



## **POSITION**

### **Project Title/ Job position title**

Respiratory Viruses and NK Cells in Respiratory Fluids in Paediatric Hematopoietic Cell Transplantation Recipients/ Pre-doctoral position

### **Area of Knowledge**

Life Science Panel

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

### **Research Project/Research Group Description**

#### Background & Aims:

The incidence and severity of viral respiratory infections in children undergoing hematopoietic cell transplantation (HCT) may vary according to NK cells reconstitution patterns. The aims of this project are: (1) To describe viral respiratory infections in children undergoing HCT in comparison to healthy controls. (2) To establish the viral shedding duration in HCT recipients with viral respiratory infections. (3) To analyze morbidity and outcome of children who underwent HCT with or without respiratory viral infections. (4) To characterize by flow cytometry NK cells, NK cell subsets, NK cell phenotype and NK cell degranulation and to determine NK cell cytotoxicity. (5) To compare NK cell subsets in HCT recipients according to the detection of respiratory viruses and the severity of the infections.

#### Methods:

This is an ongoing prospective study that started in January 2017, including patients <18 years undergoing HCT and matched healthy controls. Nasopharyngeal aspirates are being collected in the pre-transplantation period, at transplantation and during the post-transplantation period (days 10, 20 and 30). Age- and sex-matched controls are being recruited among healthy patients undergoing elective surgery. Cases and controls are also matched according to procedure date (HCT and surgery respectively)  $\pm$  1 week.

The presence of respiratory viruses is being tested using three RT-nested PCR assays to detect 16 respiratory viruses (influenza A, B, and C, parainfluenza 1–4, coronavirus 229E and OC43, enterovirus, rhinovirus, respiratory syncytial virus A and B, metapneumovirus, bocavirus and adenovirus) at the Respiratory Virus and Influenza Unit at the National Microbiology Center (Instituto de Salud Carlos III, Madrid, Spain). The phenotype and function of NK cells, including cytolytic activity is being evaluated at the Investigation Institute of Hospital La Paz (IdiPAZ). To date, 15 patients and 13 controls have been included.

### **Job position description**



Infectious diseases are the most frequent pathology in childhood. Our group is focused in the study of paediatric infections with special attention to those associated to viruses. We are also interested in the study of the immunological response of the children to the viral infections. We are a multidisciplinary team: we include clinicians, microbiologists and basic investigators. This point has a special relevance in order to understand the complicated pathogenesis of the illness.

In this case this project is framed in the synergy of two research groups of IdiPaz, as we also have the collaboration of the Group of Hemato-Oncology Dr. Antonio Moreno focused on the study of NK cells and cell therapy.

The research fellow will coordinate all team members that are currently involved in this project: study nurses, pediatric infectious diseases specialists, pediatric hemato-oncology specialist, microbiologists and laboratory assistants. The applicant is expected to learn all the laboratory techniques that are used in the aforementioned project. Regarding virological studies, the fellow will visit the Respiratory Virus and Influenza Unit at the National Microbiology Center (Instituto de Salud Carlos III), to become familiar with nucleic acid extraction and multiplex reverse transcription-nested polymerase chain reaction (RT-PCR) assays. The applicant will also work at the Translational Research in Pediatric Oncology, Hematopoietic Transplantation and Cell Therapy laboratory.

#### **GROUP LEADER**

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**Research project/Research group website:**

<http://idipaz.es/PaginaDinamica.aspx?IdPag=53&Lang=EN>