

RESIDENTS^{AND}FELLOWS



FROM NEUROLOGY TO GLAUCOMA

BY BRETT MUELLER, DO, PhD



When I started medical school, I thought I would go into neurology. I had a strong passion for the neurosciences and was fascinated by the unknown aspects of the brain. I was in a dual degree program and working on both my medical and doctoral degrees over the course of 7 years. Then, research for my PhD sparked my interest in glaucoma.

I had joined the Department of Neuroscience and Pharmacology to find a cure for Alzheimer disease. As I began my laboratory rotations, I met the man who would eventually become my research mentor, and he told me about his research on neurons in the back of the eye. His lab was studying neuroprotective targets in retinal ganglion cells (RGCs) in hopes of developing a neuroprotective agent to treat glaucoma. Although I had started working on my PhD, I had only completed my second year of medical school and had no clinical exposure to ophthalmology.

Before I even developed a clinical passion for ophthalmology, I was enthralled by the science of the eye. From day 1 of my research project, I was captivated by the physiology and pharmacology of RGCs. As I investigated modulations of calcium signaling, induction of neural protective pathways, enhancement of synaptic plasticity in the form of dendritic spine outgrowth, and mitochondrial movement and transport in primary RGCs, I was fascinated by the complexity and beauty of the visual sciences.

Although my strong research background in the subject drew me to a specialization in glaucoma, I only began to develop a real clinical interest in the disease during the first year of my ophthalmology residency. It was the continuity of care that struck me first; I enjoyed having patients in clinic who had been seeing my attendings for the past 20 years or more. I soon found that I also enjoyed the complexity of the disease process as well as managing the IOPs and visual fields, and I appreciated the variety of laser and surgical procedures available to help lower IOP.



Despite the growing options for glaucoma treatment, however, there are still so many unanswered questions about the disease. Glaucoma remains a leading cause of irreversible blindness worldwide, but I feel both hopeful and excited about all the research currently underway to investigate different surgical treatment options and alternative medical therapies, including neuroprotective agents. I believe the etiology of this disease process and its eventual cure will be discovered in my lifetime, and I feel fortunate to be at the forefront of this effort as I look to apply for a glaucoma fellowship this coming year. It is an exciting time to be an ophthalmologist, but it is an even more exciting time to be a glaucoma subspecialist. ■

Section Editor Albert S. Khouri, MD

- associate professor and program director of the ophthalmology residency as well as director of the Glaucoma Division at Rutgers New Jersey Medical School in Newark, New Jersey
- (973) 972-2045; albert.khouri@rutgers.edu

Brett Mueller, DO, PhD

- second-year ophthalmology resident, Department of Ophthalmology and Visual Science, University of Louisville School of Medicine in Louisville, Kentucky
- (817) 734-6006; brett.mueller@louisville.edu