

A PUBLICATION OF EMORY EYE CENTER

# EMORY | eye

2018



*THE SCIENCE OF*  
**Saving Sight**

SPECIAL RESEARCH ISSUE

From Humble Roots 8 Restoring Hope to Refugees 12 Landmark Studies Continue 30



## From the Interim Director | Searching for Cures



Welcome to the 2018 edition of *Emory Eye* magazine, where we explore one of Emory Eye Center's most important areas: research.

The ophthalmology research program grew from humble roots in a small stone house on the Emory University campus to multiple fully equipped basic science laboratories. Thousands of patients visit our Clifton Road clinic each year without necessarily realizing our research team is in the same building, striving to make life better for those affected by vision loss.

Emory Eye Center has been in the forefront of research discoveries and clinical trials for glaucoma, cataract, retinal degeneration, and more. Our basic science research

lab was the first of its kind in the Southeast; over the years we've been an integral player in landmark clinical research trials such as the best way to treat infants with congenital cataract. Today, we're currently a leading center for international gene therapy trials targeting Leber hereditary optic neuropathy (LHON).

Our goal is to make research discoveries that have real-world applications for patients everywhere. You'll meet some of the people who are behind these efforts, including Morton Waitzman, PhD, who was recruited to Emory Eye Center in 1962 to build an ophthalmology research program.

You'll also meet Geoff Broocker, MD, our first full-time residency director who celebrates 30 years on the Emory Eye Center faculty in 2018. Dr. Broocker was the driving force in building our residency program into one of the best in the nation. The program continues to gain attention, as evidenced by our receiving the American Academy of Ophthalmology's Commitment to Advocacy Award in 2018.

The search for a new chair of Ophthalmology and director of Emory Eye Center continues. That person will bring new ideas and fresh commitment to all we do related to research, education, and patient care. We look forward to entering this new phase together.

Thank you for supporting Emory Eye Center and our programs. Because of you, we're impacting lives worldwide and changing how people see the world.

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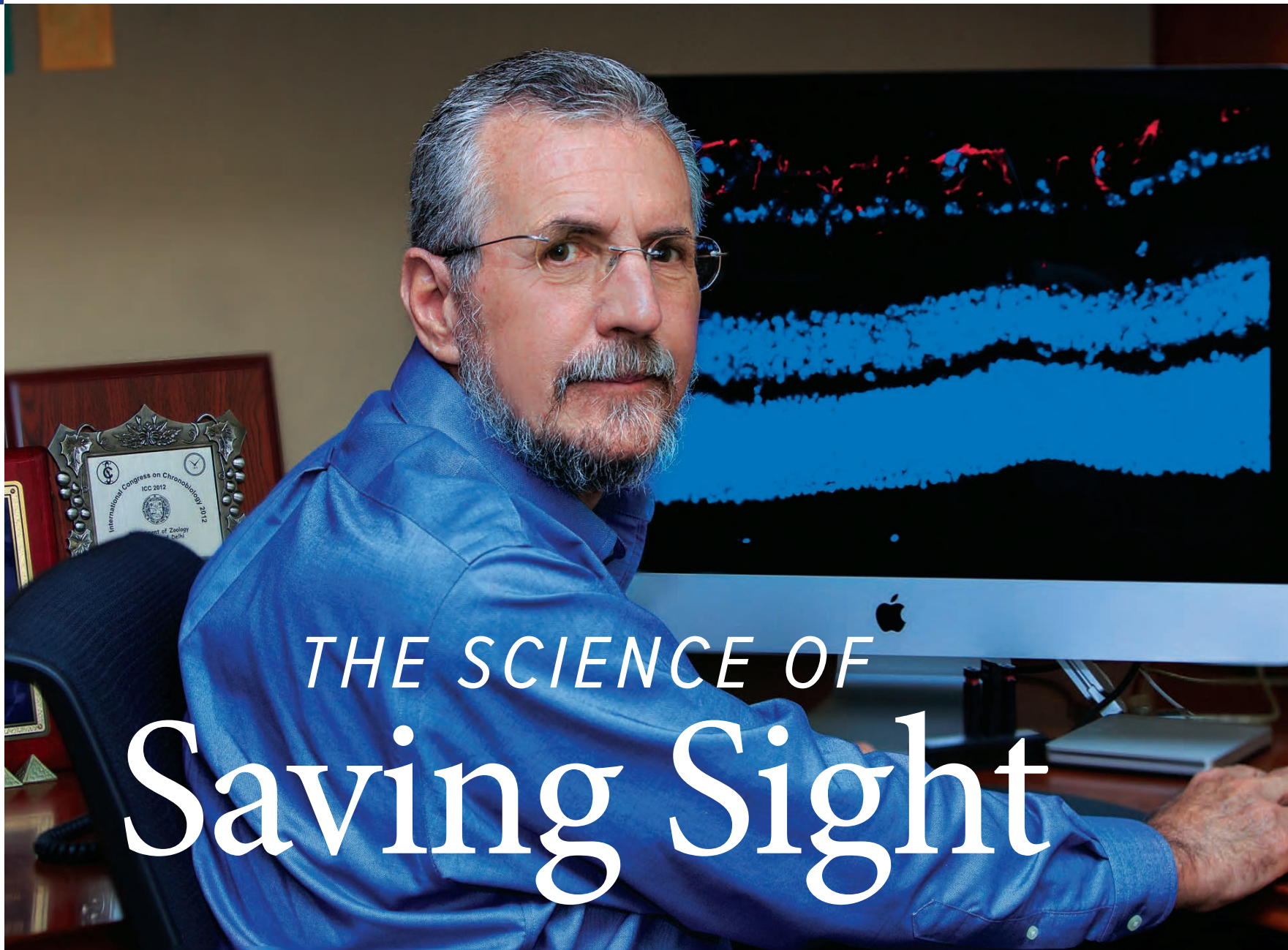
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**Emory Eye Center** *Uncommon knowledge. Uncommon sharing.*





# THE SCIENCE OF Saving Sight

*THE WORLD OF OPHTHALMOLOGY RESEARCH IS A SMALL ONE.*

*So small, in fact, that some of the faculty in Emory Eye Center's basic research department knew—or knew of—each other long before becoming a team.*

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by LEIGH DELOZIER





Far left: P. Michael Iuvone, PhD, director of vision research, studies how to better treat optic nerve trauma.

Left: Hans Grossniklaus, MD, performs surgery on a patient with ocular melanoma.

Below (l): Jeffrey Boatright, PhD, and his team explore causes of retinal degeneration (like AMD) and developing new treatment therapies; (c): Eldon Geisert, PhD, and his team have made breakthroughs in what's known about glaucoma; (r): Research specialist Kevin Donaldson adds to notes about the Nickerson lab's current work.



**“I had been reading Mike’s work in research journals since 1978,” says Jeff Boatright, PhD, referring to Emory Eye Center’s director of vision research Mike Iuvone, PhD.** “That was the major reason I decided to do graduate work at Emory in pharmacology and neurosciences. I was planning to join John Nickerson’s lab at NEI for my post-doctoral training when he was lured to Emory. All I had to do for my new training was walk down Clifton Road to the new lab!”

Nickerson was the first of the current basic research faculty to come to Emory Eye Center, when then-chairman Thomas Aaberg, MD, recruited him from the NIH in 1992. Boatright joined the faculty in 1999, and Iuvone shifted from his dual-focused research in pharmacology and ophthalmology to become director of Emory Eye Center research in 2009. Eldon Geisert, PhD, is the most recent addition, joining the Eye Center in 2014.

These scientists and their teams of

research specialists speak their own language of genomes, neurotropic factors, and molecular mechanisms. And while the acronyms and abbreviations might not make sense to the thousands of patients treated by Emory Eye Center clinicians each year, the work associated with them could lead to life-changing discoveries in the future.

That hope of discovery and where it might lead is what motivates them, even when years might stretch between new milestones.

## “It’s very gratifying to discover new information or make advances in the field that might lead to new therapies.”

– P. Michael Iuvone, PhD, Emory Eye Center’s director of vision research

“What you might find isn’t always as exciting as going through the process,” Nickerson says. “Figuring out how to test a hypothesis is probably the most rewarding thing in science when you do the experiment right. There are always spin-offs at different levels. When you go back and look at what you’ve done you realize you also discovered other important things along the way.”

“It’s very gratifying to come across new information or new advances in the field,” Iuvone adds. “Even the smallest things can contribute to our basic understanding of how the eye works. And that, hopefully, can lead to new therapies.”

The scientists of Emory Eye Center have played a vital role in numerous vision research discoveries over the years. For example:

- Scott Lambert, MD, led the Infant Aphakia Treatment Study (IATS), which showed that contact lenses were better after infant cataract surgery than intraocular lenses (IOLs)
- Dan Martin, MD, led the Comparative Anti-angiogenic Treatment Trial,

which showed that Avastin is essentially as effective as (and less expensive than) Lucentis for treating wet age-related macular degeneration (AMD)

- Hank Edelhauser, PhD, led an R24 grant that created a company currently evaluating microneedle drug delivery to the eye
  - Boatright, Nickerson, and Mabelle Pardue, PhD, discovered that a synthetic version of bear bile (TUDCA), used in Asia for more than 3,000 years to prevent visual disorders, prevents retinal cell death and preserves photoreceptor cell function and structure; their basic science research led to clinical trials
  - Geisert’s research showed that a protein affecting central corneal thickness might also be connected to glaucoma risk
- “I tell people that I don’t work, I learn,” Geisert says. “We have a huge knowledge base within our department and I learn things all the time. Research is an exciting journey of discovery. I’m one of the lucky people to have

that privilege.”

The team learns from each other but also partners with researchers in Atlanta and beyond.

“We collaborate with each other in many ways,” Iuvone says. “We apply for grants together, we work on projects together, the things we’re studying sometimes benefit several of our labs. In some research institutions, people don’t talk to their next-door neighbor because they may be competing with them. That’s not the case here at Emory.”

Collaborations involve researchers at the Atlanta VA Medical Center, Georgia Tech, Morehouse School of Medicine, Georgia State University, and more. They come together as the Atlanta Vision Research Community, a network of top vision research investigators in the greater Atlanta area. The group provides support and scientific expertise for individual, collaborative, and pilot NEI-funded ophthalmology research.

Some of the Emory Eye Center’s most promising work has been in partnership with Mabelle Pardue, PhD,

## Then and now...

**1872**

Abner W. Calhoun, MD, becomes Atlanta Medical College’s first professor of eye and ear



**1940**

L.F. Montgomery ophthalmic pathology lab established with funding from Coca-Cola executive Lafayette Montgomery

**50S AND 60S**

Ophthalmic pathology develops as a specialty

**1953**

Emory University Clinic established, allowing for an ophthalmology clinical research unit

**1962**

Morton Waitzman, PhD, recruited to establish and direct EEC’s basic research department







The Nickerson laboratory studies age-related macular degeneration and myopia in mouse models to understand the origins of these diseases. The lab uses biochemistry, histology, molecular biology, and bioinformatics tools in their work.



