



PERSPECTIVE

2016 ANNUAL REPORT

UAB MEDICINE

CALLAHAN EYE HOSPITAL
DEPARTMENT OF OPHTHALMOLOGY

Growing Our Vision for the Future



The record numbers of aging Baby Boomers have created an unprecedented challenge for our nation's health care system, and, in turn, for our academic medical center's mission. In order to continue delivering high-quality care and supporting our educational and research operations, we knew we had to respond accordingly.

Since 2012, the Department of Ophthalmology and Callahan Eye Hospital at the University of Alabama at Birmingham (UAB) have undertaken transformative growth in our clinical enterprise, faculty ranks, and translational science and

research efforts. This growth was spurred on by collaborative investments from the UAB School of Medicine, the Eyesight Foundation of Alabama, and the International Retinal Research Foundation, collectively known as the Vision of Excellence (VOE) program.

The VOE program has allowed us to expand our department from 29 to 45 faculty – a move that reinforces our ability to provide comprehensive training to the next generation of ophthalmologists, develop cutting-edge research, and deliver high-quality care across all subspecialties. This growth has resulted in a substantial increase in federal research awards, such that our Department now ranks No. 17 in funding from the National Institutes of Health, up from No. 36 in 2013.

Our surgical caseload has grown dramatically alongside an ambulatory clinic volume that has nearly doubled during the past five years. To meet this growing demand, we've more than doubled our ambulatory clinics, which now provide care in 17 convenient locations throughout northern Alabama. We are in the midst of increasing our surgical capacity by expanding our number of state-of-the-art operating suites from nine to 16, which will be the largest concentration of ophthalmologic surgical suites – with a Level 1 Ocular Trauma Center and dedicated inpatient unit – under one roof in the United States.

We are proud of the progress we are making, as it reflects the commitment we established over 50 years ago to preserving and restoring global eye health. It is exciting to see that vision continue to come into focus. Thank you for reading Perspective. The work showcased in this annual report represents just a sample of the excellence and innovation taking place in our clinics, classrooms, and laboratories.

Sincerely,

C. Brian Spraberry, MSHA

President & Chief Executive Officer
UAB Callahan Eye Hospital

Christopher A. Girkin, MD, MSPH, FACS

EyeSight Foundation of Alabama Chair,
UAB Department of Ophthalmology

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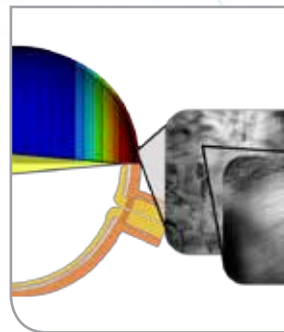
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RESEARCH



2013–2016 NIH RANKING

17TH

IN 2016

2015 - 26TH

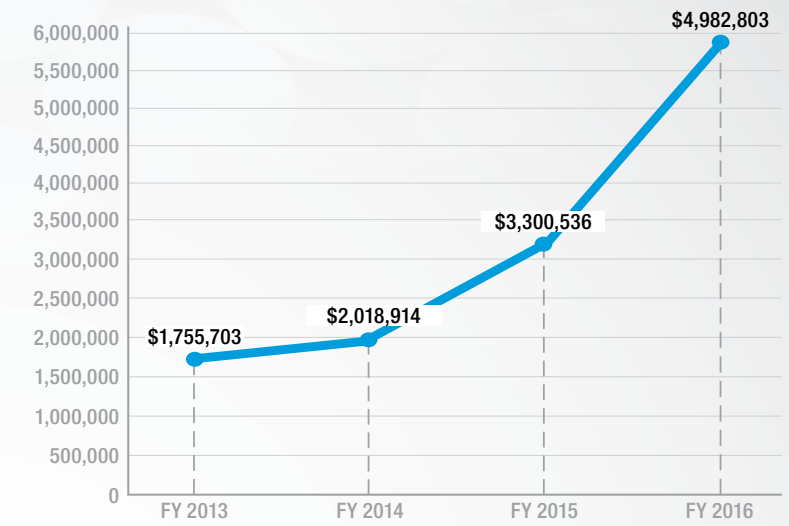
2014 - 34TH

2013 - 36TH

*Data obtained from the Blue Ridge Institute for Medical Research on December 30, 2016

