

The visual system has fascinated me since I was a child. In junior high school and high school, I saw several eye surgeries done by a local ophthalmologist. In college, I studied retinal cell biology in the lab of Federico Gonzalez-Fernandez, MD, PhD. In the MSTP program at the University of Virginia, I worked with Russell G. Foster, PhD on circadian rhythm biology, and later with Robert M. Grainger, PhD on homeobox genes and lens induction. For my dissertation studies, I returned to the lab of Dr. Gonzalez-Fernandez.

In the lab of Dr. Gonzalez-Fernandez, I studied a novel retinoid-binding protein unique to the retina and pineal gland called interphotoreceptor retinoid-binding protein (IRBP). IRBP is an extracellular protein localized to the subretinal space. It has been proposed that one function of IRBP may be to transport retinoids between the retinal pigment epithelium and the photoreceptors. Unlike other known vitamin A-binding proteins, IRBP has a modular structure consisting of four homologous modules of approximately 300 amino acids each. I was fascinated by this modular structure and set out to determine the relationship of the modules to its function. Using molecular techniques, I expressed several recombinant *Xenopus* IRBP constructs – each individual module separately, domains within a module, and module combinations. After purification, I characterized the interaction of these fusion proteins with retinoids and several other ligands using a variety of biochemical techniques such as fluorescence spectroscopy. I found that each of the four modules alone is capable of binding various retinoids and fatty acids (*_ et al.*, In revision). I localized the retinoid-binding domain in the fourth module of IRBP (*_ et al.*, 1998, *Exp. Eye Res.*, 66, 249-262). Using site-directed mutagenesis I also explored the role of highly conserved arginines in determining the specificity of retinoid and fatty acid binding sites (*_ et al.*, 1998, *Mol. Vis.*, 4:30). I have had the opportunity to present these and other findings at ARVO on five separate occasions giving both platform and poster presentations. These meetings have exposed me to the breadth, excitement, and opportunity in vision research ranging from cornea to new surgical techniques.

During my clinical clerkships, I had a rotation in general ophthalmology and also a rotation in neuro-ophthalmology working under Steven A. Newman, MD. Everything I learned -- from optics and anterior segment to glaucoma, plastics, retina, and neuro-ophthalmology -- fascinated me. Working with Dr. Newman, I experienced first hand the day-to-day activities of an ophthalmologist in an academic center. When people ask me why I want to focus my career on “such a small part of the body,” I respond in part by saying that ophthalmology encompasses every medical and basic science discipline from endocrinology and immunology to molecular biology and physics. I ask them to imagine themselves losing their vision and how much they would appreciate someone restoring that vision or preventing them from losing their vision in the first place. I tell them that in many ways the ophthalmologist is a primary care physician seeing patients of all age groups, following patients for many years, and often guiding patients in other aspects of healthcare besides their vision. All of these aspects are reasons why I want to pursue a career in ophthalmology.

In 10 years I see myself on faculty at a university medical center. My day will include providing direct patient care, doing basic research, and teaching.