**1964**

Laboratory for Eye Research established, the first of its kind in the Southeast

**1980**

NEI selects EEC to direct the PERK study on radial keratotomy

**1985**

Emory Eye Center's current building (Clinic B) opens, including clinic and research space



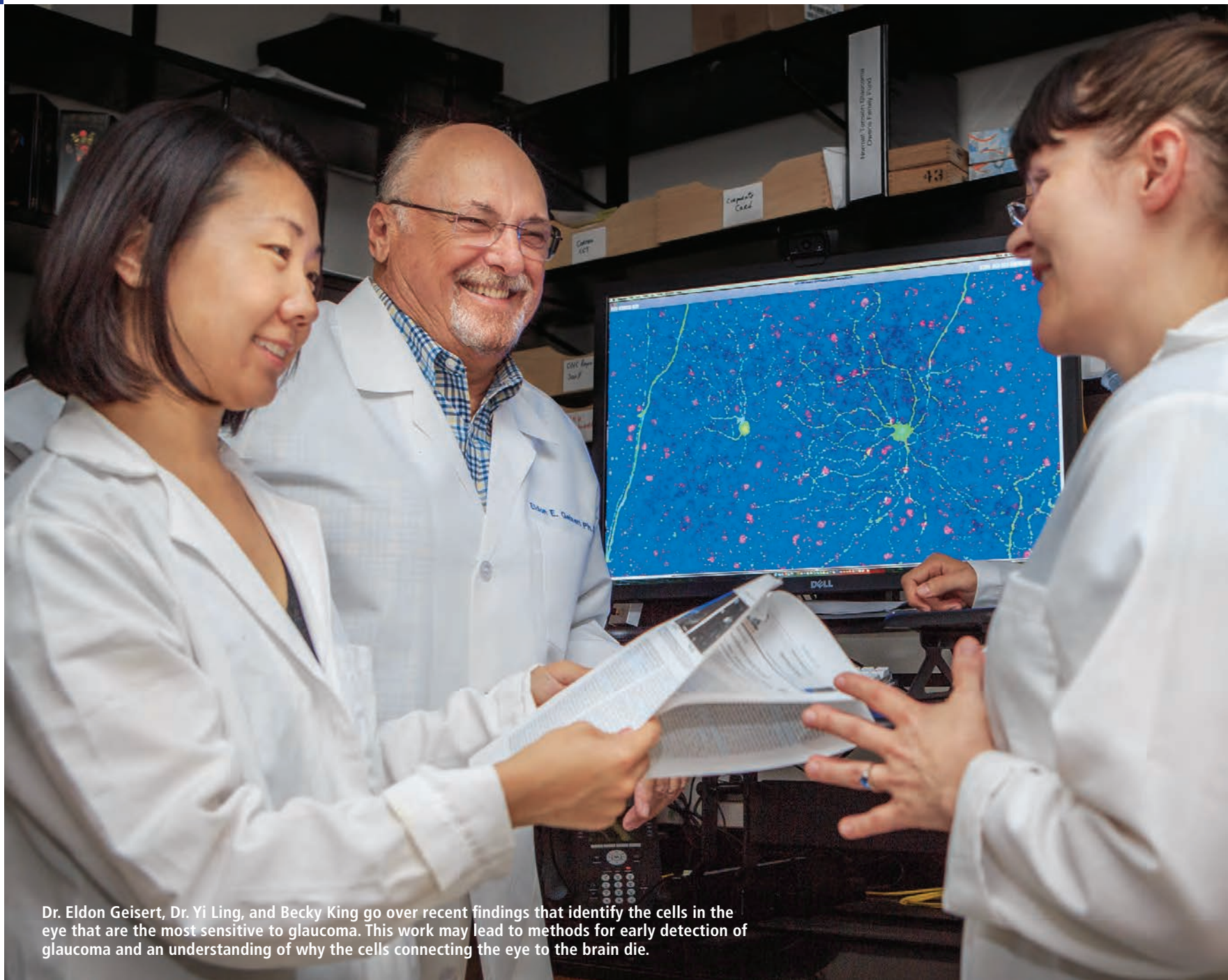
**1986**

Emory Eye Center awarded its first NEI P30 Core Grant for Vision Research

**1995**

EEC researchers are first to publish an electronic, peer-reviewed life sciences journal on the Internet, *Molecular Vision*





Dr. Eldon Geisert, Dr. Yi Ling, and Becky King go over recent findings that identify the cells in the eye that are the most sensitive to glaucoma. This work may lead to methods for early detection of glaucoma and an understanding of why the cells connecting the eye to the brain die.

### 1998

The Foundation Fighting Blindness names EEC a national research center for retinal degenerations

### 2001

EEC reaches 20 consecutive years of NEI funding

### 2002

Results from first AREDS and OHTS clinical research trials announced

### 2005

EEC is lead center for IATS study; clinical study evaluating Optobionics retinal chip begins

### 2006

Five-year R24 NEI grant to study transscleral drug delivery awarded; R. Howard Dobbs, Jr. Foundation gives \$1 million grant to support AMD research

### 2006

EEC publishes that analogs of ursodeoxycholic acid are protective in models of AMD and retinitis pigmentosa; led to an ongoing EEC/INSERM clinical trial for retinal degenerative rhegmatogenous detachment



**“Once I got in a lab, I loved everything about science and discoveries. I’ve never done anything else since then.”**

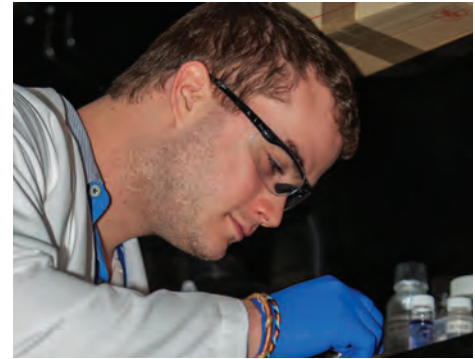
– Eldon Geisert, PhD, Emory Eye Center basic research scientist



The Iuvone lab team has grant support to study myopia, circadian rhythms, and retinal pathology in health and vision.



Hans E. Grossniklaus, MD, MBA, (right) studies ocular melanoma in the L.F. Montgomery Laboratory and also treats patients who have ocular tumors.



Nate Henneman of Dr. Boatright’s lab conducts experiments to test the effects of exercise on preserving vision in mice and humans.

a research scientist at the Atlanta VA Medical Center. One example is the study Pardue and Boatright are conducting with veterans at the Atlanta VA to show connections between mild exercise and lowering the risk of developing AMD.

“Machelle is extremely interested in translating what we learn in the lab to how it works in humans,” Boatright says. “She said years ago that we should work with people at the VA on our studies. She’s been a motivating force behind our partnering on this and other research there.”

Another branch of Emory Eye Cen-

ter’s research department that translates lab findings to clinical care is the L.F. Montgomery Laboratory, established in 1940 to evaluate ocular tissue samples and diagnose conditions. The lab is overseen by Hans Grossniklaus, MD, MBA, an ophthalmologist and pathologist who became EEC’s director of ocular pathology in 1989 and established the department’s clinical ocular oncology and pathology service in 2007.

“The Montgomery Lab is one of the few full-time, accredited, and certified ophthalmic pathology labs in the world,” Grossniklaus says. “Ophthalmologists, otolaryngologists, and plastic

surgeons send us surgical specimens. We study eyes, corneas, orbital tissue, eyelids, ocular cytology specimens, and vitreous.”

Grossniklaus and other Montgomery Lab staff have analyzed more than 70,000 specimens over the years. Research related to these specimens can dovetail with the work of the Eye Center’s other basic scientists.

For example, Grossniklaus discovered how cells involved with new blood vessel growth produce vascular endothelial growth factor (VEGF) in AMD. Iuvone, Boatright, Geisert, and Nickerson also study aspects of AMD:

**2007**  
Ocular oncology and pathology service established

**2008**  
EEC is first U.S. site to conduct Collagen Cross-Linking trial for keratoconus

**2012**  
EEC is first center in Georgia to offer implantable miniature telescope for end-stage AMD

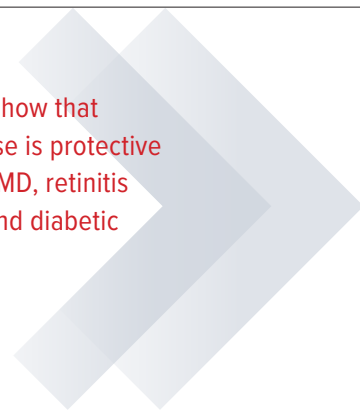


**2013**  
IATS clinical trial results announced

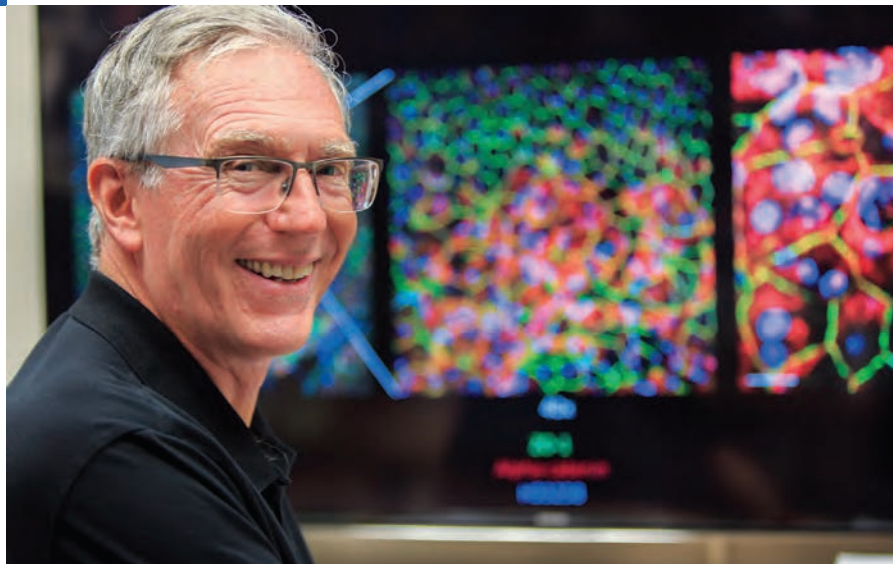
**2014**  
Clinical trials for Argus II retinal prosthesis system for retinitis pigmentosa begin



**2014**  
EEC is first to show that modest exercise is protective in models of AMD, retinitis pigmentosa, and diabetic retinopathy








John Nickerson, PhD, is vice director of vision research for Emory Eye Center. He studies retinal degenerations and the genetics behind them, along with pharmacological or gene therapy approaches to slowing or preventing degeneration.

how gene therapy, circadian rhythms, and cell repair can help pinpoint or stop AMD in its early stages.

Whether they're delving into AMD and other retinal diseases, corneal issues, glaucoma, or other conditions, the researchers know their work can impact generations.

"There are so many different forms of blindness or visual impairment, and many of the treatments are limited," Nickerson says. "We may never say we've found the best treatment possible, but we can use what resources and capabilities we have to move in that direction."

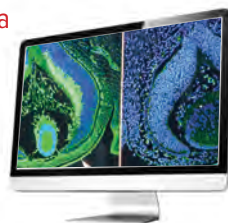
"I never imagined we would reach this point of discovery during my lifetime," Geisert adds. "Things we've learned in the lab are moving toward being applied in clinical situations. It's an exciting time for us and the people we want to help." 

## 2016

EEC researchers receive \$3 million, five-year NEI Core Grant for Vision Research; this grant has been continuously funded since 1986

## 2018

EEC publishes research showing connection between central corneal thickness and glaucoma risk



# From humble roots to world-renowned

**Emory Eye Center's research department began in a simple stone house on the Emory campus with a scientist who became interested in blindness because a class filled a gap in his high school schedule.**

The man is Morton Waitzman, PhD. The class was an elective designed to provide rehabilitation services for visually impaired students.

"It was my junior year, and I needed one

more class to fill my schedule," Waitzman says. "I started out reading to blind students but soon became enmeshed in anything that might help them."



Waitzman learned to read and write Braille and

to use a Braille typewriter. He became assistant Scout master for a Boy Scout troop of visually impaired students and later learned to help train seeing eye dogs.

"Helping those people became the most important thing in my life," he says. "I knew that I wanted to become involved with research and solve all the problems of blindness."

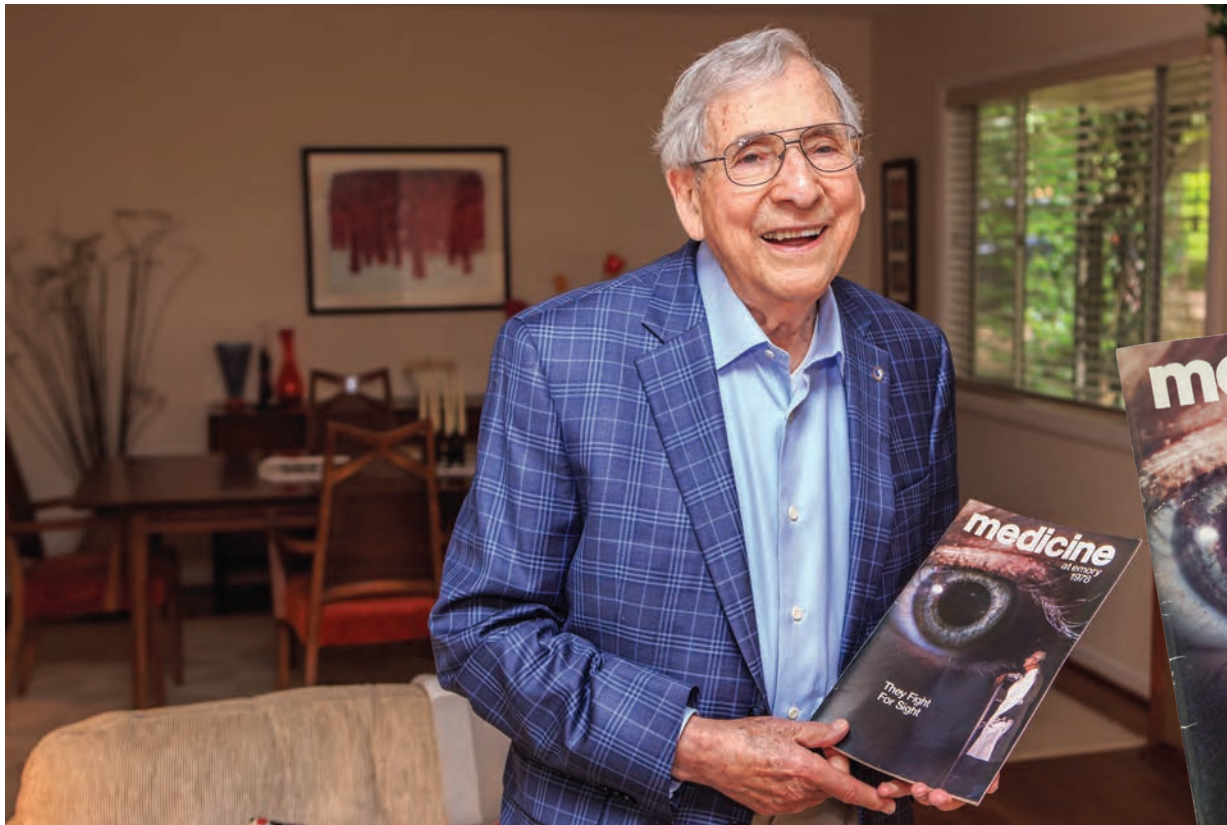
Serving in the Army during World War II, landing on the beaches of Normandy on D Day, and fighting his way across Europe postponed Waitzman's future work, but didn't make him stray from his goal.