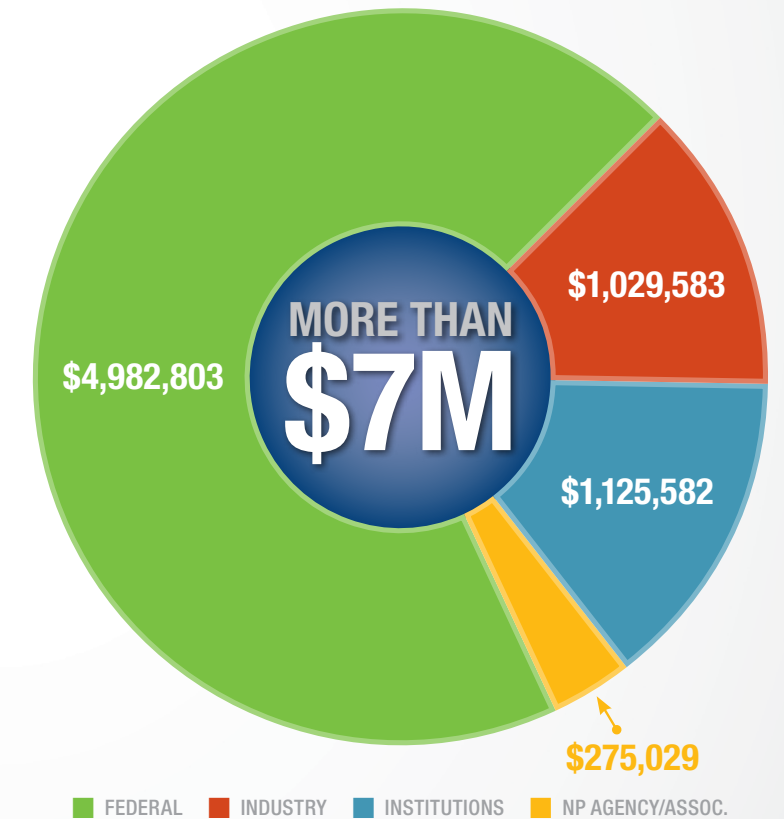
21 ACTIVE NIH GRANTS

2013–2016 NIH Funding



*Data obtained from the Blue Ridge Institute for Medical Research on December 30, 2016

2016 Active Awards by Sponsor Type



■ FEDERAL ■ INDUSTRY ■ INSTITUTIONS ■ NP AGENCY/ASSOC.

Cross-Disciplinary Collaboration

Many of the most common eye diseases are complicated and require cross-disciplinary collaboration. Our researchers collaborate across campus and across the nation.

Invigorated by leadership's renewed commitment to research, UAB Ophthalmology's research faculty has enhanced our scientific research abilities in areas that coincide with our clinical strengths. This alignment helps ensure that our research efforts target diseases with the greatest critical need and creates a pathway for quick translation of research from the bench to the bedside.

Distribution of Publications & Grants



PUBLICATION DISTRIBUTION

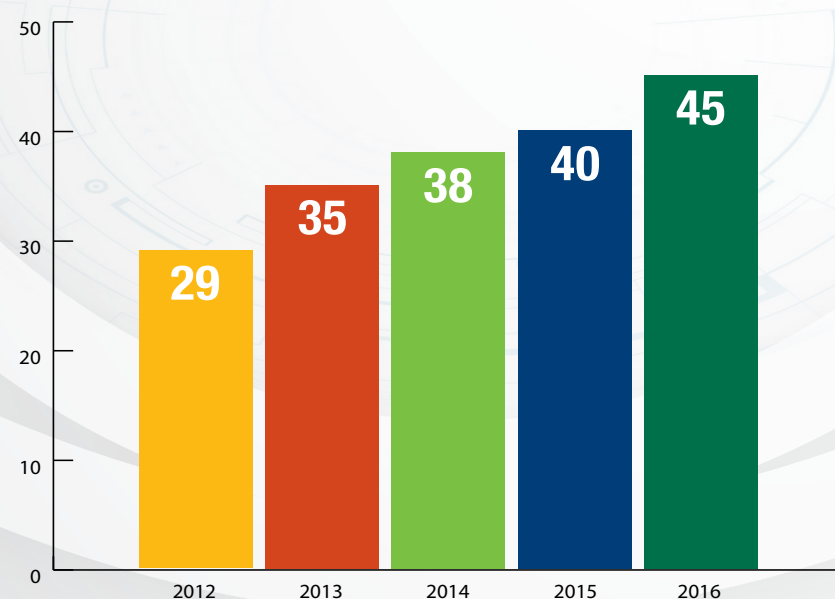
Diabetes	4
Ocular Biomechanics	12
Driving/Visual Performance	13
Glaucoma	18
Health Services Research	6
Macular Degeneration	19
Low Vision	6
Retinal Disease	14
Visual Neuroscience	16



