



Spring 2014

# SightLine

Wilmer Eye Institute at Johns Hopkins



## Women on the Rise

Meet three faculty members  
who recently marked a  
milestone at Wilmer.



Dear Wilmer Friends and Family,

As winter melts into spring here at Wilmer, we are grappling with major changes underway as a result of health care reform, even as our country works to recover from a recession. The cuts associated with the efforts to control the federal deficit have so far resulted in a 2 percent reduction in payments to physicians, plus a reduction in federal funding for vision research that has sent us back to the 2003 level. These cuts

could threaten our clinical and research mission. Johns Hopkins is the top recipient of federal research grants, and Wilmer is the department with the most funding from the National Eye Institute.

Fortunately, at Wilmer, we are moving right along. We recently transitioned to an electronic medical record system that promises greater efficiencies and even higher quality of care for our patients. Our clinical practice and research programs continue to grow, allowing us to recruit talented young faculty. Thanks to the generous support of many, including the recently announced \$20 million bequest from Mr. T. Boone Pickens, we have the ability to support our physicians and scientists as they begin their work here. And for those who wonder whether the changing health care landscape might discourage brilliant young people from pursuing careers in medicine, I share good news: Wilmer has never had stronger applicants for its residency program than over the last two years. For the first time in Wilmer's history, the top five ranked candidates (out of 500 total) all chose to match into our residency program this past year.

These new residents will follow on the heels of an accomplished group. Our current residents set new records for surgical experience this year, reflecting the new surgical training curriculum and the generous support of donors who are helping fund care for indigent patients at The Wilmer Eye Institute.

We are not naïve enough to think that the dramatic changes being effected by external forces will not require Wilmer to adapt in order to best serve our patients, referring physicians, and society at large. At the same time, however, there has clearly never been a better time to be an ophthalmologist or scientist focused on finding new cures for eye diseases. Today, we can dramatically improve the vision of people who were untreatable just a few years ago, and the much-heralded advances in nanotechnology and stem cell biology—two research priorities at Wilmer—have clearly placed us on the cusp of exciting new therapies.

Peter J. McDonnell, MD  
*William Holland Wilmer Professor and Director*

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Friedman lecturing students in China.

## Putting Millions Within Reach of Clinical Trials

**W**hen the Johns Hopkins School of Medicine and China's Sun Yat-sen University (SYSU) formalized a partnership in March 2013, it was hailed as a milestone for health sciences research. In the months since then, the Wilmer Eye Institute has emerged as a leader in developing a strong reciprocal relationship with Zhongshan Ophthalmic Center, its counterpart at SYSU.

"For a globally focused institute like ours, it's hard to ignore China," says **David Friedman, MD, PhD**, Alfred Sommer Professor of Ophthalmology and director of the Dana Center for Preventive Ophthalmology at Wilmer. "The sheer size of the population, paired with the economic and demographic changes taking place there, make it an incredible opportunity from a public health standpoint."

China is home to nearly a quarter of the world's population, so a better understanding of the major eye problems there and the best approaches to treating them will have a huge impact, Friedman notes.

He points to a joint study now underway to determine how to prevent angle closure glaucoma, one of the leading causes of blindness globally, which is four times more prevalent among the Chinese than among Caucasians. Thanks to the partnership with SYSU, the joint research team has been able to screen 10,000 Chinese citizens and identify 1,000 subjects for this trial.

"These are big numbers that would be hard to achieve in the United States," Friedman says. "SYSU is a massive

university with several hospitals and the relationship puts millions of people within reach [of clinical trials]," ultimately speeding the discovery of important new treatments for eye disease. "Wilmer's research partnership with Zhongshan is an excellent model for all of Hopkins to collaborate on studies in China."

For their part, teams at Sun Yat-sen University gain access to Johns Hopkins' expertise to improve the quality of clinical research in China. Experts from Johns Hopkins, including Wilmer's Friedman and Michael Boland, MD, PhD, have traveled to SYSU to teach and lead workshops to strengthen the professional development of investigators, research professionals, and research administrators.

"SYSU is led by a proactive and bright faculty that is eager to improve the quality of its clinical research," Friedman says. "We are optimistic that they can develop into one of the premier clinical research facilities in the world."

The two universities will co-develop education and training modules that combine e-learning with weeklong in-person workshops and lectures. Friedman is the co-director of this university-to-university collaboration.

"China's health care sector and biomedical research field are expanding rapidly and there is great opportunity for collaboration and knowledge growth," Friedman says. "I hope the relationship becomes deeper and lasts a long time." ■

—Andy Myers

# Taking Aim at Birdshot Chorioretinitis

**A**s head of the U.S. Securities and Exchange Commission's Division of Corporation Finance, Meredith Cross helped the country navigate its way out of one of the most serious recessions in recent history. It was a dream job for the hard-charging corporate finance lawyer.

Then, on a March morning in 2012, she began to experience vision problems.

"Suddenly I had all of these crazy floaters," recalls Cross.

