

Joel S. Schuman, MD

Dr. Schuman contemplates the viability and purpose of the clinician-scientist.

How did your time working with W. Morton Grant, MD, influence you?

During my fellowship, another of my mentors, David Epstein, MD, suggested the possibility of my assisting Dr. Grant with the next edition of his book *Toxicology of the Eye*. I had no background in this area and knew very little about the subject. I did not think Dr. Grant would be interested in working with such a novice, but he took me under his wing. We collaborated on the project for about 4 years. Working with him was a pleasure and an honor. He was an extremely careful reviewer. My pages would come back to me covered with his comments. Over time, the red ink decreased. I learned a tremendous amount from this remarkable man.

The consummate clinician-scientist, Dr. Grant would identify a clinical problem, take it to the laboratory, and try to bring back the answer. He had a strong relationship with a prominent clinical glaucoma specialist, Paul Chandler, MD. They would exchange ideas, which spurred on Dr. Grant's research, because he was presented with new and unusual clinical problems to solve.

Dr. Grant was a role model for me. He was incredibly ethical, kind to a fault, considerate, really the perfect gentleman. He was also thoughtful, generous, very low key, and extremely hardworking, and he had a selfless dedica-

tion to teaching. He was always available to talk with his fellows and residents. These are all characteristics to which I aspire.

Is the clinician-scientist a dying breed in glaucoma?

No, but it is an endangered species. The decision to become a clinician-scientist is difficult but tremendously rewarding. You can make a difference, not only for a given patient but also for patients in general. You must really want to serve this role, however, because funding is tight and the clinical pull is strong.

When I decided to follow this career path, my department chair told me that the clinician-scientist was a dinosaur. That may be true of the individual who works alone. Because of the explosion in information, you cannot keep up with everything. Nevertheless, I think that, instead of having become archaic, the role of the clinician-scientist has

morphed. I see the model as one of collaboration instead of working solo. The clinician-scientist works with the PhD basic scientist, engineers, and others to create new science together. It is the clinician-scientist who acts as the bridge between the laboratory and the clinic. That role is incredibly important.

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FAST FACTS

- Eye and Ear Foundation professor and chairman of ophthalmology at the University of Pittsburgh School of Medicine, 2003 to present
- Professor of bioengineering at the University of Pittsburgh's Swanson School of Bioengineering, 2003 to present
- Member of the McGowan Institute for Regenerative Medicine, University of Pittsburgh, 2008 to present
- Professor at the Center for the Neural Basis of Cognition, University of Pittsburgh and Carnegie Mellon University, 2007 to present
- Adjunct professor of ophthalmology at Tufts University School of Medicine in Boston, 2003 to present
- Recipient of the AAO's Honor Award and Senior Achievement Award, 1995 and 2003, respectively
- Recipient of the Alcon Research Institute Award and Lewis Rudin Glaucoma Prize (2002) and the ARVO/Pfizer Translational Research Award (2006)
- Principal investigator for Novel Glaucoma Diagnostics for Structure and Function (NIH 5RO1 EY13178, 2000 to present) and Optical Coherence Tomography: a Novel Glaucoma Diagnostic (NIH R29-EY11006, 1995 to 2000)
- Fellow of The Heed Ophthalmic Foundation, 1989 to 1990

5 QUESTIONS

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What led you to pursue a career in academia? Do you ever wish you had gone into private practice?

Academics offered me the opportunity to do what I love for a living. That is a unique privilege. I have endless possibilities to explore. I get to work with medical students, residents, fellows, graduate students, and postdoctoral students; these are the people who keep me growing and learning and who inspire me to be better than I am. I am also able to work with outstanding colleagues who are similarly devoted to patients' care, research, and education. I have never regretted remaining in academia, but private practice is a great career option, as my brother can attest. He is in solo private ophthalmic practice.

What is the current focus of your research?

I am lucky to be collaborating with a diverse and excellent team of engineers, clinical research specialists, and computer scientists. Together, we are working toward the earlier diagnosis of glaucoma and its progression. Specifically, we are researching both methods of diagnosis and novel uses for currently available methods. In addition, we are trying to identify fresh targets for diagnosing glaucoma and detecting its progression. They include the lamina cribrosa and the macula. Furthermore, we are looking for new ways of measuring those tissues to determine if they are normal or abnormal and whether or not they are changing.

We are also trying to differentiate people who have aggressive versus mild disease. This is an important distinction in all fields of medicine. For example, most people with cancer do not have an aggressive tumor, but the majority receives aggressive treatment, because it is difficult or impossible to determine who needs it and who does not. Similarly, some patients' glaucoma progresses slowly, whereas others rapidly sustain damage. We want to determine who needs aggressive treatment and who can be treated more conservatively.

Finally, we are developing new technologies and software for optical coherence tomography to make the device more clinically applicable and relevant.

What inspired your love of photography, and why do you think so many ophthalmologists share this hobby?

When I was 8, I began to share a darkroom with my brother, whom I mentioned earlier. He taught me how to develop film and take pictures. It was fun to develop rolls of film myself, create pictures, and watch them appear on the photographic paper as I put it in the developing solution and then the fixer. Photography continued to be attractive to me as I grew up. I was a photo editor for my college newspaper, and I transitioned to digital photography in the 1990s.

The inspirational aspects of photography are the beauty of the images, the art that you can create with the camera and editing, and the feeling you get when you look at art. Art creates an emotional response. I think other ophthalmologists may share this hobby because photography is a totally visual experience. We spend our time as ophthalmologists observing. We look at the eye intensely, and we see the awesomeness of nature, both good and bad. In photography, we can compose beautiful, striking images and edit them. Really, we can change the world. □

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