GRANTS DISTRIBUTION

Aging	.2
Ocular Biomechanics	.8
Driving/Visual Performance	.4
Gene/Cell Therapy	.4
Glaucoma	.8
Health Services Research	.9
Macular Degeneration	11
Myopia	.2
Traumatic Brain Injury	.1
Visual Neuroscience	.6

Total Faculty Growth from 2012–2016



169

ACTIVE RESEARCH PROTOCOLS PURSUED IN 2016

UAB researcher receives National Eye Institute telemedicine grant for glaucoma work

Lindsay Rhodes, MD, has received a \$1 million National Eye Institute grant to study new care delivery models, such as telemedicine, to treat glaucoma. Glaucoma is a blinding eye disease increasingly common in older adults and often diagnosed late in the disease course.

Rhodes, an Assistant Professor in the UAB Department of Ophthalmology, says it is essential to develop novel health care models, utilizing telemedicine, to improve the ability of routine eye exams to detect glaucoma at an earlier stage, and to provide a platform to manage this disease in community-based clinics so further vision loss is prevented.

The grant also includes funding for a training program that will consist of mentored research, conducted under the direction of a team composed of Christopher Girkin, MD, Professor and Chairman of the UAB Department of Ophthalmology; Cynthia Owsley, MD, Professor and Vice Chair for Clinical Research in the Department; Stephen Mennemeyer, PhD, Professor in the UAB Department of Health Care Organization and Policy; and Gerald McGwin, PhD, Professor and Vice Chair in the UAB Department of

Epidemiology. The mentored research plan will evaluate a novel community-based care delivery model for open-angle glaucoma.