She told herself to remain calm and go to work, but a few hours later, there was more debris in her vision. Days passed, and doctors could not figure out what was wrong. Meanwhile, Cross' vision continued to deteriorate.

"It felt like I was looking through an Etch A Sketch or Magna Doodle," says Cross. "I was so frightened and frustrated that no one seemed to be able to help me."

Cross' primary care doctor recommended she visit the Wilmer Eye Institute, where **Jennifer Thorne, MD, PhD**, diagnosed her with birdshot chorioretinitis (BSCR)—a very rare type of non-infectious uveitis in which the inside of the eye becomes inflamed. Patients may also experience episodes of macular edema in which blood vessels within part of the retina leak. The disease earned its unusual

name because of the scattered spots that can develop on the retina—spots that resemble birdshot from a shotgun.

"The symptoms tend to come on in a very insidious way," says Thorne, one of the world's few experts on the disease, which usually strikes people in their 40s and 50s, and more often affects women. "Typically there is no pain and the eye is not red."

Thorne has been instrumental in showing the importance of immunosuppressive drugs in combatting BSCR and has worked closely with Cross to fine-tune her medications so that she retains her vision and is able to continue her work. Cross is now a partner at the WilmerHale law firm in Washington, D.C.

Unfortunately, little is known about the causes and progression of BSCR. Cross is hoping to change that with a \$1.25 million financial commitment that has established the Jennifer E. Thorne, MD, PhD, Birdshot Research and Endowed Research Funds. The funds are allowing Thorne to conduct in-depth studies on the epidemiology, progression, and treatment of BSCR, as well as its genetic and epigenetic characterization.

With the funding, Thorne has been able to hire Trucian Ostheimer, MD, a uveitis specialist and research fellow, to assist in her studies. Thorne is currently completing a retrospective analysis of

clinical outcomes of BSCR patients at different academic centers, and she is now participating in a multicenter study to determine the best imaging methods for monitoring the disease. With other collaborators across the country, she also plans to investigate BSCR's immunologic triggers.

By providing financial support for research, Cross feels like she's doing what she can to take charge of her illness and help BSCR patients retain their vision, particularly since funding for birdshot research is so scarce. She has also rallied other donors to put additional funds toward BSCR research—nearly \$150,000 so far, from about 50 donors.

"I'm so grateful to Dr. Thorne for her remarkable care and for undertaking these research projects, and to my friends and family who've already given generously to support the Birdshot funds. Their giving makes so much more possible in the future. And, I can't possibly thank my husband, John, and our son, Joseph, enough for their unwavering support. I feel like I'm a very lucky person."

If you would like to contribute to the Birdshot Research Funds, please visit [wilmer.org](http://wilmer.org) and designate your gift to the "Birdshot Research Fund" in the dropdown or call the Wilmer Development Office at 410.955.2020. ■

—Sarah Richards

I'm so grateful to Dr. Thorne for her remarkable care and for undertaking these research projects, and to my friends and family who've already given generously to support the Birdshot funds.

—Meredith Cross (right), with Thorne



# Higher Volume Equals Lower Costs



Grant's study found that the average cost of treating orbital trauma at Wilmer was \$6,194—less than half the other hospitals at \$12,692.

In today's health care environment, reining in health care costs is paramount. To that end, a recent study from the Wilmer Eye Institute provides welcome news.

The Wilmer study, which examined traumatic eye socket injuries, showed that this “high volume” academic medical center not only costs half as much as community hospitals, but delivers comparable care.

The research team, led by **Michael Grant, MD, PhD**, who directs the Eye and Orbital Trauma Center, studied victims of traumatic eye socket injuries—the kind suffered in automobile accidents, sport injuries, and blunt force trauma. For decades, patients needing reconstructive surgery have had to choose between specialized facilities, like Wilmer, and presumably less expensive community hospitals. The costs at the specialized facilities, it was assumed, were inherently higher owing to the responsibilities of specialized care, research, and support for graduate education.

In the study, published in

the journal *Ophthalmology*, the team analyzed nearly 500 orbital reconstruction patients at 22 Maryland hospitals over a five-year period. About half received care at Wilmer, nearly a fifth were treated elsewhere at Johns Hopkins Medicine, and the remaining patients had surgery at 21 hospitals throughout Maryland.

The study found that the average cost of treating orbital trauma at Wilmer was \$6,194—less than half the other hospitals at \$12,692.

Grant points out that economies of scale at busy centers lead to reduced time in the operating room, more efficiency in their pre- and post-operative procedures, and more judicious use of equipment and supplies—all of which help drive down costs.

“At academic hospitals, with relatively high volume spread over a smaller number of surgeons, the procedures become more standardized. At community hospitals, on the other hand, each doctor often has a personal approach that leads to

natural variability and inefficiency,” Grant says. “Busy facilities ... essentially, they become very proficient, and are able to limit under- or overtreatment, both of which can lead to higher costs.”

While doctors at high-volume centers understandably play a key role in keeping costs down, Grant notes that nurses in academic hospitals play an important role, as well. They are critical to creating standardized pre- and post-operative care plans for trauma patients. “Therefore, they are able to deliver a very high level of care on the regular surgical nursing floor, diminishing the need for placement in a more expensive ICU setting,” he says.