"One thing kept me going during the war," he says. "I was going to school and was going to do a wonderful thing for the blind people of the world. I had to survive and go to school."

He did, attending college on the GI Bill. He followed with graduate school at the University of Illinois, where he earned his PhD in physiology with minors in nutrition and biochemistry.

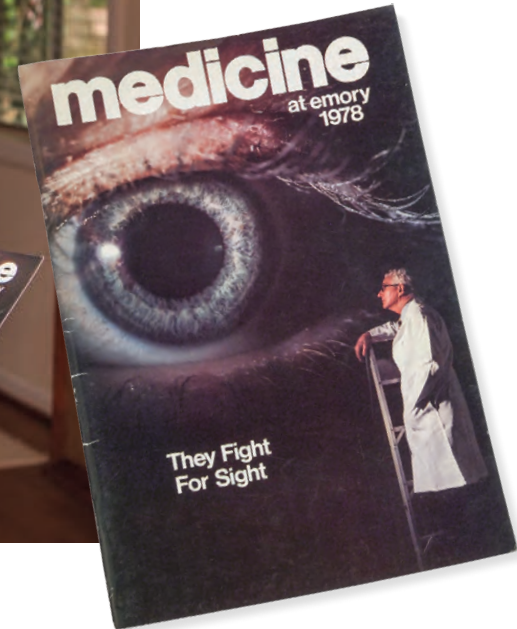
"I knew that if I wanted to conduct research related to blindness, I needed to know the basics





Far left: Morton Waitzman, PhD, when he came to Emory in 1962.

Left: Waitzman in his home today. He keeps in touch with Emory Eye Center faculty and is still interested in the department's programs and research.



of biochemistry and physiology. That's why I started there."

Waitzman was a professor and director of ophthalmology research at Case-Western Reserve University when he was contacted about a new opportunity at Emory. F. Phinizy Calhoun, Jr., MD, chairman of ophthalmology at Emory, had gotten approval to begin an ophthalmology research program. When Gerhard Brecher, chairman of Emory's physiology department, learned of the plan, he knew Waitzman would be perfect for the job.

"I was professional friends with Dr. Brecher because of my work in physiology," Waitzman says. "He recommended me for the position. Emory offered me the opportunity to develop a program of research for ophthalmology and hold tenured academic appointments in both ophthalmology and physiology. My family and I agreed this would be the right place for me at that stage in my career."

Waitzman joined Emory in June 1962.

"We faced the challenge of starting at the very beginning—including where the department would be housed," he says. Calhoun and Arthur Richardson, MD, dean of the School of Medicine, described three possible locations to Waitzman. He chose a solid granite building that he knew had space for

everything they would need for biological research.


Work to transform the Stone House, as it was called, to a research facility began soon after Waitzman arrived in Atlanta. Waitzman also helped recruit scientists to build the research team.

*“Even in those early days, we were conducting pioneering vision research,” he says. “Our first research studying prostaglandins of the eye was done at the Stone House. We expanded to various disciplines and studied glaucoma, diabetic retinopathy, cataracts, and cornea transplants. We made a mark.”*

"Even in those early days, we were conducting pioneering vision research," he says. "Our first research studying prostaglandins of the eye was done at the Stone House. We expanded to various disciplines and studied glaucoma, diabetic retinopathy, cataracts, cornea transplants. We made a mark."

Waitzman made another mark as the ophthalmology department expanded and received funding for a new building. He helped design what became Clinic B on the Emory University campus.

Even after retiring from Emory in 1991, Waitzman spent years still serving the ophthalmology department at Grady Hospital in numerous capacities.

As he reflects on all he and other vision researchers have done, Waitzman is content. "I derive great satisfaction in knowing that during my career I have contributed to the advancement in treatments of various eye diseases." 



## *Clinical trials:*

# Taking research to the next level

When people hear the word “research” they might imagine scientists in lab coats surrounded by beakers, microscopes, and specialized equipment. That’s accurate for basic research science, but the Emory Eye Center research team includes another important branch: clinical trials.

Clinical research aims to further medical knowledge by studying people within defined parameters. A clinical research trial uses volunteers (participants) to try and determine whether a medical strategy, treatment, or device is safe for human use. Studies might also help show which medical approaches prove most effective to treat specific conditions or groups of people.

Emory Eye Center’s clinical trials program has a longstanding national reputation for highly ethical clinical research, accurate and complete data, and the ability to recruit appropriate study participants. Several EEC clinical trials coordinators share about their work.

### **What does a clinical research coordinator do?**

We manage the operational and technical aspects of research on experimental drugs, devices, or procedures that are meant to treat people with specific eye disorders that affect vision. Some clinical trials don’t involve medications but aim to answer important questions. For example, a current pediatric ophthalmology trial studies whether a certain computer game helps amblyopia (poor vision in one eye).

### **Who participates in studies?**

We carefully screen potential participants based on detailed guidelines (age, medical history, conditions that are required or excluded, etc.). Following clear protocol determines whether the trial works in that ideal population.

No one is part of a study without their personal consent. If we think someone qualifies for the study, we will discuss the drug or procedure, the protocol, the length of time the study lasts, the visits required, the potential side effects, etc. We want to be sure all their questions are answered before they sign up for the study. We also make it clear that participation is voluntary. If they are not interested, they may continue to get standard-of-care treatment. If they enroll in the trial and then change their mind, they are free to leave the trial at any time. If the doctor sees a reason a person should be withdrawn from the study, they are withdrawn. Throughout the process, the person is more important than the study.

### **How are studies regulated?**

Conducting a clinical trial is not and should not be easy. It follows a strict set of rules to establish efficacy and promote safe medical practice.

If the protocol changes, the consent form is revised and discussed with the patient at the next visit. If they don’t like the change, they can exit the study. If they would like to continue, they sign and continue after we answer all of their questions.

The study sponsor sends people to monitor our work and ensure we are doing things correctly. They verify that the information in the patient’s chart matches what was sent to them, that everything is documented correctly, and that there are no data entry errors. Representatives from Emory’s Office of Compliance also may check our documents.

### **Why do studies use placebos?**

Participants take different drugs or a placebo for comparison purposes. If there is an approved medication for the condition being tested, some of the participants will receive the already-approved drug and some will receive the new one being tested. If there is not already an approved treatment, participants receive either the test drug or a placebo. When the study concludes, the groups can be compared without bias to determine if one has better results than the other.




### What's one thing about clinical research you'd like people to know?

I truly believe that people who participate in clinical trials often do better than those who don't. With the additional testing that a study trial requires, we learn more about their individual disease process. The participant in a clinical trial has multiple health care professionals involved in their care. That helps the individual patient.

### What do you enjoy most about your work?

Participating in cutting-edge scientific discovery is amazing. It's exciting to work on a drug trial that proves to be effective; but even when it's proven not to be effective, we've gained information and that's important.

We have the opportunity to build extraordinary relationships with patients who may have progressive or devastating vision loss and to whom we can offer some hope. Over the years of coordinating clinical trials, we've made a difference in many individuals' care by offering treatments that have allowed them to see better or have allowed them to avoid further vision loss.

**Learn more:** Emory Eye Center is enrolling participants in clinical trials for cornea, glaucoma, neuro-ophthalmology, ocular oncology/pathology, oculoplastics, pediatric ophthalmology, and retina. Visit [eyecenter.emory.edu](http://eyecenter.emory.edu) and click on "Clinical Trials" for information. 

## Stepping into the breach

### Volunteering for the common good

*The volunteering spirit of patients who generously participate in clinical trials can help make better vision a possibility for many people who desperately need it. Today's clinical trials can lead to new standards of care in the future. A few people involved with clinical trials at Emory Eye Center share their perspectives.*

**"I know that research can change the future. I'm excited about all that Emory is doing in vision research."**

—Mary Wiley, clinical trials participant

**"Participating in a trial might not change anything for me, but what they learn through the study could help others."**

—Kathleen Hanks, clinical trials participant

**"It is extremely gratifying to work with our volunteer study patient population whose sight often benefits as the result of the controlled exposure to these new investigative therapies."**

—Alcides Fernandes Filho, MD, associate program director of clinical trials,  
Emory Eye Center



# Restoring vision and hope to refugees

**In** the summer of 2016, when Emory Eye Center cornea specialist Soroosh Behshad, MD, MPH, kept seeing news stories and social media posts about the hardships and trials of Syrian refugees (particularly children), he knew he wanted to use his career as an ophthalmologist to effect a positive change not only in his own community, but internationally as well. Although the Emory faculty member had no connection to Syria, he has always been interested in refugee health care.

“Unfortunately, the situation within Syria is too dangerous to travel there, so my initial involvement was based on using technology to make an impact,” he says. By August 2016, he began offering

tele-ophthalmology consultations to first responders in Syria and consultation for management of difficult cases (specifically ocular trauma) to hospitals in the Syrian conflict zone.



Soroosh Behshad, MD, MPH, checks in with a patient after her successful surgery.

He continued to work with non-governmental organizations who were providing care to Syrian refugees residing in neighboring countries and then began collaborating with the Syrian American







**While in Jordan, Behshad and Weil see hundreds of patients each day over a week-long period and perform 20 to 30 eye surgeries per day.**

Above: (top left) Natalie Weil, MD, reassures a patient prior to surgery, then (right) shares a laugh with another young patient at the Za'atari refugee camp.

Left: The Za'atari camp is home to more than 80,000 Syrian refugees.





Natalie Weil, MD, performs eye surgery on a refugee in the Za'atari camp.



Children of all ages roam among the shelters.

Medical Society (SAMS) to set up ophthalmological care for Syrian refugees living in refugee camps in Jordan. Since January 2017, he has traveled every few months to Jordan to provide surgical and clinical eye care for refugees.

Initially, he started by providing cataract surgery, eye injections, laser procedures, and distributing glasses. After the first trip, Behshad noticed a large incidence of amblyopia (sometimes known as “lazy eye”) in the children. Untreated amblyopia in children can lead to irreversible blindness. Normally, the condition is diagnosed during routine vision screenings in school. Most of the refugee children were not in school because they worked to help support their families, so the blindness caused by amblyopia was being missed.

Behshad then collaborated with Emory Eye Center pediatric ophthalmologist Natalie Weil, MD, to establish a program to screen and treat pediatric amblyopia in the refugee camps. They work directly with local ophthalmologists, residents, and medical students to provide the services.

“Working in conjunction with pediatricians allows us to reach more patients,” Weil says. “After identifying patients who failed a vision screening, we complete a full eye exam and provide patients with the appropriate glasses or patching, if needed. We’ve been fortunate to work with Patch Pals, a group that has donated reusable cloth

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**“Some of the children who were born in the camp have never had access to an eye doctor.”** —NATALIE WEIL, MD

---

patches for all the refugee children who need amblyopia therapy.”

Vision screenings also have identified patients with inherited retinal dystrophies, juvenile cataracts, active ophthalmic infections, congenital eye-related conditions, and strabismus.

“Many have serious eye conditions,” Weil says, “especially genetic conditions that are inherited.”

In addition to treating patients,

Behshad and Weil use their visits to educate Syrian providers. In January 2018 they brought three of the four remaining ophthalmologists out of Syria for further education and training.

“Our goal is to care for the patients but to also do training,” Behshad says. “We want to teach their doctors how to provide care and support themselves so their community isn’t always dependent on us.”

The numbers of people needing care are staggering. Za’atari, the largest Syrian refugee camp, is home to more than 80,000 refugees, more than half of whom are children. The camp stretches over three square miles of desert and qualifies as the fourth largest city in Jordan. It is gradually evolving into a permanent settlement, with residents shifting from living in tents to calling shelters made from corrugated metal containers “home.”