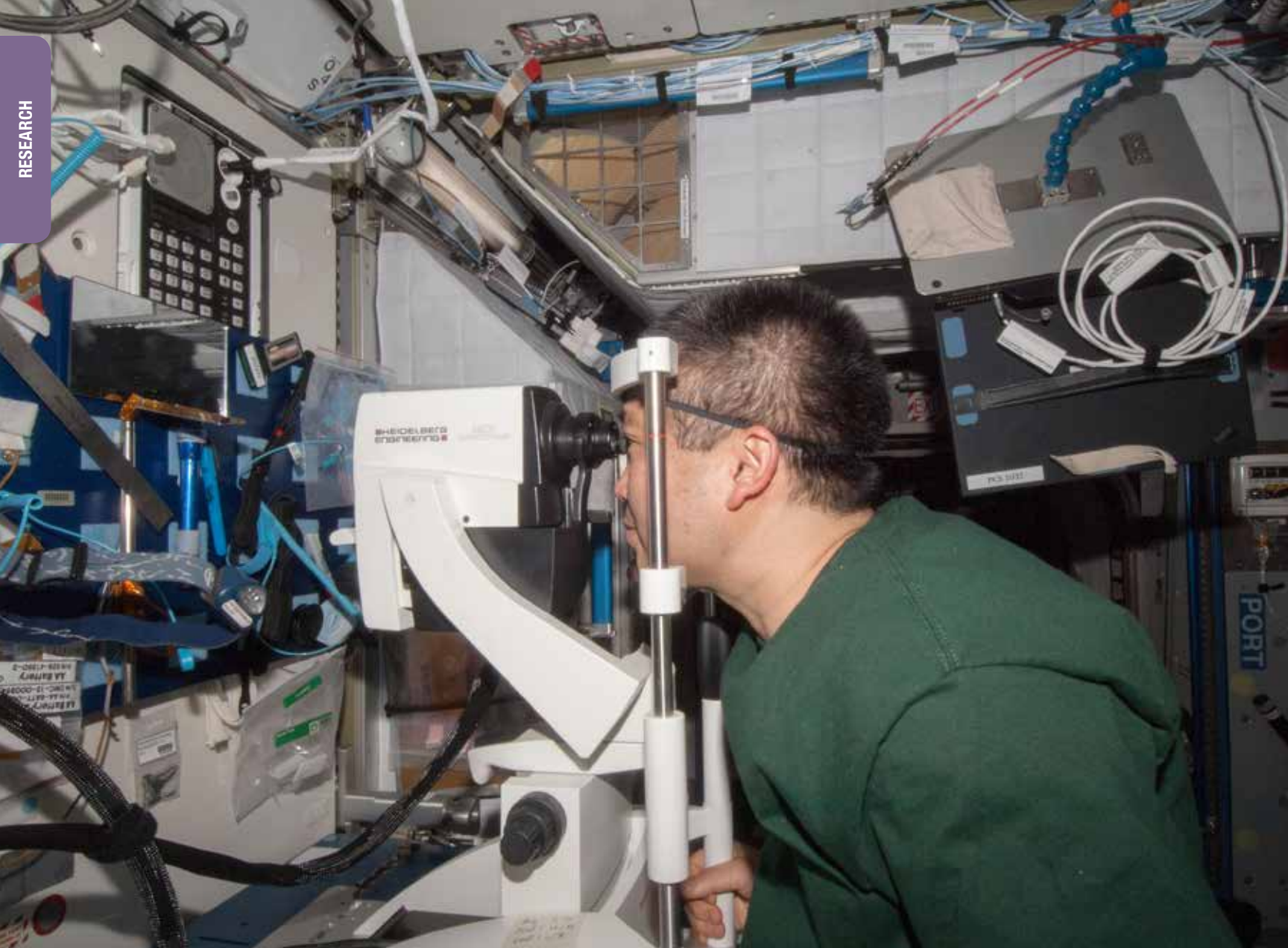
In open-angle glaucoma, there is an imbalance in the production and drainage of the clear fluid, called the aqueous humor, that fills the eye's anterior chamber.

"Telemedicine is a potential strategy to improve eye disease detection and management, as well as to improve effectiveness, access, and adherence with routine eye care," Rhodes says. "Telemedicine is well-suited for the detection and management of certain eye conditions since there have been great strides made in the development of non-invasive ocular imaging devices that provide high levels of diagnostic reliability, ease of training of testing personnel, and electronically transmissible results."

The NEI grant is a five-year K23 grant, which is classified as a career development award. These grants fund young clinician-scientists toward becoming independent investigators.



Lindsay Rhodes, MD, will study telemedicine as a potential strategy to improve eye disease detection and management.



Dr. Samuels and collaborators received a grant from the NASA Glenn Research Center to help determine why astronauts who come back from space experience poorer vision after flight.

Scientist Makes Strides in Preserving Vision for Astronauts

Brian Samuels, MD, PhD, Assistant Professor in the UAB Department of Ophthalmology, and his collaborators recently received a grant to study computational modeling as a method of determining why astronauts who are in space for extended amounts of time are experiencing eye pathologies. Many astronauts who come back from space experience poorer vision after flight, some even years later. The project is being led by C. Ross Ethier, PhD, Professor and Interim Chair of the Wallace H. Coulter Department of Biomedical Engineering at Georgia Institute of Technology and Emory University School of Medicine. Drs. Ethier and Samuels are collaborating with scientists at the NASA Glenn Research Center, and others, to help identify the cause of the pathologies and determine if there is a way to intervene and prevent these types of vision complications in the future.

“We are trying to incorporate all of the existing clinical and research data into functional computational models of the eye itself, the central nervous system, and the cardiovascular system to determine how they are interacting. These computational models should answer some of the questions as to why this is happening to our astronauts.”