“I don't think the study is necessarily saying, ‘send more patients to academic hospitals,’ nor is it saying, ‘make local hospitals more like Wilmer,’” Grant says. “The solution is a little of both: Move the complex cases to the high-volume specialists and standardize procedures across all facilities doing these surgeries.” ■

—Andy Myers

# A Big Boost for Cataract Surgery Research

When Kay Alchu first met Michael A. O'Bannon some 30 years ago, she didn't make much of it.

"I had a small real estate office in Las Vegas, and he stopped by one time," says Alchu. "He said he couldn't afford to have his taxes done and would I rent him a space? A little room area where he could do his taxes."

Unbeknownst to Alchu, the stranger was a wealthy man. A World War II veteran born in 1919, O'Bannon had earned millions by investing in oil wells and the stock market. Yet despite his wealth, he continued to live a simple life on the barest minimum of expenses, says Alchu.

"He had two old cars, and he'd drive around to find the cheapest oil and to find somebody to change the oil for him," Alchu recalls from her home in Omaha, Nebraska. "That was the happiest thing in his life: to be frugal."

When O'Bannon died in 1994, he left instructions in his will to create a charity; at its helm would be none other than his friend Alchu, acting as the executive trustee. Since then, Alchu has devoted her time at the Michael A. O'Bannon Foundation to helping worthy causes, from food banks to animal shelters—and now, due to a second chance encounter, to improving sight.

Two years ago, Alchu happened to be visiting the

Wilmer Eye Institute for an unrelated eye issue when she decided to have **Yassine Daoud, MD**, operate on her cataracts. "Anybody who's literate and reads knows about Wilmer," says Alchu.

After the surgery, she says, "I had better than 20/20 vision." Alchu told Daoud she would be happy to consider supporting his research with a grant from the foundation. "He seems like a brilliant young man with a brilliant past," says Alchu. "Those are the types of people we need in research."

Daoud, an assistant professor of ophthalmology at Wilmer, joined Johns Hopkins after completing a cornea fellowship in 2010. Born in Lebanon, he spent most of his youth in a Palestinian refugee camp. He won a scholarship to attend the United World College in New Mexico, and went on to receive his medical degree from Harvard Medical School.

Last November, Daoud learned that the Michael A. O'Bannon Foundation would fund his study on the effectiveness of a new laser used in cataract surgery. The grant covers the cost of a study coordinator, laser interface, and consumable supplies.

"Such research cannot be done without financial backing and support," says Daoud. "This is a new, cutting-edge technology to potentially improve the outcome, effectiveness, and safety of cataract surgery."



PHOTO BY MARSHALL CLARKE

Yassine Daoud, MD

Daoud's study involves a femtosecond laser, an ultra-fast laser—currently used in certain LASIK surgeries—that emits brief optical pulses that make extremely precise incisions.

Traditionally, cataract removal involves a surgeon manually cutting and removing the lens of the eye (using ultrasound energy) and replacing the lens with an artificial one. By using a femtosecond laser, certain steps of the operation can be controlled by a computer, with laser precision.

Daoud says studies have shown the laser to be better than the average surgeon's hand when it comes to the initial corneal incision, cutting the lens capsule, and breaking up the cataractous lens. Daoud believes the approach has the potential to make cataract surgery in the United States safer and more effective. It could also mean that less-experienced cataract surgeons in the developing world could be trained in the technique and improve their surgical outcomes, he says.

For all of these reasons, Daoud believes the laser merits further, independent investigation.

"All of the studies that have been done on the femtosecond laser have been done overseas, and almost all have been corporate sponsored," says Daoud. "The technology has not been objectively and critically studied."

Daoud anticipates his study, involving 120 patients at

[Dr. Daoud] seems like a brilliant young man with a brilliant past. Those are the types of people we need in research.

— Kay Alchu, trustee, Michael O'Bannon Foundation

Wilmer, will last approximately two years.

"This project is limited in its scope, but it is only the tip of the iceberg, as the technology itself can serve a very important role in the future," says Daoud. "At a time when governmental funding is down, private philanthropy such as the grant from the Michael A. O'Bannon Foundation is vital for continued research and discovery. We are grateful to Ms. Kay Alchu and the foundation for making this research possible. We are optimistic this research will help serve our patients as well as our colleagues around the country and across the world." ■

—Sarah Richards



Evan K. A. Ophth

Jennifer C. Tre M.D.

Phos - For Pip-Tip & Tubes

PIRETTES





Newly minted  
full professors:  
Akpek, Elisseeff,  
and Thorne

# women on the Rise

Once dominated by men, Wilmer now includes many women as junior faculty. What's more, the institute recently reached a milestone of having three female faculty members consecutively appointed to full professor.