Behshad and Weil have traveled to Za’atari several times and have provided eye exams or surgery for almost 10% of the refugees in the camp. While there, they work closely with other inter-



national nonprofit groups, including Doctors Without Borders/Medecins Sans Frontieres and UNHCR (the U.N. Refugee Agency), who refer patients to the EMORY/SAMS team for surgical care. The Emory team established a network of local doctors to ensure all patients are followed by an ophthalmologist after their surgeries.

When in Jordan, Behshad and Weil see hundreds of patients each day over a week-long period and perform between 20 to 30 eye surgeries per day. Their biggest reward comes from seeing what a life-changing difference care can make for some patients.

Weil recalls, “During my first trip I met a young girl named Bushra, who had developed dense white cataracts in both eyes and had very little vision. She was also non-verbal and unable to walk by herself. After much discussion with her family, we decided to remove the cataract in hopes that she would gain some vision (which she did). Giving her family some small amount of hope brought her mother to tears, and touched all of us in the room.”

Behshad tells the story of Hajjeh, a mother displaced by the Syrian war who relocated to Za’atari to keep her family safe.

“She was permanently blind in her right eye due to complications from cataract surgery performed before the war,” he says. “She was fearful from this experience so had avoided surgery to correct the cataract in her left eye. The cataract had progressed to the point that she was legally blind in that left eye as well. She was dependent on a cane and her family to navigate around her tent and was unable to perform basic daily activities without assistance. She reluctantly agreed to proceed with the cataract surgery. Her vision was restored to 20/20 in that eye and for the




Soroosh Behshad, MD, MPH, stops for some selfie fun with two clinic patients in the Za’atari camp.

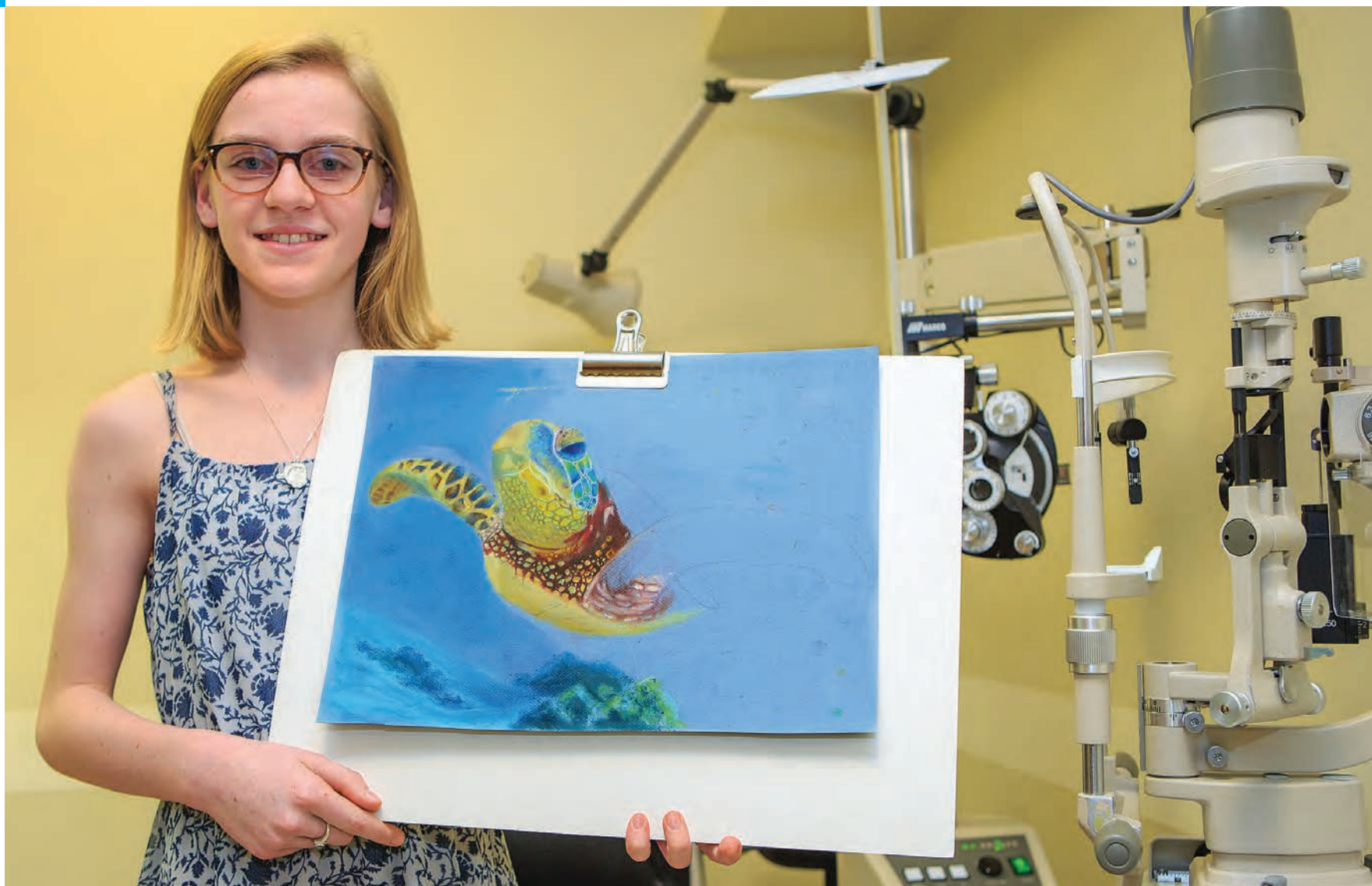
first time in years she was able to walk independently. Her smile and happiness were contagious.”

Examples such as Bushra and Hajjeh compel Behshad and Weil to continue working with—and for—the refugees. They plan to continue this work by expanding the vision screening program by training local health workers on the ground to screen more children—which can prevent more children from going blind. They also are conducting re-

search to examine ways to provide better quality, targeted care to the refugee population.

“Many patients walk into the clinic dependent on their family members to help them navigate due to their poor vision,” Behshad says. “The next day they’re able to get around safely because their vision is restored. That, and the huge smiles on their faces when they learn we’ve traveled all the way from America to treat them, is priceless.” 





# SEEING THE WORLD HER WAY

**13-YEAR-OLD RYLIE JACOBS IS AN ARTIST.** Her favorite medium is chalk pastels, which she shades and blends with her fingers to become beautiful representations of nature. No one who looks at her artwork would ever guess that she was born with cataracts and has virtually no depth perception.

Bilateral infantile cataracts are so rare that many pediatricians might never see them in a patient. Fortunately for Rylie, her pediatrician near Atlanta diagnosed Rylie during her newborn screening. She was soon referred to Scott Lambert, MD, a pediatric ophthalmologist on the Emory Eye Center faculty at the time.



**“NEITHER OF US WEARS GLASSES OR CONTACTS,” GINNY SAYS. “WE’D NEVER HELD A CONTACT LENS, LET ALONE PUT ONE IN AN EYE. WE WERE TERRIFIED TO DO IT WITH A BABY.”**

“Dr. Lambert removed the cataracts when Rylie was a month old,” her mother Ginny says. “My husband [Terry] and I read anything we could about what her future might hold. It was scary because there wasn’t much information for parents to learn from—it’s still not easy to find.”

Rylie showed early signs that she could see light after the cataracts were removed. “She would jump when the flash on the camera would go off, so we knew she wasn’t completely blind,” Ginny says. “We held onto the hope that things would be okay.”

When patients as young as Rylie have cataract surgery, the best option often is a specialized contact lens. Rylie was fitted with her first contacts when she was a month old—such tiny lenses that Terry’s fingers were too large to insert them in her eyes.

“Neither of us wears glasses or contacts,” Ginny says. “We’d never held a contact lens, let alone put one in an eye. We were terrified to do it with a baby.”

They learned, and dealing with Rylie’s contacts became part of their everyday routine. Ginny would wake Rylie up, insert the contacts, and put her back in her crib before leaving for work. “She didn’t need to sleep in the contacts

all night, but it was okay for a couple of hours. Rylie got so used to it that she’d go right back to sleep.”

One morning when Rylie was about six months old, Ginny noticed that her right eye was enlarged. Lambert thought it could be caused by high eye pressure and referred Rylie to Allen Beck, MD, one of Emory Eye Center’s glaucoma specialists.

Tests showed that Rylie had high intraocular pressure (IOP), but not glau-

coma. Daily eye drops returned the pressure to normal. Keeping a check on the pressure meant examining her eyes under general anesthesia at Children’s Hospital of Atlanta at Egleston several times a year.

“You can’t do the ‘blowing air’ test to check pressure in infants because they move and can’t keep their eyes open,” Ginny explains. “A baby has to be put to sleep. The procedure only took Dr. Beck a few minutes, but we’d be at the hospital most of the day because of the anesthesia.”

As Rylie grew older, Ginny became a self-professed “CSI mom,” adept at searching for Rylie’s contacts whenever one was lost. “We didn’t want to keep her from doing things because we were worried about losing contacts,” she says, “but losing them was part of life when she was so young. We lost five in one month when she began to crawl.”

Rylie’s contacts are color coded (left is green, right is blue), but that doesn’t always make them easy to find. Terry laughs about a time when he surprised everyone by finding one in the pool.

“We were at our community pool one evening just after dark and Rylie told us she’d lost a contact,” he says. “She showed us where she’d been playing so I used a pair of the kids’ goggles and jumped in. After holding my breath for about 30 seconds I found it in the corner of the pool. No one believed me until I showed them the contact between my fingers.”

A whole new world opened for Rylie when she turned one and Lambert prescribed glasses. The contacts provided distance vision; the glasses allowed Rylie to focus up-close.

“We thought she’d never keep the glasses on because she was so young,” Ginny says. “Dr. Lambert said she wouldn’t want to take them off because she could see. He was right.”

Within a year of her wearing glasses, Ginny and Terry began to notice Rylie’s aptitude for art. Preschool and elementary teachers also noticed, and encouraged them to enroll Rylie in art classes. She began her first drawing class at age six and was soon displaying her work in local art shows. She’s won multiple awards, even reaching a state-level competition for one of her loggerhead turtle pieces.

“I like using chalk pastels because they blend really well,” Rylie says. “I keep a folder of pictures that give me ideas.”



Rylie with Allen Beck, MD, who has treated her high eye pressure since she was an infant.

*Continued on page 36*



## Sharing knowledge and treatment worldwide

Emory Eye Center faculty, staff, and trainees work year-round to diagnose and treat visual impairment through a range of programs in Georgia and internationally. Here's the latest on how EEC programs are making an impact across multiple fronts.

### LEARNING FROM EBOLA VIRUS DISEASE SURVIVORS

Steven Yeh, MD, Jessica Shantha, MD, and others have worked in Sierra Leone since 2015 to screen and treat Ebola virus disease (EVD) survivors for vision-threatening uveitis, an inflammatory condition of the eye. As some of the first ophthalmologists to work with these patients after the 2014 epidemic, their research has helped set treatment protocols for EVD survivors worldwide.

Their most recent visits focused on examining Ebola survivors and close contacts (often children orphaned by EVD) to assess ocular complications and the impact of vision loss on quality of life and mental health. This phase of their work was funded by a Marcus Foundation Combatting Childhood Illness Seed Grant through the Emory Global Health Institute/Marcus Foundation. EEC faculty collaborated with Morehouse School of Medicine.

“With the many children who have been orphaned by Ebola, this investigation was needed to better understand childhood vision impairment, blindness, and mental health in this at-risk population,” Yeh says. “Our team from Emory Eye Center is privileged to continue these endeavors with our colleagues and friends from Sierra Leone.”

### EXPOSING TRAINEES TO GLOBAL HEALTH ISSUES

Emory's Global Health Scholars Residency Program gives residents and fellows an opportunity to gain knowledge and practical experience in multiple areas of global health. The year-long program includes classes, lectures, and other study at Emory as well as a clinical rotation in Addis Ababa, Ethiopia. Emory Eye Center's 2017/2018 participating resident, Zach Balest, MD,



worked in the Ethiopian clinic alongside EEC's global ophthalmology fellow Fran Wu, MD, MPH, and others.

Pediatric ophthalmologist Phoebe Lenhart, MD, was Emory Eye Center's faculty partner for Balest's trip. She, Balest, and orthoptist Obinna Uzoho taught ophthalmology residents, saw patients, and led group teaching discussions about patient cases.