Brian Samuels, MD, PhD

– Brian Samuels, MD, PhD

“We know that if astronauts are in space for extended amounts of time they have a higher propensity for developing pathologies similar to increased intracranial pressure,” says Samuels. “We are trying to incorporate all of the existing clinical and research data into functional computational models of the eye itself, the central nervous system, and the cardiovascular system to determine how they are interacting. These computational models should answer some of the questions as to why this is happening to our astronauts.”

The length of time astronauts stayed in space changed in the mid-2000s when the International Space Station started being used. Space shuttle missions typically lasted two weeks, but now the ISS missions may last six months or longer. Astronauts were no longer going up to space and quickly coming back down to Earth. It was around this time the scientific community noticed that longer durations in space, in microgravity, caused a larger propensity for changes in the eye.

Many astronauts who experience these vision issues are encountering a hyperopic shift in their vision, meaning they gradually become farsighted. Astronauts can get folds in the retina, experience swelling of the optic disc,

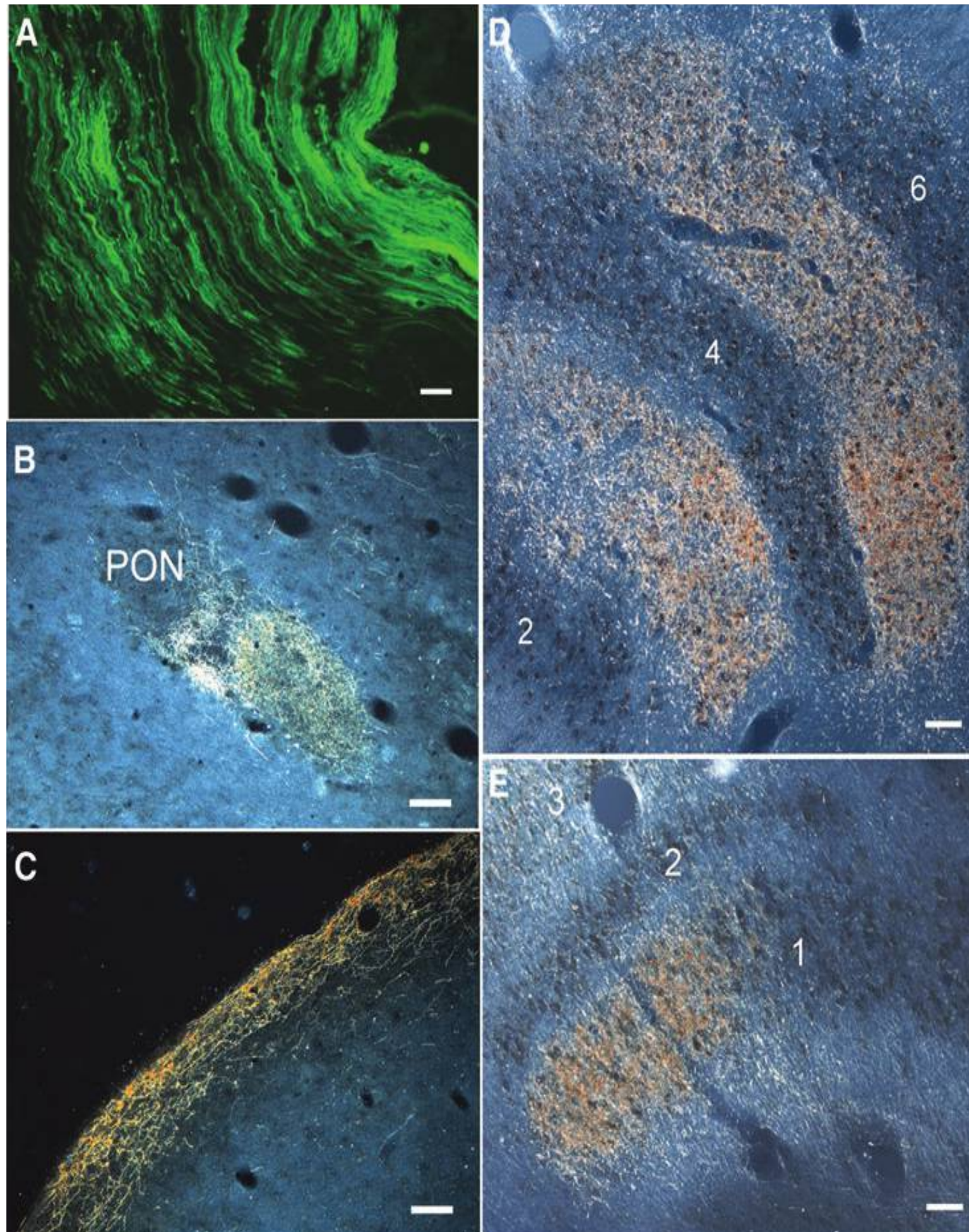
and also have distention of the optic nerve sheath behind the eye. Some astronauts who have returned from a mission are still experiencing vision issues five years later, so Dr. Samuels and his colleagues believe there may be some permanent remodeling changes in the eye after extended periods of time in space.

