

Kidney Medicine and Transplantation
Brigham Medical Specialties

PhD Student Position – Immunoregulation in Autoimmunity and Transplantation

We are seeking a highly motivated PhD student to join a dynamic and translational immunology laboratory focused on uncovering novel mechanisms of immune regulation in autoimmunity and transplantation. Our work centers on a unique population of **HLA-E–restricted CD8⁺ regulatory T cells (CD8 Tregs)** that play a critical role in controlling pathogenic CD4⁺ T cell responses, including T follicular helper (Tfh) cells, and in limiting humoral immunity.

The successful candidate will investigate the **biology, specificity, and therapeutic potential of HLA-E–restricted CD8 Tregs** across models of alloimmunity and autoimmune disease. Projects will integrate **human samples and cutting-edge experimental platforms**, including immunopeptidomics, single-cell and spatial transcriptomics, and humanized in vivo models. The goal is to define how stress-induced peptide presentation via HLA-E shapes CD8 Treg function and to leverage these insights to develop novel immune-modulatory strategies.

Key areas of research include:

- Mechanisms of antigen recognition and activation of HLA-E–restricted CD8 Tregs
- Interactions between CD8 Tregs and Tfh/B cell responses in germinal centers
- Role of stress-induced peptides and non-classical MHC presentation in immune regulation
- Translational applications, including peptide-based immunotherapies and engineered T cell approaches
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Environment and training:

The student will be part of a highly collaborative and interdisciplinary environment at Brigham and Women's Hospital / Harvard Medical School, with access to state-of-the-art core facilities and close interactions with clinical programs in transplantation and autoimmunity. The lab emphasizes **rigorous mechanistic science coupled with translational impact**, offering opportunities to work at the interface of human immunology and therapeutic innovation.

Qualifications:

- Strong background in immunology, molecular biology, or related fields
- Prior research experience (wet lab preferred)
- Interest in translational science and human disease
- Creativity, independence, and a collaborative mindset
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This position offers a unique opportunity to contribute to the development of **next-generation immune therapies** by harnessing endogenous regulatory pathways.

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Jamil R. Azzi MD, PhD

John P. Merrill, MD, and Charles B. Carpenter, MD, Endowed Chair in Transplantation Medicine
Associate Professor of Medicine, Harvard Medical School
Director, Transplantation Research Center
Director, Kidney and Pancreas Transplantation
Director, Vascularized Composite Allotransplantation
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