RE: Rahul Dhodapkar Heed Retreat Application
April 22, 2025

To whom it may concern,

My long-term goal is to build a career as a physician-scientist practicing in an academic setting, where I can integrate clinical care, research, and education to advance our understanding of and treatment of vision-threatening diseases. My training in both computer science and medicine has shaped a career path centered on applying computational approaches, and especially machine learning, to problems in ophthalmology.

During my residency, I have developed a strong clinical and academic interest in glaucoma. I am particularly drawn to glaucoma because of its complex and multifactorial nature, the challenges of early detection and monitoring through diverse imaging and diagnostic modalities, and the opportunity to meaningfully alter the trajectory of disease through timely intervention. I am further drawn to the possibility of better understanding glaucomatous optic neuropathy, with the hope of developing complementary therapeutic approaches alongside intraocular pressure reduction. My prior research experiences, including work in single-cell genomics and retinal biology, have reinforced my interest in mechanisms of retinal ganglion cell injury and repair, and I hope to build on this foundation through fellowship training.

In parallel, I have maintained a sustained commitment to research at the intersection of artificial intelligence and ophthalmology. My work has spanned the development of machine learning methods for analyzing high-dimensional biological data, as well as building tools for ophthalmic imaging and smartphone-enabled clinical measurement. I am particularly interested in integrating multimodal data to better characterize disease heterogeneity, predict progression, and identify new therapeutic targets. I also see a significant potential for low-cost and highly available technologies, including smartphone-based and low-cost imaging systems, to expand access to care and bring advanced diagnostic capabilities to broader patient populations.

As I pursue fellowship training in glaucoma, I aim to continue developing as an independent investigator who can bridge computational and clinical domains. I am especially motivated to translate advances in machine learning into practical tools that can improve patient care, while also contributing to a deeper biological understanding of disease. Ultimately, I hope to establish a research lab that leverages data-driven approaches to improve the diagnosis, monitoring, and treatment of glaucoma and related conditions.

Best,

Rahul Dhodapkar, MD
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