By Jennifer Walker  
Photos by Justin Tsucalas

When Wilmer Director Peter McDonnell, MD, began his residency at Wilmer in 1983, “ophthalmology was a man’s world,” he says. Only one female professor was on the faculty; occasionally Wilmer’s class of medical residents would include a woman as well. In the last five years, though, female ophthalmology residents have primarily filled Wilmer’s training program—McDonnell notes that this is rare among top residency programs nationally—and a high percentage of women now make up the junior faculty here.

“In the last nine years, we have trained more women than in the previous 80 years,” McDonnell says. “The days of all men, except for an occasional woman [at Wilmer], are over.”

With this shift, Wilmer has also reached a milestone: Between 2011 and 2013, three female faculty members were consecutively appointed to full professors. Because they specialize in different areas—Jennifer Elisseeff, PhD, the Jules and Doris Stein Professor, is a laboratory scientist; Jennifer Thorne, MD, PhD, Professor of Ophthalmology and Epidemiology, is an epidemiologist and chief of the Division of Ocular Immunology; and Esen Karamursel Akpek, MD, Professor of Ophthalmology and Rheumatology in the Division of Cornea, Cataract, and External Diseases, is a clinician-scientist—these three women are examples of the multiple pathways that junior faculty, irrespective of gender, can take to becoming full professors at Johns Hopkins, McDonnell says.

“Now young women coming to Wilmer can also see these three super-talented women who can serve as both role models and mentors to them,” he adds.

reasons you started this work, whether it be a love of science, working for the students, or trying to make a positive impact on the world,” she says. She also learned a valuable lesson from her father, a professor: Avoid workplace politics. “He was respected for that, I think. So I always try to keep my head down and just work hard,” she says.

That hard work has led Elisseeff to the TTEC, where she engineers tissues that can help promote new tissue growth. Her team is developing synthetic, biological, and synthetic-biological hydrogels to be used as a scaffold where extracellular matrix cells can be combined with synthetic materials to regenerate tissues. She is also working to understand the matrix organization of the cornea, which is the first step in making materials to mimic and repair the tissue. And in the future, she hopes to introduce to the clinical environment a regenerative biomaterial that can aid in reconstruction of the eye.

Elisseeff is also collaborating with Hopkins’ Applied Physics Laboratory on Eye PATCH (Protection and Treatment for Combat Healing), a project funded by the U.S. Army and Medical Research Command to develop more effective ways to treat ocular injuries in soldiers. Her team built a nanofiber membrane to be implanted in a damaged cornea; the membrane will help the wound heal and guide tissue regeneration. Now in the last year of the grant, the team’s final prototypes are headed into pre-clinical testing.

In addition to her research, Elisseeff—who admits that balancing work and family has gotten easier now that her daughter is a teenager—has founded several companies, the most recent of which is Aegeria Soft Tissue. People can lose soft tissue because of cancer, burns, or even the aging process, but so far, this tissue has been hard to reconstruct, she says. Through the company, her team has developed a synthetic soft tissue that will soon be tested in clinical trials.

“Working with patients through the company also feeds back into the lab and helps us do better research and ask the right questions,” she says.



Jennifer Elisseeff, PhD, the Jules and Doris Stein Professor, is a laboratory scientist

## True Grit

**Jennifer Elisseeff**, Jules and Doris Stein Professor and director of the Translational Tissue Engineering Center (TTEC), prefers not to go into detail about any challenges she has faced while building her career, but she does have some advice for women who hit roadblocks in similar fields. “Having some grit helps, as does remembering the

## Fully Focused

Although it is the fifth to sixth leading cause of vision loss in the United States, uveitis—a group of intraocular inflammatory diseases that encompasses about 30 clinical syndromes—is still relatively rare. “There aren’t enough patients to draw data from each of the individual syndromes,” says **Jennifer Thorne**, chief of the Division of Ocular Immunology. “It can also be challenging to obtain funding for rare diseases, such as the [various] uveitis syndromes, which in many cases require study focused specifically on the unique syndrome in order to make real progress.”

Still, Thorne has been fortunate to garner resources to support her research in the epidemiology and clinical outcomes of uveitic syndromes like birdshot chorioretinitis, which causes inflammation in the choroid and retina. Thorne is currently studying optical coherence tomography imaging of the choroid, as well as other monitoring methods, to see if these tools can help doctors more precisely monitor birdshot’s progression (see p. 4).

She is also medical officer for the Multicenter Uveitis Steroid Treatment (MUST) Studies, a research group that developed the first NIH-funded multicenter clinical trial in uveitis to test the effectiveness of two treatments for severe uveitis. The group found that both methods—administering corticosteroids orally or through a capsule surgically implanted in the eye—were successful in improving patients’ vision and decreasing inflammation.

In the next five years, Thorne has a vision of leading more studies about uveitis internationally, especially in Southeast Asia, where populations with uveitis are underserved.

Juggling this variety of responsibilities is common for those who work in academic medicine, Thorne says. Sometimes her schedule can also change because of priorities at home; recently, for example, she skipped a much-anticipated lecture because her 9-year-old child was sick. “Part of [balancing everything] is trying to stay focused on the task at hand,” she adds.

