Project Summary
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Understanding T cell and leukemic blast interactions in the bone marrow regulating GVL

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Allogeneic hematopoietic cell transplantation is a curative therapy for many patients with leukemia, and yet the mechanisms underpinning the efficacy of this remarkable treatment remain poorly defined. T cells are the critical immune cells that drive the anti-leukemic activity of a transplant, a phenomenon known as graft-versus-leukemia (GVL). The focus of this project is to investigate deeply how T cells mediate this fundamental anti-tumor function. Because leukemias are malignancies arising from cells in the bone marrow, this project seeks to understanding post-transplant T cell immunity in the bone marrow itself or the leukemic tumor microenvironment. The first goal of this study is to understand the physical distribution of distinct T cell subsets in the bone marrow post-transplant and how they may interact with malignant leukemic cells in patient samples. In parallel, we will interrogate how T cells in the bone marrow evolve over time to help promote leukemia remission. Finally, we investigate how post-transplant T cells interact with malignant cells via analysis of patient samples as well as relevant pre-clinical models of GVL and transplantation. The hope is that this study will provide fundamental insights into the efficacy of GVL and uncover immune-based treatment strategies to prevent leukemia relapse post-transplant.