

## Friedman Named Sommer Professor

**D**avid S. Friedman, M.D., M.P.H., Ph.D. has been named the inaugural Alfred Sommer Professor of Ophthalmology. This honor is the highest that Johns Hopkins can bestow upon its faculty members, and both recognizes Friedman's extraordinary accomplishments, as well as provides a source of funds to support the continuation of his creativity.



David S. Friedman,  
M.D., M.P.H., Ph.D.

Friedman is looking forward to the use of this funding to advance his research. "This honor recognizes my research, clinical and teaching accomplishments by providing consistent funding that is unrestricted in its use. This additional source of money

will allow me to embark on new research collaborations prior to seeking larger grants, and can be used to support my work if there are gaps in funding." Friedman plans to initially apply a portion of the funds to an ongoing clinical trial of early treatment to prevent angle closure glaucoma, a leading cause of blindness.

The chair is named in honor of Alfred Sommer, a Wilmer faculty member and the former Dean of the Bloomberg School of Public Health. Friedman first met Sommer when he was a medical student, and it was his inspiration that led Friedman to enter ophthalmology and ultimately to join the Dana Center. Friedman remarks, "I cannot imagine any greater privilege than to be awarded a chair in his name." He joins three other glaucoma faculty with endowed chairs, Harry Quigley, M.D., Don Zack, M.D., Ph.D., and Henry Jampel, M.D., M.H.S. □

## Efforts to Improve Quality of Life

**W**hen discussing the cure for glaucoma, our minds invariably race to ways that we can restore people's vision. Unfortunately, that day is still not here. In the meantime, Pradeep Ramulu, M.D., Ph.D., is studying how to "cure" individuals who now suffer from glaucoma-related vision loss.

Ramulu's research focuses on how people are affected by glaucoma, and seeks to improve the lives of glaucoma patients by understanding how vision loss limits their activities. His overall goal is to ultimately provide patients with the means to overcome their visual disability.

Glaucoma affects several major tasks important in our daily lives, such as driving, walking, and reading. The question to be asked is not if these activities are affected by glaucoma, but rather, when they are affected, how are they affected, and what can we do about it? Ramulu's research in an elderly population found that 1 in 10 individuals with glaucoma had stopped driving because of their vision loss. A surprising number of glaucoma patients also describe difficulty reading, despite the fact

that their central vision remains intact. Ramulu has constructed new tests of reading, and his early work suggests that individuals with glaucoma may become more tired (and slow down their reading) while reading over a longer period of time.

When evaluating how patients are disabled by their vision, it is also important to examine them in their normal daily routine, not just in the clinic. Ramulu has been doing this over the last year by examining activity with accelerometers (a fancy pedometer) and GPS trackers which are worn on the waist. Early results from these devices show that patients with significant glaucoma in both eyes walk less and are less physically active, predisposing them to medical problems such as heart disease, diabetes, and osteoporosis. With these sophisticated measures of physical activity in hand, Ramulu plans to examine how rehabilitative services can be used to make people more confident in their walking, and encourage them to live more active and healthy lives. □

# If A Stiff Upper Lip Is Good, A Stiff Eye Is Better

For many years, the only treatment available for glaucoma has been lowering of eye pressure (IOP). As good as eyedrops, laser and surgery are at protecting the optic nerve and preventing vision loss,

## Marijuana and the Treatment of Glaucoma

Henry Jampel, M.D., M.H.S, recently authored a position statement on “Marijuana and the Treatment of Glaucoma” for the American Glaucoma Society, the largest glaucoma organization in the United States. The position statement has been published as an editorial in the *Journal of Glaucoma*, where it is certain to be read by glaucoma specialists around the world and thereby disseminated to glaucoma patients.

In the editorial, Jampel stresses the following points:

- The mainstay of treatment for glaucoma patients is lowering intraocular pressure.
- Smoking marijuana, or taking it by mouth, does lower intraocular pressure.
- The duration of the effect of marijuana is only 6 hours, so it would have to be used 4 times a day.
- The side effects of using marijuana, including mood alteration and harmful effects on the lungs, are too serious to use it to lower intraocular pressure.
- Research may someday lead to a marijuana-like eye drop that would lower the intraocular pressure without side effects, but no eye drop is available now.

Not surprisingly, Jampel concludes that there is currently no role for marijuana in any form in the treatment of glaucoma. □

a small amount of further deterioration can occur in some persons, despite present therapy. To attack this more effectively, and potentially to replace IOP lowering drugs, Harry Quigley, M.D., working with Don Zack, M.D., Ph.D. and colleagues in their laboratory have been investigating treatments to reduce the effect of the IOP on the optic nerve. Neuroprotection research in our labs has already found potential gene therapies that may benefit those with glaucoma.

The more recent investigations have focused on making the eye wall called the sclera (the white part of the eye) more rigid. IOP is transmitted to the sclera just as the wall of a car tire gets more rigid as air pressure increases inside. It is known that the same IOP can produce more stress in the sclera of some eyes than in others. Bigger eyes (persons with near-sightedness typically) have more stress than small eyes. Thin-walled eyes have more stress at the same IOP. Younger eyes may have more stress than older ones. It is possible that the more rigid the sclera, the less the IOP will affect the optic nerve, and the more vision will be preserved.

Could your eye be made safer by making it stiffer? That’s the present direction of Quigley’s work, and was stimulated by trials in humans with a corneal disease called keratoconus. Keratoconus causes abnormal growth of the cornea, and doctors have treated

persons with this disease with a chemical that stiffens the cornea and has eliminated the need for surgery in some. Researchers reasoned that this could work in glaucoma as well and have begun work with mice to see if it could be a useful treatment.

