Internship proposition
One page max
M2 I3/0HNU 2024-25

Lab: CRCI2NA

team: 12

Name and position of the supervisor: Christelle RETIERE, DR

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Candidate:

Title of the internship: KIR2DL5, a new player in modulating the NK cell response against leukemia

Summary of the internship proposal:

Natural killer (NK) cells are part of innate immunity and play an important role in the elimination of virally infected cells and tumor cells. They have no specificity, but they can sense the defective expression of self-HLA class I molecules thanks to inhibitory receptors such as KIR and CD94/NKG2A. KIR and HLA form the most polymorphic receptor-ligand pair in humans and are involved in structuring of a large diversity of the NK cell repertoire. Leukemias account for 3% of all cancers worldwide. Allogeneic hematopoietic stem cell transplantation (aHSCT) is the gold standard protocol to eradicate leukemia in adults with high relapse rate. NK cells are the first line of defense against viruses and residual leukemic cells early after HSCT, before T-cell recovery. Leukemias express different ligands that are recognized by activating NK cell receptors such as PVR. Recently, we have shown that KIR2DL5, an inhibitory KIR, contributes to modulate the NK cell response against acute myeloid leukemia (AML) by interacting with PVR induced on AML. Our results address several questions regarding the physiological function of KIR2DL5 and, the functional education of KIR2DL5^{+} NK cells. The candidate will study NK cell biology (phenotype and function) from a large cohort of KIR and HLA genotyped healthy blood donors (EFS n>200) and a cohort of primary leukemia (n>30) and standard leukemia cell lines to answer the questions raised. These studies will be performed using cellular (culture, flow cytometry…) and molecular approaches (KIR and HLA immunogenetic analysis, CrisprCas9…) in an environment adapted to NK cell research projects (2 PhD students, 3 researchers and 3 technicians). The proposal should determine the beneficial effect of KIR2DL5 in the NK cell-based immunotherapy against leukemia, developed by the team.

Option(s) linked to the project:

☐ Clinical Research Profile
☐ Data Analyst Profile
☒ Experimental Biology Profile