"Our goal was to help ophthalmology residents at the University of Addis Ababa become more comfortable examining children and teach them how to gather important information from patient visits," Lenhart says. "It's easy to forget how fortunate we are in the U.S. to learn and practice our medical skills in a relatively stable environment with a relative abundance of resources. It's exciting to share skills that can help develop pediatric eye care on a global basis. It's just as important for us to learn things from practitioners working in other countries and environments that are different from our own. It puts things in perspective."

### TEAMING UP TO FIGHT RETINOBLASTOMA

Retinoblastoma (RB), the most common form of childhood ocular cancer, is often treatable and even curable in the U.S. but not in other parts of the world. Ethiopia is one developing country with a high infant mortality rate from RB. EEC faculty (including Jacquelyn O'Banion, MD, Baker Hubbard, MD, and Hans Grossniklaus, MD) and Ethiopian ophthalmologists and pathologists organized and hosted a symposium about RB in May 2018.

"The conference was intended to focus on getting these children the care they need and decreasing the RB mortality rate in Ethiopia," Grossniklaus



Top: Young Ebola survivors had eye exams and were enrolled in a pediatric study to assess their quality of life and other health issues.

Center: The Eye Bank of Ethiopia, the first cornea transplant facility in the country, celebrated 15 years of service in 2018.

Bottom: Fran Wu, MD, MPH, Zach Balast, MD, and orthoptist Obinna Uzoho study a patient's test results in the Addis Ababa clinic.

explains. "We developed teams to work in different areas to keep moving forward."


During their visit, Grossniklaus and others visited the Ethiopian version of Ronald McDonald House, where children who have been diagnosed with cancer are able to stay free of charge with their families. "The families and children thought we were heroes," he says, "but they're the real heroes. They are inspirational to all of us working on this project."

### PREPARING STUDENTS FOR CERTIFICATION EXAMS

Emory Eye Center (in partnership with Himalayan Cataract Project) hosted the first-ever International Council of Ophthalmology (ICO) review course in Ethiopia in 2018. The exam assesses the knowledge of graduating ophthalmologists worldwide much like the American Board of Ophthalmology does in the U.S.

Wu created a curriculum and recruited Ethiopian and international lecturers to teach basic sciences, optics, and refraction to prepare residents for the international exam.

"Improving the quality of eye care begins with residents," says O'Banion. "Currently, there are more residents in Ethiopia than ophthalmologists to train them, so most of their learning is self-guided. By helping develop curriculum and enhancing residents' success in passing the ICO exam we're creating high-quality eye care professionals who are on par with those trained in top institutions across the globe."

Approximately 60 residents from throughout Ethiopia attended the course. Their test results were excellent, with a much higher pass rate in 2018 than in 2017. 



Kathleen Hanks and her sons, Anthony and Sidney, display three of her paintings.

## *HOLDING ONTO THE STARS*

When Kathleen Hanks woke one morning with blurry vision, she blamed it on being tired and not getting enough sleep. But the blurriness continued, leading her to see an eye doctor who prescribed glasses and hard contact lenses.

“I tried multiple things, but none of them helped,” she says today.  
“I gave up for a while.”

Hanks’s situation began to improve when she was later referred to Emory Eye Center’s director of neuro-ophthalmology services, Nancy J. Newman, MD. Newman diagnosed Hanks with Leber hereditary optic neuropathy (LHON), a form of vision loss that usually affects both eyes within weeks or months of each other. Newman invited

Hanks to consider participating in the Eye Center’s first-ever genetics therapy trial for patients with LHON.

Study participants receive a single injection in a randomly assigned eye. Hanks received her injection in September 2016. “I decided to do it, and having an injection in my eye wasn’t as bad as I had expected,” she says.



“They numbed it so much beforehand that it didn’t hurt.”

Hanks returns to Emory Eye Center every six months for Newman to check her vision. “They hope the medicine might transfer to the other eye,” Hanks says, “but aren’t sure yet if that really happens. I think the injection might have made my vision a bit better or might have stabilized it, but I don’t want to get my hopes up.”

Hanks is considered legally blind but manages her day-to-day life better than many people would expect. “I can’t drive, but I can still cook and clean and go to the store,” she says. “I can’t see far away and can’t see faces unless they’re really, really close. But I manage.”

Her sons Sidney and Anthony help however they can, including with one of her favorite pastimes: painting.

“I’ve always loved art but stopped painting when I lost my vision,” Hanks says. “I would say ‘I used to be an artist,’ but then I decided that I can still be one.”

She paints with oils because she can take her time adjusting things before everything dries. “Anthony helps me with the colors,” she says. “He puts the paints on the palette and tells me where the different colors are.”


“I got paint all over myself the first time I tried,” she laughs, “but I kept doing it. So many things have changed in the past three years, but I didn’t want to give up art. Painting makes me happy. It gets my mind off my vision loss.”

Another expression of art that makes Hanks happy is her tattoos, especially the scattering of tiny stars near her hairline. “I missed seeing the stars, so I

decided to get the tattoo. Now I can always see them if I look close enough.”

Lindy DuBois, one of the LHON study coordinators, has been impressed with the initiative Hanks has displayed and the functional progress she has made.

“Kathleen is amazing,” DuBois says. “In the face of her disability, she has found ways to manage her household as a single parent and do what she needs. She uses

social media to counsel and help others affected by LHON, and seeks outside resources to help herself. And her artistry! When she texted me a photo of the first painting she did this year, I was blown away by her talent and the power of the picture itself. She is an inspiration.” 



**Nancy J. Newman, MD, is principal investigator for the first-ever genetics therapy trial at Emory Eye Center.**

## What is LHON?

Blurry or cloudy vision usually is the first symptom of LHON (Leber hereditary optic neuropathy). The problem might begin in one eye or in both simultaneously. If vision loss starts in one eye, it usually affects the other eye within weeks or months. Although vision loss can progress over one or two years, most people are severely impaired by three or four months after the original onset.

LHON mainly affects central vision, which is needed for everyday tasks such as reading, driving, and recognizing faces. People with LHON also experience a severe loss of visual acuity (sharpness) and color vision. Gene therapy treatment attempts to correct the genetic mutation that causes vision loss from LHON.

# 30 years and counting: From boredom to building an educational mainstay

GEOFF BROOCKER, MD, THOUGHT HE WANTED TO BE A VETERINARIAN, OR MAYBE A CHEMISTRY PROFESSOR. What he became, thanks to a one-week elective in medical school, was an ophthalmologist and legendary educator.

“I was in private practice for 5½ years and was bored,” Broocker says today. “I was teaching my staff and teaching in the community, and loved it. I felt that the business of medicine was superseding the practice of medicine and wanted a change.”





## “Dr. Brocker put Emory and Grady on the map as a premier residency training program.” Yousuf Khalifa, MD, chief of ophthalmology, Grady Eye Center

A close friend at Bascom Palmer Eye Institute encouraged Brocker’s interest in education. He also helped connect Brocker with Emory faculty when Tom Aaberg, Sr., MD, became ophthalmology chairman in January 1988.

“He was seriously interested in ‘pumping up’ Emory Eye Center’s residency program,” Brocker says of Aaberg. “Previously, they had the tools and the talent for a solid residency program, but not strong interest from department leadership to focus on training and supervision. Dr. Aaberg asked me to take the reins of the training program and to also become chief of service at Grady. It seemed like a Herculean task, but I was driven to take a shot at it.”

Brocker faced multiple challenges with his new position, as expected. “The residents were ingrained with their own independence in running everything themselves in the training program,” he says. “Little or no effort was made to bill for patient care at Grady, and some faculty would not participate in the training program by going to Grady.”

He tackled each issue with one goal in mind: to provide the best possible training program for the Eye Center’s ophthalmology residents.

“My favorite memory is hearing from a number of traditionally top eye residency programs that Emory was now a top-10 program and that we were filling our match early. I always took great pleasure in hearing from our trainees that they matched in their top fellowship and private practice choices. Several great fellowship directors would tell me, ‘Keep ‘em coming!’”

Brocker kept training Emory Eye Center residents full-time until 2013, when he stepped down as chief of the

ophthalmology service at Grady. He retired and became a professor emeritus of ophthalmology at Emory University School of Medicine in 2014, but the change in status didn’t mean Brocker left the Eye Center and Grady.


He still plays an ongoing role in educating the Eye Center’s current residents. He visits them at Grady each week, presents management conferences at Grady twice each month for residents and rotators, gives lectures during resident orientation each July, and helps them review prior to their OKAPs (a test given each year of residency to assess ophthalmic knowledge). Brocker also attends Grand Rounds at Emory Eye Center whenever possible, where he’s always ready to share his perspective or ask questions to help trainees deepen their knowledge.

Why does he continue to be involved with Emory Eye Center’s training program even in retirement? His ongoing love of this program and its trainees.

“Dr. Brocker’s encyclopedic knowledge is matched only by his passion for teaching,” says Yousuf Khalifa, MD, chief of ophthalmology at Grady. “His Wednesday morning lectures at Grady Eye Center are a cornerstone of the educational program to this day. His strong leadership skills and sense of humor guided the Grady Eye Center through some of the

most turbulent times in Grady Hospital’s history.”

“A famous axiom is that there are many paths one can take in life,” Brocker says. “Maybe I should have been a veterinarian or chemistry professor, but given the majority of wonderful experiences I had at Emory and Grady, I would do it again. I regularly hear from former residents who say, ‘I hear your voice in the operating room and clinic, especially when I have to make a difficult decision.’ I either made an impact on their careers or made them hallucinate freely!”

Brocker may joke, but his former students or colleagues say hearing his voice in their heads is no hallucination. It’s a welcome reminder of their time with him: a mixture of knowledge, humor, and passion from one of the best educators they’ve known. 



Geoff Brocker, MD (center) with a few residents over the years



# Lessons learned and passed along




Geoff Broocker, MD, and Tom Aaberg, Sr., MD, shared many laughs at Emory and Grady.

**September 15, 2018, marked 30 years since Geoff Broocker, MD, became director of residency education for EEC and chief of ophthalmology at Grady Hospital. His lessons for residents still are evident at Emory and beyond. Several EEC faculty and staff shared glimpses into his influence.**

- **MARIA AARON, MD:** Geoff’s unique teaching style incorporates stories, laughter, and joy, which makes everything he tells you memorable. I made many mistakes during my training but rarely made them more than once. Geoff reminds you that no one is perfect, and he can always make you smile.
- **ALLEN BECK, MD:** Geoff definitely raised the level of resident education in ophthalmology at Emory University. I am personally proud to be part of the Broocker posse that he trained. Geoff, please keep on keeping on.

- **ROSCHANDA FLETCHER:** Dr. Broocker has left a lasting impression on the Grady Eye Clinic. With his leadership and oversight, the eye clinic grew beyond measure. He continues to be a great resource for our residents.
- **HANS GROSSNIKLAUS, MD:** Dr. Broocker always put patients and residency education first and made Emory the best ophthalmology residency in the country.
- **APRIL MAA, MD:** Working with Geoff was like doing a comprehensive ophthalmology fellowship the whole time I was with him. His knowledge and wisdom are beyond reproach. I am a better ophthalmologist just by being his colleague.
- **PURNIMA PATEL, MD:** I have learned so many things from Geoff over the years. He is truly a wealth of information and has left a lasting legacy on a generation of Emory-trained ophthalmologists. One of the top things I learned from him is to do right by the patient—always.
- **SUE PRIMO, OD:** We kidded often about optometry and ophthalmology debates, but he always supported me and my colleagues and personally taught me a lot about not only eye care, but life, in his crazy humorous ways. We are fortunate to still have him teaching at Emory Eye Center. He knows everything!
- **TERRI TROTTER:** Dr. Broocker was a leader and pioneer in residency education and was instrumental in establishing new methods of teaching. He was a renegade and maverick in establishing the Core Competencies in Ophthalmology within the ACGME.

I will always adore and love Geoff, particularly for his quick wit and wicked sense of humor.

- **STEVE URKEN, MD:** Dr. Broocker was the most influential person in my ophthalmology career. During my residency training, there was nothing more rewarding than seeing him scribble a simple “Agree, G.B.” after he reviewed one of my notes. The clinical and surgical skills he taught me are innumerable. The most important and lasting lessons he taught me were that physicians should always make decisions with a patient-centered focus and that we should act as an advocate for our patients, especially those who are limited in their ability to do so for themselves.
- **TED WOJNO, MD:** There have been few people in the 35 years I’ve practiced that I’ve seen devote as much time and energy to resident education as Geoff Broocker. He has always done this with compassion and good humor. There is no one like him, and we are all better off for having worked with him. 

## Help support EEC resident education

The Broocker Fund in Ophthalmology Residency Education honors Dr. Broocker’s dedication to EEC’s training programs and enhances the residents’ experiences. You can make a difference by visiting [eyecenter.emory.edu](http://eyecenter.emory.edu) and clicking on “Give Now.”





