gómez-Manzano) proyecto colaborativo (Alonso, García-Moure, Gonzalez-Huarriz y Laspidea)

✓ Industrial entities:

DNAtrix (<https://www.dnatrix.com/>)

VCN Biosciences (<http://www.vcnbiosciences.com/>)

▪ Group review

Dr. Alonso's group started in 2010 with a “Ramón y Cajal” scholarship after a long stay at the MD Anderson Cancer Center (Houston, USA). Throughout this time, Dr. Alonso has been recognized with different awards and has obtained extramural including prestigious projects such as ERC Consolidator, US Department of Defense, Carlos III Institute and others. The group's projects focus on the development of new biological and immunological strategies for the treatment of pediatric brain tumors, as well as osteosarcoma. In addition, the group has conducted 4 phase I / II clinical trials with oncolytic adenoviruses for the treatment of pediatric and adult brain tumors. During these years, the group led by Dr. Alonso has published multiple articles in prestigious journals and has disclosed their work in international scientific conferences. We want to highlight the formative activity of the group with several graduates in relevant positions in other institutions. In summary, the group has a very productive track record in an area of great relevance to adenoviruses, pediatric cancer, and cancer biology (over 4,000 citations and an H factor of 34).

- Link of the group to the “Portal of scientific production”
- <https://www.unav.edu/en/web/grupo-investigadores/tumores-solidos-pediatricos>



<https://www.unav.edu/web/grupo-investigadores/biomarcadores-y-nuevas-terapias-para-tumores-del-sistema-nervioso-central>

- Pictures, links... to academic or industrial partners (if any)
- <https://cima.cun.es/investigacion/programas-investigacion/grupo-investigacion-terapias-avanzadas-tumores-solidos-pediatricos>
- <https://www.cun.es/nuestros-profesionales/profesionales/marta-alonso-roldan>