**Jennifer Thorne, MD, PhD, Professor of Ophthalmology and Epidemiology, is an epidemiologist and chief of the Division of Ocular Immunology**



**Esen Karamursel Akpek, MD, Professor of Ophthalmology and Rheumatology in the Division of Cornea, Cataract, and External Diseases, is a clinician-scientist**

## Staying Strong

**Esen Karamursel Akpek**, professor of ophthalmology and rheumatology in the Division of Cornea, Cataract, & External Diseases, has carved out an impressive distinction as a corneal surgeon. She has unique expertise in surgical management of inflammatory eye diseases affecting the cornea. Akpek is an internationally recognized leader in the field and the only surgeon in the tri-state area who regularly performs artificial corneal implantation and ocular surface reconstruction. Artificial corneal surgery is a rare procedure. When Akpek first started doing these procedures in 2004, less than 100 procedures had been performed worldwide. She was the first surgeon on the East Coast to perform the AlphaCor corneal implant.

Artificial corneal surgery is needed when patients have autoimmune diseases attacking their corneas’ surface. Sjögren’s syndrome is one such disease and the most common autoimmune disease in adults. Sjögren’s syndrome manifests itself with dry mouth and dry eye, which leads to opacification of the cornea and vision loss. Although common, Sjögren’s syndrome is frequently “underdiagnosed.” About 90 percent of individuals with this condition are women in their 50s. Importantly, about 5 percent of those with Sjögren’s syndrome develop lymphoma—making appropriate and timely diagnosis vitally important. Akpek’s team discovered that 1 in 10 people with dry eye have this condition. They also outlined some of the clinical clues that might indicate that a dry eye patient has underlying Sjögren’s syndrome.

Reflecting on her various roles—she also directs Wilmer’s Cornea Fellowship program and is medical director of the Eye Bank of Maryland—Akpek, who is a mother of two, ages 19 and 8, half-jokingly says this about work-life balance: “There is no such thing. You have to give up a lot to be successful.” This is especially true for young women who have children early in their careers, she adds. But, if these women are strong and if they—like Akpek—have a good support system and mentors who can guide them, she says, “they’ll survive.” ■



## Lessons in Generosity

For Michelle Smith, Philanthropy is a Family Affair

When real estate developer and philanthropist Robert H. Smith died unexpectedly in 2009, his family was determined to carry on his philanthropic legacy through the Robert H. Smith Family Foundation. Since its inception in 1987, the foundation has supported a number of institutions and programs both in the United States and abroad – including the Robert H. and Clarice Smith Building of the Wilmer Eye Institute.

Recently his daughter Michelle Smith, president of the foundation since 2010, spoke with *Sightline* about her family's philanthropy and its special interest in supporting the work of the Wilmer Eye Institute.

**Q:** What was it about ophthalmology at Wilmer that prompted your parents to donate so generously?

**A:** There are several reasons why my family was particularly interested in supporting research in ophthalmology. My mother is an artist and my father's life's work was also very visual—literally “seeing” how buildings could look and places could be transformed and made more beautiful.

Excellent eyesight is something we personally value and wish to be a reality for everyone. Quite a few years back, my mother met William R. Brody, MD, who retired as president of Johns Hopkins University in 2008, at an event at the University of Maryland, and she was telling him about her mother's macular degeneration. Dr. Brody recommended they go see Wilmer's Morton Goldberg, MD—Joseph E. Green Professor of Ophthalmology, Retina Division, and the former director of Wilmer—which they did. My parents were so impressed with Dr. Goldberg that they wanted to help him with his plans for Wilmer. My father decided to make it happen, and so here we are today. He, with the help of many others, made the dream a reality.

**The atrium of the Robert H. and Clarice Smith Building of the Wilmer Eye Institute.**



**Q:** What is it about the work of Peter J. McDonnell, MD, director and William Holland Wilmer Professor of Ophthalmology, and Justin Hanes, PhD, Lewis J. Ort Professor of Ophthalmology and Director of the Center for Nanomedicine, that has captured your interest?

**A:** This technology is so exciting! To be able to deliver antibiotics in sutures is incredibly helpful to patients, especially once they leave a hospital setting. With the sutures you don't forget when to put in the medicine, you don't have to touch the eyes, which can lead to infections—it's just so cutting edge and really medicine of the future.

**Q:** Your family has an unparalleled level of philanthropy and volunteerism. Could you tell us how that was—and continues to be—fostered as part of the family culture?

**A:** The values we have as a family definitely go back to my grandfather, Papa Charlie. Charles E. Smith always said we needed to align ourselves with organizations that were bigger than we were. He mainly focused on Jewish education and the elderly. My father,

Robert H. Smith, took his father's example and greatly expanded the areas of giving to the arts, medicine, education, and the Founding Fathers, to name a few. My father impressed upon us that we had an obligation to give back. He always said he was a "grateful American," and we needed to show our gratitude in a tangible way. In his opinion, giving your time and ideas were just as important as giving money, so volunteering was highly valued in my family.

**Q:** When you think of your father and what he taught you about business and philanthropy, what are some of the major lessons that come to mind?