## Screenings and expos further the Eye Center's reach

More than 45,000 patients are treated by the Emory Eye Center team each year, but vision education and care don't happen only within the clinics.


Emory University School of Medicine students who are interested in ophthalmology join EEC faculty and staff to offer free vision screenings in metro Atlanta and South Georgia several times a year. They check participants' visual acuity, intraocular pressure, and retinal health to potentially catch early signs of glaucoma, diabetic retinopathy, or other conditions.

Many screenings are in conjunction with EEC's Georgia Vision 20/20 partners (Atlanta Lions Club, Georgia Eye Bank, Georgia Lions Lighthouse, and Prevent Blindness Georgia). The events reach hundreds of patients who might not otherwise have access to professional vision care; participants are referred for glasses, medical follow-up, and surgical follow-up as needed.

"Many blinding eye diseases such as glaucoma are silent in that they slowly cause damage, resulting in vision loss without the patient noticing it," says comprehensive ophthalmologist Jacquelyn O'Banion, MD. "Thus, screenings such as these are imperative to detect early disease and avoid

vision loss in a population who often lack access to preventive care. Partnering through Georgia 20/20 allows us to share resources, raise awareness, and access hard-to-reach populations. Our goal is to prevent needless vision impairment in our community."

Faculty and staff also volunteer time to educate the public about vision-related conditions and EEC services. Events during the past year included working with Georgia Lions Lighthouse during Glaucoma Awareness Week, the Healthy New You Expo hosted for Emory employees, and the fitness expo following Emory Johns Creek Hospital's annual Scrub Run 5k.

"Providing baseline screenings is important, but so is general education," says Allen Beck, MD, interim chair and interim director of Emory Eye Center. "People need to know about different eye conditions and how to watch for early warning signs of potential trouble. They also need to realize that detecting conditions early through annual vision exams can help preserve their vision. The more we can educate the public about these things, the better." 




## Promoting RPE cell recovery after retinal detachment

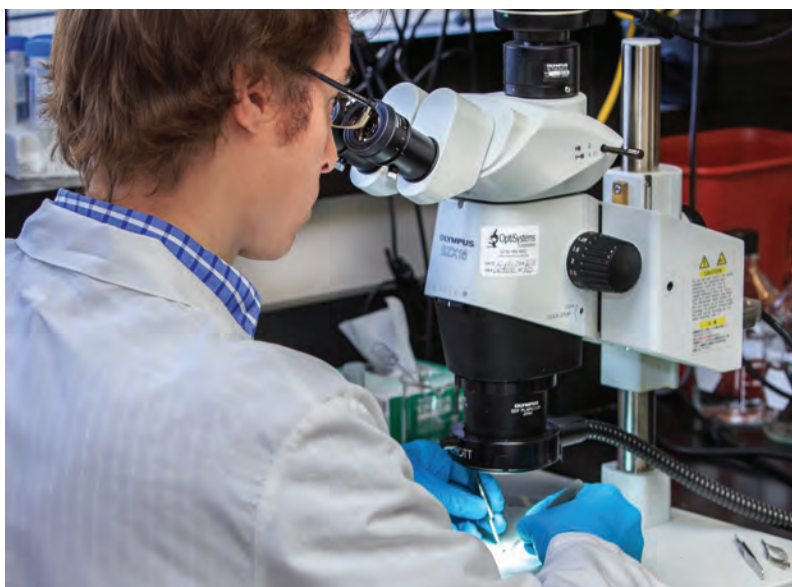
Gene therapy is a promising treatment for inherited retinal diseases; a subretinal injection of recombinant adenoassociated virus (rAAV) raises a bleb, or bubble of fluid, beneath the retina. In most cases, the retina reattaches as the fluid is absorbed and the therapeutic virus can replace the missing function that causes the disease. But sometimes the reattachment is not perfect and leads to damage.

“We’ve thought for years that this therapy works pretty well to restore vision,” says John Nickerson, PhD, vice director of basic research at Emory Eye Center. “Now that we’re studying it specifically related to RPE cells and photoreceptor cells, things might not be going as well as we thought.”

RPE and endothelial cells mesh together to create a barrier of protection for the retina. “A tight junction between these layers is essential for retinal integrity,” Nickerson says. “We’ve been looking at cross-sections of RPE cells after bleb creation from a different view and are seeing that RPE cells are sicker than we imagined.”

RPE cells must recover from the wound created by the subretinal injection before regaining full function and stability. Nickerson’s theory is that RPE recovery is slower because a gene known as  $\alpha$ -catenin—instrumental to the RPE’s ability to build a stable retina barrier—is being restored too slowly.

“What can we do to promote quicker healing and help RPE cell recovery?” he asks. “We’ve already been looking into this issue for about five years and now have an NIH grant for further study.” 




## Hope for better optic nerve regeneration

Researcher Eldon Geisert, PhD, and his team are working on what he calls “the holy grail of vision science”: reconnecting the eye to the brain after optic nerve damage.

The optic nerve transmits messages between the eye and brain, allowing us to see. Eye trauma or conditions such as glaucoma can damage the optic nerve and lead to vision loss or blindness. Researchers have found in recent years that this damage, which traditionally has been viewed as irreversible, might be fixable.

“The optic nerve is part of the central nervous system and is made of the same tissue as the retina,” Geisert says. “We can take some of the things we’ve learned about the retina and see how they apply to the optic nerve.”

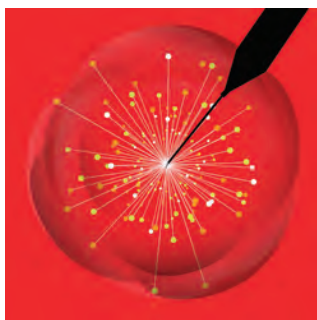
Geisert and others have discovered how to regrow the optic nerve in mice at a rate of 0.2-0.3 mm per day. A human’s optic nerve is 3-4 cm long, so the current growth rate is too slow for an optimal solution.

“We’ve spent years developing a system that will increase the growth of axons that make up the optic nerve,” Geisert says. “Our goal now is to speed the growth and innervate the correct targets in the brain. Optic nerve regeneration has reached the brain in the mouse, but we do not yet know if those targets will function. We are in the process of identifying the genes responsible for the increased regeneration, and future experiments will focus on restoration of function.” 




## Stabilizing vision after optic nerve trauma

Emory Eye Center research director Michael Iuvone, PhD, has worked for several years to learn whether quick intervention can prevent or slow vision loss after traumatic optic nerve damage. His team has learned that it is possible



**“It would be equivalent to an Epi-pen injection that would halt the initial damage that eventually leads to optic nerve degeneration. Every medic or every soldier could have it in their pack.”**

If effective, such a medication could have much wider use. “Car accidents, sports injuries, or other forms of blunt trauma to the eye or the side of the head can damage the optic nerve,” Iuvone says. “An easily injectable medication would have the potential to benefit the general population.”

Iuvone’s team is still investigating through mouse models, but he believes their results hold promise. “We’re optimizing the compound so it will have more potential. New grant funding is helping us continue our work.” 

in mouse models, so now they’re ready for the next phase: translating what they know to benefit humans.

“We’ve been working on drugs to help prevent optic nerve degeneration,” Iuvone says. Their initial focus has been from a military perspective because of Department of Defense funding. “The misconception in the past has been that if a soldier sustains a blast injury to the eye but seems to have unaffected vision initially, then things are fine. But many begin to lose their vision later.”

Iuvone hopes to develop an injectable medication that could be self-administered in the field to prevent vision loss in that situation. “It would be equivalent to an Epi-pen injection that would halt the initial damage that eventually leads to optic nerve degeneration. Every medic or every soldier could have it in their pack.”




## Getting active to supplement retinal cell survival

Research in recent years has shown that physical activity can potentially improve vision or slow the onset of conditions such as age-related macular degeneration (AMD), retinitis pigmentosa (RP), and glaucoma. That’s because certain types of exercise increase production of BDNF (brain-derived neurotrophic factor), a protein connected with nerve growth in the brain, retina, and other areas.

BDNF binds to a receptor on retinal cells called TrkB (pronounced “Track B”). The BDNF/TrkB pathway is important for photoreceptor and retinal ganglion cell (RGC) survival and their response to injury in diseases such as AMD, RP, and glaucoma.

“Exercise increases BDNF, which activates TrkB receptors,” says researcher Jeffrey Boatright, PhD. “If we can create some type of medication that activates the BDNF/TrkB pathway, we’d have an additional way to attack the issue of photoreceptors or retinal ganglion cells dying. It could possibly help people who suffer from an optic nerve blast injury as well as people with glaucoma.”

BDNF supplementation has been successful in slowing retinal death in animal models of blast injury, AMD, and glaucoma. This discovery led to Emory Eye Center researchers being awarded a four-year grant from the Veterans Administration to test BDNF analogs in pre-clinical trials using models of glaucoma. In other work, EEC researchers are taking their exercise finding into human studies funded by Research to Prevent Blindness and the VA, testing the effects of exercise on vision in AMD and RP patients. 

## We're tops again

Seven Emory Eye Center ophthalmologists were selected as some of Atlanta's Top Doctors for 2018. The selections were featured in the July issue of *Atlanta* magazine.

Earning recognition were:

- **Maria Aaron, MD** (comprehensive ophthalmology)
- **Allen Beck, MD** (glaucoma)
- **Valérie Biousse, MD** (neuro-ophthalmology)
- **Hans Grossniklaus, MD** (ocular oncology and pathology)
- **G. Baker Hubbard, MD** (retina)
- **Nancy J. Newman, MD** (neuro-ophthalmology)
- **Ted Wojno, MD** (oculoplastics)

Health care research firm Castle Connolly Medical Ltd. publishes the annual America's Top Doctors list. Thousands of doctors across the nation are invited to participate in regional peer nomination surveys. The process aims to find physicians who excel in academic medicine and research, but who also are known for their excellence in patient care. In other words, these are the physicians the nominating physicians would recommend to their own friends and family.

Atlanta's 2018 list included 781 physicians representing 59 specialties. Emory Healthcare had more Top Docs on the list than any other health system in Atlanta, with a total of 329 —42% of the doctors recognized.



## New clinic opens at Johns Creek

**Emory Eye Center opened a new office at Emory Johns Creek Hospital in April 2018.**


The new location is Suite 311 of the Physicians Plaza, the physician building adjacent to the hospital at 6335 Hospital Parkway.

The newly designed space includes five exam rooms and a diagnostic room that can be used for OCTs (optical coherence tomography), visual fields, or other tests.

Optometrist Petra Jo, OD, sees patients at Johns Creek. She provides comprehensive eye care, including eye health assessments, diabetic dilated retina exams, glaucoma risk assessments, and contact lens and eyeglasses prescriptions.

Dr. Jo joined the Emory Eye Center team in 2014.

"I became an optometrist because I like learning about vision and the eye," Dr. Jo says. "I enjoy helping others and solving problems to meet their visual needs. I like getting to know my patients and hope to grow my practice in the Johns Creek area."

Emory Eye Center at Johns Creek is open weekdays from 8 a.m. until 4 p.m. To schedule an appointment, call 404-778-2020. 




Representatives from Emory Eye Center, Emory Johns Creek Hospital, and the Johns Creek Chamber of Commerce celebrate the new clinic.

## Grady Eye Center gets an update

Clinic space at Grady Eye Center completed a year-long refurbishment in 2018. The state-of-the-art facility allows Emory Eye Center faculty, fellows, and residents to provide patients with everything from routine vision exams to subspecialty care.

Grady Eye Center tallies more than 20,000 patient visits per year.

The goal of renovation was to increase the clinic's capacity to see more patients, while increasing efficiency. One example of this is the clinic's pod system, which divides the Eye Center into four distinct clinics that focus on specific subspecialties each day (retina, glaucoma, optometry, etc.). Schedules are based on the pods, which optimize staffing and make patient care more efficient. That, in turn, improves the quality of services providers offer to patients. 



## EEC teams up to raise money for vision research

**Emory Eye Center faculty and staff supported a fellow vision organization by joining the 12th Annual Atlanta VisionWalk benefiting Foundation Fighting Blindness.**

Since beginning in 2006, VisionWalk has raised more than \$45 million nationwide to support research to provide preventions, treatments, and cures for people affected by retinitis pigmentosa, age-related macular degeneration (AMD), Stargardt disease, and other retinal degenerative diseases.

The Eye Center's involvement was led by Nieraj Jain, MD, a specialist in vitreoretinal surgery and ophthalmic genetics.


Millions of people around the world suffer from retinal degenerative diseases. It is difficult to predict the extent of vision loss or rate of disease progression, but many people with retinal degenerative disease will eventually experience significant visual impairment.

