

Project Summary

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Multimodal mapping of the leukemia immune microenvironment to personalize the therapy of posttransplantation relapses

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Despite constant improvements in the results obtained by hematopoietic cell transplantation from healthy individuals for the treatment of acute leukemias, disease recurrence remains frequent and largely incurable. Recent studies have demonstrated how relapse after transplantation could represent an immune-mediated phenomena, identifying a number of distinct modalities by which leukemia cells can alter their genetic, epigenetic and metabolic state to evade the "Graft-versus-Leukemia" effect mediated by the donor immune system. Starting from primary patient samples, in the present project we will combine single cell transcriptomics, multiplex tissue immunofluorescence and functional immunological assays to investigate how the different hematopoietic and non-hematopoietic components of the bone marrow microenvironment counter or support the different modalities of leukemia relapse, with the ultimate goal of identifying new strategies to therapeutically rewire dysfunctional interactions and recover an effective antitumor response.