First, a mouse model for glaucoma had to be developed to test the treatment. Then, the mouse is given a drug to stiffen the sclera of the eye. The mice don’t feel any pain from their experimental glaucoma in one eye, just as most glaucoma patients have no pain from their IOP.

Engineers from Johns Hopkins University are working to measure the stiffness of the eyes, and will soon launch the key experiment—testing whether mice with stiffened sclera will have less glaucoma damage. If this works in mice and later in humans, the effect of IOP could be lessened, making all glaucoma therapy more effective. □



Harry Quigley, M.D. and his research team.

# Collaborative Research Space



The Robert H. and Clarice Smith Building has doubled the amount of research space at the Wilmer Eye Institute. The five floors of open lab spaces support a collaborative research approach, which has revolutionized the way research is conducted at Wilmer.

In July 2009 the laboratory research faculty and staff of the Wilmer Eye Institute moved into the brand new and beautiful Robert H. & Clarice Smith Building. The construction of the building, at a cost of \$105 million, was made possible by the generosity of Robert H. & Clarice Smith and by gifts from many other generous Wilmer donors and friends. The six story, 211,500 sq. ft. building contains new operating rooms that facilitate the speed, comfort, and safety of outpatient ophthalmic surgery and five floors of unparalleled research space. The new research space more than doubles the laboratory space that was previously available at Wilmer.

The aesthetics of the Smith Building make it a unique place to work. In addition to the stunning architecture, the building is the home to sculpture and paintings from renowned artists including Wolf Kahn, John Safer, and the building namesake Clarice Smith.

The building's brightness and open design creates an atmosphere that is essential for creative insights and active collaboration. Johns Hopkins in general, and Wilmer in particular, have long been known for the collegial and interactive nature of our faculty, fellows, residents, students, and staff.

In fact, this ability to effectively work together is an important component of our recruitment process and has been part of our secret of success. However, effective collaboration, as good as it was, was not always optimal among the laboratory researchers because individual labs were scattered across multiple buildings and tended to be in small, separated rooms. This has all changed with the move to the Smith Building. Instead of individual walled off laboratories, the wonderful open lab spaces allow personnel from multiple labs work together, interact actively, and share common equipment and reagents. The multi-story atrium, which is lit by natural light, and the many seminar rooms provide additional opportunities for interaction.

For the first time, all glaucoma research laboratories are in one building. Not only does this facilitate interaction within our division, but our proximity to other ophthalmic research labs has also led to new collaborations and new ideas across disease areas. Some of these ideas have been initiated by accidental encounters and conversations, that might not have happened if not for the environment provided by the Smith Building. □

# Using IT to Improve Glaucoma Care

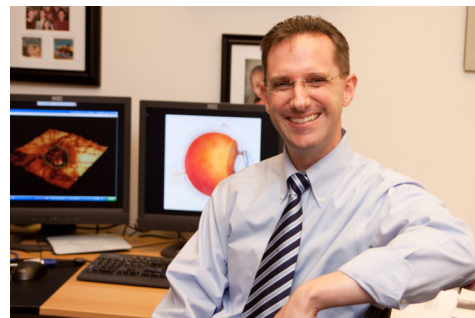
**M**ichael Boland, M.D., Ph.D. has been named Director of Information Technology for the Wilmer Eye Institute. As both a glaucoma specialist and someone with a background in technology, he is well suited to this position. In his new role, he will bring electronic medical records to the department, starting with the Glaucoma Division.

Current patients know that Wilmer glaucoma physicians have been documenting visits using the computer for over a decade, but the move to a real electronic medical record system will bring important benefits. First, providing physicians with better access to data will enhance the care of the patients. Second, this upgrade is an important step toward allowing patients to access their own medical information. Finally, it will allow all medication prescriptions to be managed electronically, making that entire process more efficient. In keeping with the Wilmer missions of research, teaching, and patient care, Boland's team will continue to study the effects of the new electronic medical record on both patients and physicians.

Boland is also taking advantage of information technology to create a network of clinician-scientists to carry out

important glaucoma research. The Glaucoma Research Network (GRN) currently consists of investigators from six ophthalmology departments along the east coast. The first two GRN projects are underway: a comparison of surgical implants for glaucoma and the creation of the largest database of visual field data. The GRN will facilitate collaboration on glaucoma clinical research by using the internet to collect data from all sites for storage and analysis at the coordinating center within Wilmer.

The generous support of grateful patients has funded the initial phase of this project. After successfully completing these initial projects, Boland expects to use the results to support grant applications to maintain and expand the GRN. □



Michael Boland, M.D., Ph.D. uses technology to improve glaucoma care at Wilmer and beyond.

## Glaucoma Division Faculty

**Harry Quigley, M.D.**

*Director of the Glaucoma Division  
A. Edward Maumenee Professor*

**Henry Jampel, M.D.**

*Odd Fellows and Rebekahs Professor*

**Donald Zack, M.D., Ph.D.**

*Guerrieri Family Professor*

**David S. Friedman, M.D., M.P.H., Ph.D.**

*Alfred Sommer Professor*

**Michael Boland, M.D., Ph.D.**

*Assistant Professor*

**Pradeep Ramulu, M.D., Ph.D.**

*Assistant Professor*

If you are interested in supporting these doctors and the research they are conducting at the Wilmer Eye Institute, please contact:  
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*CureGlaucoma* is published once a year by the Wilmer Eye Institute at Johns Hopkins Hospital.

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