“Given that one of NASA’s primary goals is to send an astronaut to Mars, this will be the longest amount of time humans have spent in space thus far,” says Samuels. “If we are able to identify risk factors that might predispose someone to these types of health issues in space, the computational models could become a screening tool for future astronauts. We also want to find the direct cause behind these eye pathologies in an effort to develop tools to halt this process for astronauts in space. If an astronaut is six months from coming home and is already experiencing vision-related issues, we want to temporize any further damage that may occur.”

Samuels’ role in this project is to interpret clinical and research data that informs the computational modeling and relay back to the other investigators whether the output data obtained from the models is realistic. In other words, he is a clinical litmus test for the project. Samuels splits his time between the laboratory and the clinic. As a clinician-scientist, he can take information that is gathered from research studies, clinical studies, and computational modeling in the lab, and compare it to real-world scenarios in a clinic.

“Dr. Samuels is our point person for clinical calibration,” says Ethier. “We are trying to understand a complex pathophysiologic process, and the research inevitably requires that we make certain assumptions about how organs and tissues are responding to microgravity. Dr. Samuels helps ground us in clinical reality by relating effects in space to clinical conditions on earth, detailing pathophysiologic processes at the cellular level to clinical outcomes. He is an incredible resource for our team and the broader space physiology community.”

Transformative Science: Correcting Vision Loss Through Gene Therapy



(A) Fluorescent and dark field images of Green Fluorescent Protein (GFP) labelled fibers projecting to retinorecipient brain regions. Fluorescent image of GFP expression within retinal axons in the optic nerve. (B) Dark field image showing retinal projections to the pretectal olivary nucleus (PON). (C) Dark field image showing retinal projections to the superficial layers of the superior colliculus. (D,E) Dark field images showing retinal projections to dorsal lateral geniculate nucleus. (From Boye et al., 2016).

“For most retinal degeneration disorders, no effective treatment currently exists to preserve photoreceptors. This could be a preventive approach or more likely a potential treatment for people who are at risk of losing vision or have experienced partial vision loss.”



Paul Gamlin, PhD

– Paul Gamlin, PhD

Gene therapy is a technique used to replace or supplement a mutated gene with a healthy copy of the gene. Altering these genes has the potential to treat or even cure a wide range of diseases, including vision-related conditions.

Gene therapy is different from traditional drug-based therapy, which may treat symptoms but not the underlying genetic cause. Paul Gamlin, PhD, a professor in the UAB Department of Ophthalmology, is working to apply gene therapy approaches to the eye – in particular, patients diagnosed with retinal degeneration.