**A:** My father was a wonderful teacher who mainly taught by example. He was very enthusiastic about almost everything in life and was always trying to learn new things. He was a true Renaissance man. Seeing his enthusiasm and how passionate he was about his business and philanthropy naturally made me want to be that way. His interests, in all areas, from work to play, made him happy. I knew I wanted to be an engaged philanthropist like he was. We like to

be committed and personally involved in the interests we support. We learn from them and we offer our ideas and talents. It's a huge privilege to be able to contribute in this way.

**Q:** Look into your crystal ball and tell us what you hope are the main achievements of the Robert H. Smith Family Foundation over the next few years.

**A:** I tend not to focus so much on intervals of time in the future. I see the big picture and the fact that the world is fluid and always changing. I prefer a more organic approach to giving that combines continuing my father's work and also seizing upon new ideas that may present themselves. My crystal ball shows the Robert H. Smith Family Foundation continuing to find relevant opportunities that we can feel passionate about and that can make a difference now. I want to remain engaged through our work and, like my father, I plan on having fun doing it. ■

—Interview by Nancy Dunham

This technology is so exciting! To be able to deliver antibiotics in sutures is incredibly helpful to patients, especially once they leave a hospital setting.

—Michelle Smith, on the nanomedicine work of Justin Hanes, PhD



Justin Hanes in the lab with Walter Stark, MD.

**Glaucoma  
researchers on  
the case: Quigley,  
Welsbie, and Pitha**

# So Long to Eye Drops in Glaucoma?



**N**o matter how religiously glaucoma patients monitor their medications, chances are they have trouble adhering to eye drop use. It's not that the patients don't want to save their vision from one of the leading causes of blindness in the United States, it's that the medication schedules are often difficult to follow given their busy lives.

"We have patients who each have three different bottles of drops they must use," says **Harry A. Quigley, MD**, A. Edward Maumenee Professor of Ophthalmology and Director of the Glaucoma Center of Excellence. "Imagine how many times they have to be sure to use the drops. Imagine how many times they have to go to the drugstore."

Research shows that although patients believe they are 95 percent adherent, the average patient takes only 70 percent of daily drops. Now, glaucoma researchers, under the direction of Quigley and Justin Hanes, PhD, Lewis J. Ort Professor and Director of the Center for Nanomedicine, are developing new treatments to lessen that medication burden. One such treatment is an injectable, time-released medication

that would be more effective and have fewer side effects than eye drops and other pharmaceuticals used to manage glaucoma.

Much of that ongoing research is due to a generous gift by Mary Bartkus of New Jersey, a patient of Quigley's. Her respect for him led her to follow his medical research.

"I began to read research papers authored by Dr. Quigley and members of his team and to learn more about the impressive work underway in his lab to develop new therapies to address unmet needs for patients with this serious progressive condition and to improve existing pressure-lowering therapies for glaucoma patients," Bartkus says. "I gave this gift to honor Dr. Quigley and his team for their commitment to excellence in patient care and glaucoma research and to help support that research. Right now my glaucoma is well managed and controlled, but that's not true for all of us."

**Ian Pitha, MD, PhD**, one of the researchers on the team, says that when glaucoma patients don't fully comply with eye drop regimens—a critical component of glaucoma treatment—the damage is often irreparable.

"If a patient misses even one or

two days a week, their glaucoma will get much worse," he says. "Even when patients are confident in what they are doing, many are missing getting the drops in. This treatment would take that concern away."

Other glaucoma research, such as that by **Derek Welsbie, MD, PhD**, includes the use of high-throughput genetic screening, such as functional genomics, to identify the genes responsible for nerve cell death in glaucoma and other neurodegenerative disorders. By identifying these genes, researchers will be able to develop treatments that are better targeted and more effective.

"In all of ophthalmology, this is one of the biggest challenges," Welsbie says. "We should be able to do better for patients...[thanks in large part] to long-term delivery of drugs."

Support by Bartkus and other donors may help glaucoma researchers do just that.

"We know this kind of a controlled release system is feasible," says Quigley. "Thanks to this donor's gift (and anticipated further support), we have been able to hire the researchers and support staff needed to continue this research." ■

—Nancy Dunham

# Improving Early Detection of Amblyopia

Imagine trying to hold toddlers perfectly still while their eyes are examined. That's nearly impossible, of course, and when the examination requires contact lenses placed on their eyes, the scenario becomes even more challenging.

A generous gift by the William E. Cross Foundation has funded the purchase of a video eye tracker that was modified at Wilmer Eye Institute to take the angst out of such examinations; it may allow for the detection of amblyopia—a condition commonly known as “lazy eye” that is responsible for more vision loss in children than all other causes together.

The device has made it possible for **Howard S. Ying, MD, PhD**, and his colleagues to launch a study to screen for amblyopia in young children. “With this research project, we don’t have to ask the child what he or she sees on the eye chart to figure out if an eye is lazy,” says Ying. “The idea is that an eye with amblyopia or vision loss does not move accurately and that tracking these inaccurate eye movements is a sensitive and reliable way to diagnose amblyopia.”