Photoreceptor cells in the retina sense light and send impulses to the brain to create an image. When the photoreceptor cells malfunction or disappear because of retinal degenerative disease, the image the brain receives is blurred, distorted, or completely unseen. Vision loss from retinal degenerative diseases has a major impact on life because it affects everyday activities such as reading, driving, or watching TV.

The Emory Eye Center team raised more than \$4,500 for VisionWalk 2018.

"There's no question that these individual donations make a real-world impact for patients we see on a regular basis in the ophthalmic genetics clinic,"



Jain says. "The Foundation Fighting Blindness and similar organizations have played a vital role in raising awareness of these diseases. Their investment in research has led to numerous scientific discoveries that have translated into promising studies on novel treatments. We look forward to being able to offer more treatments to our patients in the coming years." 

**Emory Eye Center faculty and staff joined with family and friends to support the work of Foundation Fighting Blindness (FFB) at VisionWalk 2018. FFB provides grant funding for some of the Eye Center's retina research.**

# AREDS and OHTS trials reach 20-year study milestone

Two landmark clinical trials for ophthalmology, known as AREDS and OHTS, were reopened in recent months for additional patient follow-up and testing. Emory Eye Center has been involved with both trials since their inceptions, so is once again collecting data to impact patient care.

## AREDS investigates supplements and AMD

Nearly 2 million Americans have some form of age-related macular degeneration (AMD); another 8 million are at risk. Of those affected, approximately 100,000 are blind. Treatment for advanced AMD is limited.

Animal studies and a few small clinical trials suggested years ago that antioxidants, zinc, and selenium might be associated with AMD risk. A small, randomized clinical trial of zinc supplementation found a statistically significant reduction in vision loss compared with a group of participants treated with placebo. More definitive study was needed before drawing conclusions.

The first phase of AREDS (Age-Related Eye Disease Study) launched in 1990 and concluded in 2001 at Emory and other sites across the nation. Data collected established that daily high doses of vitamins C and E, beta-carotene, and the minerals zinc and copper (called the AREDS formulation) can help slow the progression to advanced AMD. However, beta-carotene use has been linked to a heightened risk of lung cancer for people who smoke, and high zinc intake can sometimes cause minor side effects such as stomach upset.

In 2006 the NEI launched AREDS2, designed to test whether the original

AREDS formulation could be improved by adding omega-3 fatty acids, lutein, and zeaxanthin and by removing beta-carotene or reducing zinc. The study also examined how different combinations of the supplements performed. Results announced in 2013 concluded that lutein and zeaxanthin can safely replace beta-carotene with similar results in terms of slowing the progression of AMD. In addition, the study found no benefit for the addition of omega-3 fatty acids to the formulation and no difference between high- and low-dose zinc.

An extended five-year AREDS2 Telephone Follow-on Study began in April 2013 to continue collecting data regarding the incidence of advanced AMD, cataract surgery, and lung cancer. Participants were interviewed by phone approximately every six months and received AREDS2 Preservision supplements during the trial.

The AREDS2 10-year Follow-on Study began in 2018, with Emory as one of only 24 sites selected to participate.

“This study collects additional data regarding the incidence of advanced AMD, cataract surgery, and lung cancer as well as obtains additional imaging data in approximately 1,200 AREDS2 participants,” says Baker Hubbard, MD, principal study investigator for EEC.

A subset of trial sites, including Emory, will collect blood samples from AREDS2 patients to establish a bank

of blood cells that can be changed into other cell types, such as eye cells.

“This will allow better understanding of the mechanisms of AMD progression and will allow researchers to test potential new drugs for AMD and other eye diseases,” Hubbard says.

## OHTS studies topical medication and POAG

Glaucoma is one of the leading causes of blindness in the U.S. and the number one cause of blindness among African Americans. Glaucoma usually has no early symptoms; by the time people experience problems with their vision, they usually have lost a significant amount of their sight. Approximately 4 percent to 8 percent of people over the age of 40 in the U.S. have ocular hypertension (high pressure within the eye).

The Ocular Hypertension Treatment Study (OHTS) was a randomized trial to determine if using topical ocular hypotensive medication delays or prevents the onset of primary open-angle glaucoma (POAG).

More than 1,600 participants meeting the study criteria were enrolled. Half received medication, and half were observed without treatment.

Twenty-two clinical centers and satellites participated in OHTS nationwide, studying a total of 1,636 volunteers;




25% were African American. Emory Eye Center enrolled 98 patients; 37% of the patients at Emory were African American (9.5% of the study's total African American enrollment).

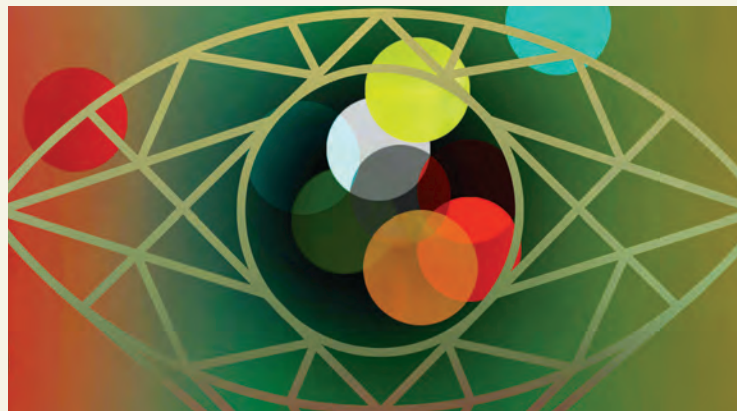
Patients were examined twice each year from 1994 to 2008; their eye pressures were checked, and they underwent visual field tests and optic nerve photos. Test results were evaluated at reading centers by independent examiners who were masked to the treatment group. The study successfully demonstrated that lowering eye pressure with eye drop medication can safely and effectively delay and/or prevent the onset of primary open angle glaucoma.

Participants were initially followed for at least five years (OHTS 1). The trial was extended to another phase that allowed for almost 14 years (OHTS 2) of follow-up in this group.

The third phase (OHTS 3) is currently re-examining participants from the original study. This 20-year follow-up focuses on how treating ocular hypertension and early POAG affects later loss of vision and quality of life and how long-term risks can be reduced. This knowledge will help determine which risk factors make people more likely to develop glaucoma and lose vision, and who is more likely to rapidly progress to vision loss.

“All patients who go blind from glaucoma started with normal vision,” says Anastasios Costarides, MD, PhD, interim director of EEC's glaucoma service. “This long-term study has helped us identify risk factors for visual loss in patients with ocular hypertension.”

AREDS and OHTS are both randomized clinical trials funded by the National Eye Institute of NIH. Prospective 20-year studies rarely are conducted in vision research. Emory Eye Center is fortunate to have successfully participated in both the AREDS and OHTS studies since their inception. 



## Gene therapy for LHON adds bilateral treatment trial

Emory Eye Center is participating in the next phase of a gene therapy trial for patients with Leber hereditary optic neuropathy (LHON). This trial, known as REFLECT, is the third study related to treatments from French-based GenSight Biologics.

LHON is a rare degenerative eye disease that strikes quickly and leads to irreversible blindness. Patients can completely lose vision in one eye only months after noticing problems. The second eye becomes involved in a similar fashion, usually within a few months. Severe involvement in both eyes by one year is essentially inevitable.

Patients enrolled in REFLECT are within one year of experiencing initial vision loss from LHON in either eye. They will receive one treatment injection in each eye and will return for follow-up vision assessments over the following two years. The hope is that gene material injected in the vitreous will improve sight by compensating for mutated genes. This new DNA made in the retinal cells should help the cells function normally to restore some of the lost vision.

A total of 16 sites are conducting the REFLECT study: seven in the U.S. and nine in Europe, Israel, and Taiwan.

Nancy J. Newman, MD, is principal investigator for the Emory site and international coordinating principal investigator for the entire trial. “We are still anxiously awaiting the results of the initial studies in which only one eye was injected with gene therapy,” Newman says. “In this new study, we will test the efficacy and safety of receiving bilateral injections. Since Leber hereditary optic neuropathy is a bilateral disease, this study is very important for clinical application in the future.”

The first Emory Eye Center patient enrolled in REFLECT was treated in the summer of 2018. 


## Residency program is noted for supporting patient advocacy

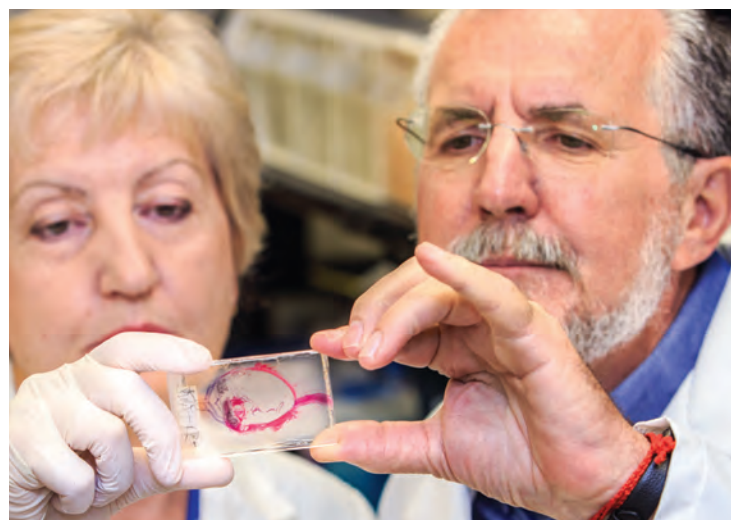
*Emory Eye Center received the American Academy of Ophthalmology's Commitment to Advocacy Award in early 2018.*

AAO created the award to recognize an ophthalmology training program and its leadership for demonstrating commitment to the Academy's Advocacy Ambassador Program. The program is designed to give residents and fellows hands-on training in advocacy and policy development, including supporting their attendance at the Academy's annual Mid-Year Forum and Congressional Advocacy Day. It is a collaboration between state and subspecialty societies and training programs to support resident attendance at state and federal legislative functions.

*"This award recognizes the efforts of all our involved faculty and residents who have worked so hard to advocate for the safety of our patients and our profession,"* says Jeremy Jones, MD, director of Emory Eye Center's residency program. *"One example of those efforts is Dr. Purnima Patel, who has put tremendous time and effort into expanding the program for Advocacy Ambassadors at the AAO's Mid-Year Forum and works with our young ophthalmologists here through the Georgia Society of Ophthalmology."*

*"I am tremendously proud of our residency teachers and mentors, as well as our residents,"* adds Allen Beck, MD, interim chair of ophthalmology and interim director of Emory Eye Center. *"This award represents a concerted effort to involve our residents in the development of public eye health policy."*

The awardee is determined by the Academy's Secretariat for State Affairs and approved by the boards of the Academy and the Association of University Professors of Ophthalmology (AUPO). Previous recipients were Wills Eye Hospital (2014), Vanderbilt Eye Institute (2015), and University of Iowa Hospitals and Clinics (2016). 



## Mike Iuvone, PhD, reaches 40-year milestone


**Mike Iuvone, PhD**, first became interested in the roles dopamine and circadian rhythms play in the brain during his graduate studies: how they affect hormones, stress, and associated behaviors. His plan to learn more about connections between dopamine and schizophrenia as a postdoctoral fellow with the National Institute of Mental Health changed when he found that there was a "methodological problem" with his intended research. He was pointed instead to an area related to vision.

"Some publications were showing that dopamine was made by neurons in the retina," he says. "We quickly found that these neurons could be regulated by light. I became interested in the retina as an approachable part of the central nervous system and so decided to study it instead of the brain. It was the beginning of 43 years of retina research."

Iuvone joined Emory University's pharmacology department in 1978. His interests in ophthalmology and the retina led to a joint appointment in the ophthalmology department in 1980.

When Hank Edelhofer, PhD, stepped down as Emory Eye Center's research director, Iuvone applied for the position. He already knew researchers Jeff Boatright, PhD, and John Nickerson, PhD, so the transition to ophthalmology made sense.

He became director of vision research for EEC in 2009. Even after 40 years with Emory, Iuvone is still pursuing questions related to dopamine, circadian rhythms, vision, and any connections between them. Recent discoveries showed that disruption of the circadian clock in the retina accelerates age-related cone photoreceptor death, similar to that seen in AMD.

"We have a great team here and collaborate on multiple projects," he says. "We still have things to discover." 



## April Maa, MD, receives prestigious VHA clinical award



Ophthalmologist **April Maa, MD**, received the prestigious National Wolcott Award for Excellence in Clinical Care Leadership from the Veterans Health Administration (VHA). Maa is part of Emory Eye Center's comprehensive ophthalmology service and the clinical director of TECS (Technology-based Eye Care Services) for Regional

Telehealth Services of the Atlanta VA.


