



## POSITION

### Project Title/ Job position title

Translational Research in Pediatric Oncology, Hematopoietic Transplantation & Cell Therapy\_NKG2D-CAR/ Pre-doctoral Position

### Area of Knowledge

#### Life Science Panel

Human Biology, Microbiology, Genetics, Cell Biology, Genomics and Proteomics,  
Biochemistry

### Research Project/Research Group Description

#### Research group

The "Translational Research in Childhood Cancer, Hematopoietic Transplantation and Cell Therapy" group is led by Dr. Antonio Pérez-Martínez, at the Hospital La Paz Institute for Health Research (IdiPAZ). It is a multidisciplinary team, composed of expert genetists, pediatric hemato-oncologists and cell therapy researchers. Currently, the team is leading five clinical trials of immunotherapy with activated and expanded NK cells in patients with relapsed or refractory acute leukemia, lymphoma, multiple myeloma and sarcoma.

We are a young and motivated team mainly focused in deciphering the immunological aspects of pediatric tumors to develop new immunotherapeutic approaches. Our goal is to implement innovative immunotherapeutic techniques for the treatment of unfavorable-prognosis childhood cancers.

#### Research project

Immune system effector cells have the potential to attack and eliminate cancer cells, but successful cell therapy requires sufficient number of tumor specific effector cells in vivo. One approach to achieve this is through the use of Chimeric Antigen Receptors (CARs). CARs combine specific antigen recognition and T cell activating functions. Although a CAR specificity is often based on antibody single-chain fragment variable regions, Natural Killer cells receptors have also been used. The interactions of NKG2D receptor on effector immune cells with NKG2D ligands on tumor cells have been shown to play an essential role in immune cancer control. NKG2D-CAR based therapy has been shown to be effective against different tumor types including ovarian carcinoma, multiple myeloma in vitro and in vivo. NKG2D CAR expressing effector cells, are also effective eliminating NKG2D ligands expressing myeloid suppressor cells within the tumor microenvironment, activating host immune response. Our group has recently shown NKG2D-CAR redirected memory T cells target osteosarcoma cells in vitro and in vivo, while they are innocuous against healthy tissues and do not cause GVHD reactions. Many pediatric tumors express NKG2D ligands, providing attractive candidates for NKG2D-CAR cell therapy. The aim of this project is to test the efficacy and safety of this



NKG2D-CAR T cell therapy in different NKG2DL expressing pediatric cancers such as acute leukemia and brain tumors.

### **Job position description**

We are looking for a highly motivated PhD student willing to learn new concepts and techniques, and with an interest in cancer immunotherapy and translational science. The main role of the candidate will be the study of the efficacy and safety of the NKG2D-CAR T cell therapy for the treatment of pediatric acute leukemia and pediatric brain tumors in in vitro assays and murine in vivo models.

The student will be supervised by postdoctoral researcher Dra. Lucía Fernández, and his/her work will be mainly developed in the laboratory our research group has in the Spanish National Cancer Research Centre (CNIO).

His/her responsibilities will include:

- Maintaining primary and established cell lines,
- Immunomagnetic separation of T cell subpopulations,
- In vitro cytotoxicity assays,
- Lentiviral production and titration,
- Lentiviral transduction of primary T cells,
- Studies of cytokine profiles,
- Flow cytometry,
- DNA/RNA extraction and purification,
- PCR and RT-PCR, patient derived xenografts,
- Monitoring of experimental mice (IVIS),
- Administration of therapy (IP, IV, subcu injections) to experimental mice.

Experience in the techniques mentioned above will be considered.

All candidates must be fluent in English. Basic knowledge of Spanish language preferable.

### **GROUP LEADER**

**Title:** MD, PhD, Professor

**Full name:** Dr. Antonio Pérez Martínez

**Email:** [aperezmartinez@salud.madrid.org](mailto:aperezmartinez@salud.madrid.org)

**Research project/Research group website:**

<http://www.idipaz.es/PaginaDinamica.aspx?IdPag=95&Lang=EN>