The screener works by capturing images of the pupil and corneal reflex (glint or sparkle from the eye’s surface) from both eyes simultaneously to measure eye movements. Although pediatricians recommend amblyopia screening for toddlers, traditional

methods are not reliable or detect only risk factors for amblyopia, such as unequal refractive error or crossed eyes. With the screening device, researchers can focus on detecting amblyopia itself.

“We really needed a method to quickly and painlessly tell who was affected,” says Ying. “Until we modified the video eye tracker, the only way to precisely measure eye movements was by using wires embedded in a large contact lens. Some children don’t tolerate the contact lens well.”

Ying and his Wilmer team plan to enroll 105 patients for their study, which will add to and benefit from other Wilmer research exploring other facets of amblyopia.

Arthur B. Brisker, a director of the William E. Cross Foundation, first became aware of the work at Wilmer when he was a law clerk for a circuit court judge whose vision was saved by the late Arnall Patz, MD. In the ensuing years, Brisker met others who benefited greatly from their treatment at Wilmer. After Brisker became acquainted with Ying and saw the benefits of his research, it seemed only natural to support the work, he says.

“Little kids can’t really talk to you, and if they can’t communicate [well], it’s difficult to tell what they see,” Brisker says. “This will remove that barrier and allow the doctors to be



Ying: the “link” in a complementary project.

able to move toward remedies.”

Ying says one of the most valuable aspects of the research is that it was first developed from—and now synergistically builds upon—the work of other Wilmer researchers who specialize in eye movements (David Zee, MD), pediatric vision screening (David Guyton, MD), and clinical trials for childhood eye diseases (Michael Repka, MD, PhD).

“I am simply the link that brought all of these areas of expertise together,” Ying says. “This is a very complementary project. If we are successful, a lot of that has to do with the presence of additional research and resources at Wilmer.” ■

—Nancy Dunham

# Exploring the Mysteries of Aging and the Eye



Anticipating the future: editors Scholl, West, and Massof

It's a startling statistic: A child born in the United States after 2000 can reasonably expect to celebrate a 100th birthday. What kind of quality of life can the world's future centenarians expect as they reach triple digits?

To address an important part of that question, a team at Wilmer recently published *Ophthalmology and the Ageing Society* (Springer, 2013). The book—edited by **Hendrik Scholl, MD, MA**; **Sheila West, PhD, PharmD**; and **Robert Massof, PhD**—is the product of two years of intensive research, writing, and editing, and examines the role of aging on the diseases of the eye. The book includes the epidemiology of ophthalmic diseases, and explores the diagnosis, treatment, and quality-of-life considerations for common eye diseases tied directly to aging—such as cataract, macular degeneration, glaucoma, and dry eye.

“The process of aging is fascinating and somehow, perhaps counter-intuitively, human life expectancy continues to grow. This will have serious consequences for

ophthalmology, since the major eye diseases all, preferentially or exclusively, affect the elderly,” Scholl explains, “I looked around for books on the subject and, surprisingly, there were none—zero.”

To complete their transformative work, the editors compiled a list of the world's leading experts on the subject. Fortunately, they didn't have to venture far.

“Fifty percent of the world's expertise is right here at Wilmer,” Scholl says. “We were surrounded by exactly the expertise we needed. That made the work not only easier, but also so much more fun.”

The list of authors, of course, was not restricted to Wilmer faculty, and the remaining authors are drawn from top names in the field from across the globe.

*Ophthalmology and the Ageing Society* is wide-ranging. It opens with a look at the epidemiologic trends affecting disease prevalence globally. It then turns to risk factors and state-of-the-science treatment options, before providing a portrait of day-to-day quality-of-life concerns.

“Consequences such as reduced driving ability and depression often accompany vision impairment in the elderly,” says Massof.

“On a positive note, our understanding and anticipation of these trends through research and planning are bearing fruit. There is evidence of decreasing incidence of blindness in certain areas thanks to better treatments,” West notes.

There remain many questions to be answered, but research into the eye—“the window” to the brain and other parts of the body—could yield answers that hold clues to other diseases. In particular, neurodegeneration in the eye could yield important discoveries for other neurodegenerative diseases, such as Alzheimer's and Parkinson's.

“Solving the challenges of aging in the eye could very well hold the key to solving the mysteries of other common diseases of aging. This book is the first to look at these questions in depth,” says Scholl. ■

—Andy Myers





## The Wilmer Board of Governors Meeting & The Dedication of the Edmund F. and Virginia B. Ball Professorship

J. Fernando Arévalo, MD, FACS,  
Inaugural Recipient

Baltimore, Maryland | November 14, 2013

L to r: Dr. Peter J. McDonnell, Dr. Oly Azar-Arévalo,  
Mr. John Cross, Mrs. Meredith Cross



Johns Hopkins leadership celebrates the dedication of the Ball Professorship. L to r: Dr. Peter J. McDonnell; Dr. J. Fernando Arévalo; Dr. Paul B. Rothman, Dean of the Medical Faculty, Chief Executive Officer, Johns Hopkins Medicine; Mr. Ronald R. Peterson, President of the Johns Hopkins Hospital and Health Systems; Dr. Robert Lieberman, Provost and Senior Vice President, Johns Hopkins University



Mr. George Berry and Dr. Michael Grant



Dr. J. Fernando Arévalo receiving his professorship crystal from Dr. McDonnell.