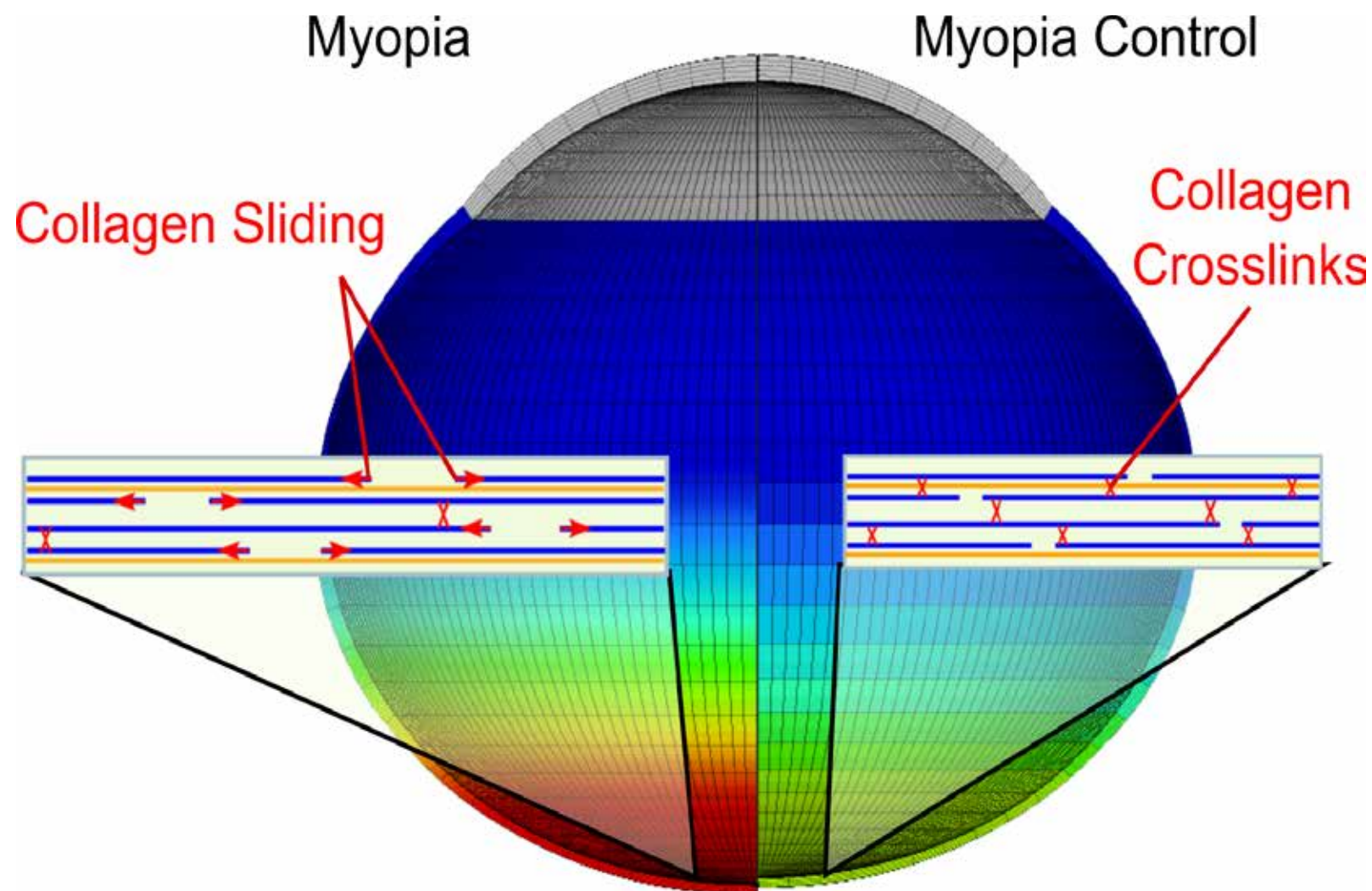
For much of his long career, Gamlin has studied how the brain controls eye movements. Specifically, he has researched the retinal ganglion cells (RGCs) that drive pupillary responses. RGCs are a type of neuron located in the retina that indirectly receive visual information from photoreceptors. In 2005, in the course of this research,

Gamlin and Dennis Dacey, PhD, a professor in the Department of Biological Structure at the University of Washington, made a novel discovery and identified a new type of cell in the primate retina that controls circadian rhythms and pupillary responses. Subsequent research prompted Gamlin to study how individual retinal cells could be manipulated using gene therapy.