The award recognizes outstanding VHA health care practitioners who deserve special recognition for their contributions that enhance clinical care. It was named after Mark Wolcott, MD, who dedicated more than 40 years to serve and improve the quality of care for the VHA's veteran population.

Maa was recognized for her efforts to create and implement an eye disease screening program that allows the VA to reach even the most vulnerable and underserved patients. The program, known as TECS, helps equalize health care opportunities for rural, medically underserved, and homeless veterans.

"The program gives veterans better access to eye care by screening them at their primary care clinics," Maa explains. "Older patients are at the greatest risk for developing potentially blinding eye conditions but are also less likely to seek care if they have to travel. Providing the service closer to home can help them access the care they need."

"Dr. Maa has provided mentorship, guidance, and leadership across the country and has helped transform eye care delivery throughout VA," stated her award announcement. "Through the TECS platform, the VA can now use technology to help triage patients into levels of need (basic, intermediate, advanced), thereby tailoring the patient care experience to the appropriate provider while optimizing resources. The result is a more agile, forward-leaning, and cost-effective eye care delivery system based on the needs of the Veteran."

Maa joined Emory Eye Center in August 2008 and treats patients in the VA Eye Clinic at the Atlanta Veterans Affairs Medical Center.

"The Atlanta VA Ophthalmology section is one of the busiest eye departments in the VA system, and demand for services continues to grow," says Steven Urken, MD, chief of ophthalmology at Atlanta VAMC. "The TECS program has been a wonderful addition to our clinic and has greatly enhanced our ability to handle the growth. We want to continue to adapt modern technologies and apply them in a way that improves eye care for our veterans. We are very honored that Dr. Maa's work has been recognized with this award." 

## Yousuf Khalifa, MD, honored at White Coat Grady Gala

Emory Eye Center physician **Yousuf Khalifa, MD**, was recognized with the Rising Star Award at the 8th Annual White Coat Grady Gala in 2018. The gala is a time to honor physicians who have helped make Grady Hospital one of the leading public academic health systems in the U.S.

Khalifa joined Emory Eye Center in 2014. He serves as chief of ophthalmology at Grady, where he has been instrumental in improving the clinic area for patient care and expanding education programs for ophthalmology residents.

"Dr. Khalifa is an outstanding clinician," says Allen Beck, MD, interim chairman and director of EEC. "When


you combine that with the ability to organize, administer, and solve big problems—that's him in a nutshell."

Khalifa is known among other physicians at Grady as a visionary who is always looking to improve and provide better care for those in need. He also is known as an excellent teacher for ophthalmology residents and fellows.

"His lack of willingness to compromise on anything for his patients has really spread throughout Grady," says Hany Atallah, MD, chief of emergency medicine for Grady Health System.

"Since Dr. Khalifa's arrival, patients really haven't had to go anywhere else to get the care that they need. When



services that patients needed weren't offered at Grady, he worked to create those services." 

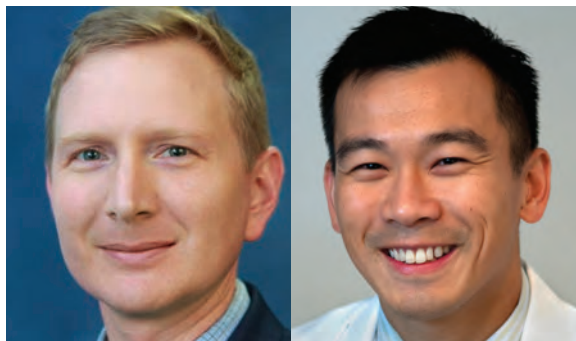
## Drs. Jones and Yeh selected for American Academy of Ophthalmology Leadership Program

Jeremy Jones, MD, (below left) and Steven Yeh, MD, (below right) of Emory Eye Center have been chosen to participate in the 21st class of the American Academy of Ophthalmology's (AAO) Leadership Development Program.

Only 20 ophthalmologists from across the country were selected for the 2018-2019 class.

The year-long program is designed to provide both orientation and skill development

to future leaders of state, subspecialty, and specialized interest societies related to ophthalmology. Participants take part in workshops focusing on leadership topics such as political advocacy, media relations, communication, practice management, and more. They also attend the AAO's Mid-Year Forum in Washington, DC, to learn about issues facing ophthalmology and to meet with federal legislators and their staffs



to discuss issues of concern.

Jones is a glaucoma specialist and medical director of Emory Eye Center's ophthalmology residency program. He also serves as associate chief of ophthalmology at Grady Memorial Hospital.

Jones was nominated for program consideration by the Georgia Society of Ophthalmology, where he currently holds the office of vice president.

Yeh is a retina specialist and director of Emory Eye Center's uveitis and vasculitis service. His clinical areas of expertise include advanced diagnostics for the care of adult and pediatric uveitis, age-related macular degeneration, diabetic retinopathy, retinal vascular disease, and retinal detachment surgery. He has a special interest in post-Ebola related uveitis pathogenesis and treatment. The American Uveitis Society nominated Yeh for the program.

## Faculty receive numerous recognitions



Neuro-ophthalmologist **VALÉRIE BIOUSSE, MD**, was elected President Elect of the North American Neuro-Ophthalmology Society (NANOS). She holds the position of Cyrus H. Stoner Professor of Ophthalmology and has a dual appointment in ophthalmology and neurology at Emory.



Researcher **JEFF BOATRIGHT, PHD**, was elected to a second three-year term as a member of the Association for Research in

Vision and Ophthalmology (ARVO) Foundation Board of Governors. He also was inducted into the Dowling Society of ARVO and is chair of the Institutional Animal Care and Use Committee of the Atlanta VA Medical Center.



**EMILY GRAUBART, MD**, interim director of comprehensive ophthalmology and director of medical student education, was

elected secretary of the Association of University Professors of Ophthalmology Medical Student Educators Council.



Ocular oncology and pathology services director **HANS E. GROSSNIKLAUS, MD**, was elected Executive Vice President and

Chief Operating Officer of the American Ophthalmological Society and was appointed the anatomy/pathology/oncology representative on the ARVO Board of Trustees. He also is editor-in-chief for *Classification of Tumours of the Eye*, a book being published by the World Health Organization and the International Agency for Research in Cancer.





**BAKER HUBBARD, III, MD,** was named Ophthalmologist of the Year at the 2018 Georgia Eye Meeting orga-

nized by the Georgia Society of Ophthalmology. Hubbard is director of Emory Eye Center's clinical retina service and focuses on treating pediatric retinal disease, including retinopathy of prematurity and retinoblastoma.

**NANCY J. NEWMAN, MD,** director of neuro-ophthalmology services for Emory Eye Center, was named a member of the Scientific Medical Advisory Board



for the United Mitochondrial Disease Foundation. She also is Senior Vice President for Education of the North American Neuro-Ophthalmology Society Executive Board of Directors and director of the American Academy of Neurology fall conferences.

Uveitis and vasculitis specialist



**PURNIMA S. PATEL, MD,** received the Emerging Leader Award from the Women in Ophthalmology organization

for her work chairing the American Academy of Ophthalmology's Young Ophthalmologists committee and her leadership in developing the Women in Ophthalmology group at Emory.



**JESSICA SHANTHA, MD,** was chosen to participate in the Building Interdisciplinary Research Careers in

Women's Health (BIRCWH) Program. BIRCWH is one of the National Institute of Health's Office of Research on Women's Health mentored career-development programs that pairs junior faculty with senior faculty who share research interests in women's health and/or sex/gender life science. Shantha is studying the pathogenesis of ophthalmic sequelae of Ebola virus disease (EVD), risks factors associated with ocular disease among EVD survivors, and ways to address unmet vision care needs in women and barriers to health care.



Cornea specialist **PRANEETHA THULASI, MD,** earned her board certification from the American Board of Ophthalmology. Thulasi completed her

medical school education and ophthalmology residency at Emory and joined the faculty in September 2017.



## Emory Eye Center care team expands with five new faculty members



**SHANE MULVIHILL, OD, MS,** is an optometrist focusing on pediatric eye care and general optometry.

Mulvihill received his undergraduate education at Xavier University and studied optometry at The Ohio State University College of Optometry. He graduated in 2016 with his Doctor of Optometry and his Master of Vision Science.

Prior to completing optometry school, Mulvihill gained experience by working as an optometric assistant and a vision therapist. He also served as the resident optometrist in binocular vision and pediatrics at the OSU College of Optometry. In that role he provided patient care, facilitated mobile vision screenings for school-age children, and instructed third- and fourth-year optometry students and interns.

Mulvihill's areas of clinical interest include pediatric vision care, vision-related learning issues, pediatric contact lenses, sports vision, and general optometry.

**BORIS SEVERINSKY, OD, FAAO, FBCLA, FSLS,** is part of the optometry team



and focuses on fitting and treating adults or children who need specialty contact lenses.

Severinsky earned a bachelor of optometry degree from Hadassah Academic College in Jerusalem, followed by a residency in pediatric ophthalmology and strabismus. He later earned a Master's degree in optometry and vision science, also

from Hadassah Academic College.

After moving to the U.S., Severinsky completed externships with Bascom Palmer Eye Institute and Global Vision Rehabilitation Center in Miami. He then earned his Doctor of Optometry from New England College of Optometry in Boston.

His experience includes completing specialty contact lens fittings for patients with advanced corneal disease or congenital retinal conditions, following refractive surgery and corneal cross-linking, and as part of pediatric eye care.

**JESSICA SHANTHA, MD**, has a bachelor of science degree in biology (magna cum laude) from the University of Georgia. She earned her medical degree from Morehouse School of Medicine, then completed a transitional year program at Presbyterian/St. Luke's Medical Center, and an ophthalmology residency at Emory. She followed residency with a clinical and research fellowship in medical retina disease at Retina Consultants of Hawaii. She also spent a year as the Heed Ophthalmic Foundation clinical uveitis fellow with the Francis I. Proctor Foundation.

During her residency at Emory, Shantha became involved with research related to how Ebola virus disease can affect survivors' vision and the eye itself. She has published on the topic in numerous scientific journals and continues to be involved with ongoing research in West Africa.

**PRIYANKA SOOD, MD**, is a cornea, cataract, and refractive specialist and also serves as ophthalmology service chief for Emory University Hospital Midtown.

Sood was part of the 7-year combined Honors Program in Medical Education at Northwestern University. While there, she earned a bachelor's degree in environmental



Medical College in cornea, cataract, and refractive surgery.

Her clinical interests include LASIK/PRK, dry eye, corneal transplants, advanced cataract surgery (femtosecond laser and specialty lenses), and comprehensive ophthalmology.

**PRANEETHA THULASI, MD**, graduated from Saint Louis University with a degree in biology and a minor in mathematics and computer science. She then earned her MD and completed a one-year transitional program and her ophthalmology residency at Emory. After residency, Thulasi completed a fellowship



in cornea, refractive surgery, and external diseases at the University of Illinois in Chicago. She has presented research at numerous conferences, including the American Society of Cataract and Refractive Surgery, the Association for Research in Vision and Ophthalmology, and the North American Neuro-Ophthalmology Society. She treats patients for immune-mediated ocular surface diseases, corneal transplantation, refractive cataract surgery, corneal ectasias, and collagen cross-linking.

science and her medical doctorate. She completed her transitional year and residency here at Emory, followed by fellowship training at Weill Cornell

## SEEING THE WORLD HER WAY

*Continued from page 17*




Rylie began focusing more on showing depth in her art as a middle schooler. "I was working on a brownish horse and could kind of see that he seemed to look flat, not really alive. My mom took a picture of it with her phone and then I could really see the difference and tried to make it better."

Now Rylie takes photos of all her projects as they progress. "I can't really see the changes while I'm working on something. I don't know why taking a picture helps me see it better, but it does."

Rylie has adapted so well that she says many people around her don't know about her circumstances. "The contacts make such a big difference in how I see that I hardly ever take them out when I'm awake. I'll leave them in if I spend just one night at someone's house. A lot of kids at school don't know. They think I just wear glasses."

That's exactly how Rylie wants it to stay as she transitions to high school. She'll be part of the yearbook committee, which will give her the chance to expand into graphic design, drawing, and photography.

"Being an artist comes so natural to her," Ginny says. "Her attention to detail blows my mind, especially knowing that her depth perception is about half what a person with normal vision has. It's like she sees it even though we know she doesn't. We can hardly wait to see where she goes will all this." 





# This is my legacy.

*Jim Lewis, Attorney  
Douglasville, Georgia*

“As a patient of the Emory Eye Center, I know firsthand that Emory delivers the best care. That’s why I’m including a planned gift for glaucoma research at the Eye Center in my estate plans. Emory’s researchers are fighting for better treatments, better quality of life, and—above all—cures.”



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Thank you



Atlanta Falcons mascot Freddie Falcon greets participants at VisionWalk Atlanta. See page 29.