

Heed Fellowship Retreat Personal Statement - Elaine A. Liu

My long-term goal is to be a clinician-scientist and educator who leverages my MD/PhD training to bridge mechanistic understanding of disease with clinical research to improve outcomes in ocular disease.

While taking call over Fourth of July weekend, a young patient with a traumatic globe rupture left a lasting impression on me. In her distress, she confided that she had a dream of becoming a physician. Amidst a busy influx of ocular trauma, this experience reminded me that while striving for professionalism and scientific rigor, empathy for patients' suffering is crucial to providing the best care in chaotic situations.

During my PhD work studying Niemann-Pick type C (NPC), I learned of Ara Parseghian, a prior Notre Dame football coach whose three grandchildren all lost their lives to NPC. At the annual Parseghian Conference for NPC, I met families directly impacted by this disease. Despite facing such difficult circumstances, they expressed sincere gratitude for research efforts. I admired their generosity of spirit, which strengthened my resolve to pursue mechanistic insights that can lead to therapeutic advances. In the laboratory, I took initiative to design new approaches and learn unfamiliar techniques that helped me elucidate mechanisms of lysosomal dysfunction and neurodegeneration in NPC.

In my current work with Dr. Jay Stewart, I have conducted longitudinal analyses of retinal microvascular and neurodegenerative changes in patients with diabetic retinopathy. I am also leading a study examining the correlation between aqueous proteins and microvascular changes in patients with varying stages of diabetes, which has the potential to identify novel treatment targets for diabetic retinopathy. While conducting this research, I remember the countless patients we take care of at our county hospital that suffer from severe vision threatening diabetic retinopathy. Many of these patients face significant life challenges, and providing effective care requires not only medical treatment but also consideration of their limited resources. These experiences reinforce my mission to bridge the gap between mechanistic understanding of disease and clinical care, particularly for underserved populations.

During residency, I witnessed both the immediate sigh of relief when I released superglue that had shut the eyelids of a patient for days, to talking to patients with geographic atrophy who sought hope for future treatments that could reverse their vision loss. As long as clinician-scientists continue to thrive, there is always hope to find solutions for many unsolved problems in ocular disease.

After fellowship, I plan to apply for a K award to continue to prepare my career trajectory as a clinician-scientist. With my basic science background clinical research training, I am well positioned to bridge the gap between mechanistic understanding of disease and improving ocular health and treatment. The Heed fellowship will provide an exciting opportunity to learn from the expertise of both peers and mentors that will help propel my ongoing career development. I appreciate your consideration of my application.