## The Lions Club Arnall Patz, MD Fellowship Luncheon

Robert H. & Clarice Smith Building & T. Boone Pickens Atrium

September 28, 2013

The Wilmer Eye Institute is grateful to the Arnall Patz, MD Fellows and Lions Vision Research Foundation (LVRF) for their contributions to support the Lions Vision Center at Wilmer and the Arnall Patz, MD Professorship in Low Vision.

Mrs. Barbara McMillion receives one of several honorary Patz Fellowships given at the Patz Fellowship Luncheon with the Lions of Multiple District 22. L to r: Mr. and Mrs. McMillion, Mr. Ted Ladd, LVRF chair, and Dr. Morton Goldberg, Joseph E. Green Professor of Ophthalmology and the former director of the Wilmer Eye Institute.



# A Gift that Works for You and Wilmer

If you are considering ways to fulfill your philanthropic goals for Wilmer while exploring options for income, a Johns Hopkins charitable gift annuity may be a good fit for you.

A charitable gift annuity is a simple contract. In return for your gift of \$10,000 or more in cash or appreciated securities, Johns Hopkins invests the funds and agrees to pay you a set dollar amount each year for the rest of your life. Your annual payment depends on your age when you make your gift, and a portion of the payment is tax-free for most or all of your life.

“Charitable gift annuities are popular for good reasons,” says Anne Doyle, director of gift planning and senior philanthropic advisor for the Johns Hopkins Office of Gift Planning. “They benefit Wilmer’s mission and provide donors with a competitive return on their investment.”

Other advantages include an income tax deduction for a portion of your gift, avoidance of capital gains tax at the time of your gift if your gift is funded with appreciated securities, and payments for up to two beneficiaries, including yourself.

Income beneficiaries must be at least 60 years old for payments to begin, and payments can start immediately or be deferred, which allows for a higher payment rate. (See chart for current immediate payment rates.) At the passing of the last beneficiary, the remaining funds support the area of Wilmer that you select.

When you create a charitable gift annuity, you are welcomed into the Wilmer and Johns Hopkins Legacy Societies, and your gift is counted today in the \$4.5 billion *Rising to the Challenge: The Campaign for Johns Hopkins*. To learn more about whether a charitable gift annuity is right for you, contact the Office of Gift Planning at 410-516-7954 or 800-548-1268, or visit [rising.jhu.edu/giftplanning](http://rising.jhu.edu/giftplanning).

### Charitable Gift Annuity Rates— Immediate Payment

Age	One-Life Rate
90	9.0%
85	7.8%
80	6.8%
75	5.8%
70	5.1%
65	4.7%

Current maximum rates as of July 1, 2013

CGAs require a minimum gift of \$10,000 (cash or securities). Seek advice from a tax professional before entering into a gift annuity agreement. Johns Hopkins CGAs are not available in all states.



WRA Day  
June 13, 2014

WRA at the AAO  
October 18, 2014



## WRA at the Academy of Ophthalmology

New Orleans,  
Louisiana  
November 16, 2013

L to r: Jessica Chang, MD (second-year resident), Amanda Kiely, MD (third-year resident), Meraf Wolle, MD (second-year resident), and Valliammai Muthappan, MD (Wilmer Resident 2010-2013, current cornea fellow at Utah's Moran Eye Center).

## T. Boone Pickens Legacy Celebration

Baltimore, Maryland | October 17, 2013

Texas energy entrepreneur and financier T. Boone Pickens' bequest of \$20 million to the Wilmer Eye Institute will create an endowment to fund a T. Boone Pickens Scholars program, supporting clinician-scientists with promising and innovative ideas for new research avenues.

A video tribute was premiered during the celebration. To view this video please visit: [hopkinsmedicine.org/wilmer/news/T.Boone\\_Pickens\\_gift.html](http://hopkinsmedicine.org/wilmer/news/T.Boone_Pickens_gift.html)



L to r: Mr. T. Boone Pickens, Mrs. and Dr. Walter Stark

*The giving levels shown represent alumni gifts and pledges or pledge payments during Fiscal Year 2013 (July 1, 2012 – June 30, 2013) and Fiscal Year 2014 (July 1, 2013 – January 29, 2014). If this information does not accurately represent your giving, you would like to remain anonymous, or you would like to change how your listing appears, contact the Wilmer Development office.*

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Anonymous\*

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SightLine is published twice a year by the Wilmer Eye Institute at Johns Hopkins.

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**Designer:** Abby Ferretti

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The mission of the Wilmer Eye Institute is to use and develop the finest scientific evidence to promote improved ophthalmic care and the reduction of visual disability in a collaborative environment that combines compassionate patient care, innovative research, and the training of future leaders in ophthalmology and visual sciences.

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