“This discovery led us to become interested in gene therapy approaches to restore vision loss,” Gamlin says. “Over the past few years we have looked at several different approaches at both the RGC and photoreceptor level. For instance, there are some diseases where just a single defect in the DNA sequence produces defects in photoreceptor proteins. Photoreceptors convert light into signals that can stimulate biological processes and relay visual information to the brain via RGCs. When photoreceptors don’t behave appropriately, they stop signaling. When the signaling stops, vision loss or impairment occurs. If we can deliver the correct DNA into these cells, we can restore visual function.”

Introducing healthy genes into the eye requires a delivery vehicle – in this case, a harmless virus. The Adeno-associated virus, or AAV, is not pathogenic, meaning it poses no harm and in some cases can even be beneficial. The virus enters the damaged cell to deliver the corrective gene so that restoration can begin.

“For most retinal degeneration disorders, no effective treatment currently exists to preserve photoreceptors,” Gamlin says. “This could be a preventive approach or more likely a potential treatment for people who are at risk of losing vision or have experienced partial vision loss. The challenge now is to bring this technology to patients with a wide spectrum of blinding eye disorders.”



Computational multi-scale model of the tree shrew eye showing myopia development and myopia control after scleral crosslinking. The model predicts that scleral crosslinking slows scleral remodeling at the macro-scale by inhibiting collagen sliding at the micro-scale.

Attacking the Myopia Epidemic: A Boom in the Research Community

Rafael Grytz, PhD, Assistant Professor in the Department of Ophthalmology, was awarded a five-year R01 grant from the National Eye Institute to explore the underlying cause of myopia, the most common refractive error of the eye. Myopia, or nearsightedness, makes close objects appear clearly, but distant objects appear blurry. It affects nearly 40 percent of the U.S. population, and the prevalence of this diagnosis is rapidly growing around the globe.

The National Eye Institute released a recent study that examined the prevalence of myopia within certain

timeframes: 1971 to 1972 and 1999 to 2004. The study found that an estimated 25 percent of the population, ages 12-54, had myopia between 1971 and 1972. This percentage increased to a staggering 66 percent between 1999-2004. During this time, myopia rose from 30 to 80 percent in Americans of European descent and an exorbitant 100 percent in African Americans. By some estimates, one-third of the world's population could be affected by myopia at the end of this decade.

With myopia, the eye increases in size beyond normal levels and becomes too long for its own optical system.

“Researchers need to find the root cause and mechanisms driving this myopia increase. If we can stop myopia from forming at the most elementary level, we would have the ability to attack it at all fronts. My five-year, fully funded R01 grant will help the scientific community get closer to this goal.”



Rafael Grytz, PhD

– Rafael Grytz, PhD

This means that the lens of the eye focuses light from far objects slightly in front of the retina, rather than directly on it. In severe cases, the eyeball elongates rapidly and causes high levels of myopia. This elongation process puts the eye at risk for blinding eye diseases such as retinal detachment, macular degeneration, and glaucoma. Progressive myopia is one of the leading causes of blindness worldwide. Glasses, contact lenses, and refractive surgery can help to visually correct myopia, but they do not address the underlying cause, the elongation of the eyeball, and they don't reduce the risk to blinding ocular comorbidities. This threat has prompted a rise in the research community to elucidate the mechanisms behind myopia.

“The rate of myopia diagnoses is dramatically increasing, and we don't know why. We need to do everything we can to prepare for the future,” says Grytz. “A person's risk for debilitating vision-related health issues significantly increases with myopia. As a researcher, I know that the work we do now can prevent these types of devastating effects for people suffering from myopia and blinding ocular comorbidities in the future.”

With this grant, Grytz hopes to fight myopia using a two-fold approach. First, he will focus on how the eye becomes elongated in myopia, specifically focusing on the remodeling of the sclera. Scleral remodeling determines the final size of the eye. During childhood, the eye uses a visual feedback mechanism to try to match the size of the eye to its optical system by altering scleral remodeling.

The sclera is known as the white, outer layer of the eye and is made out of collagen fibers, the toughest protein in the human body. Grytz hypothesizes that micro-deformations between these collagen fibers underlie scleral remodeling. Grytz is exploring this remodeling process to learn how the eye adapts its eye size. He argues that “once we fully understand this remodeling process, we can develop new and effective treatment options to control myopia in every patient.”

The second step of his research is to control myopia through slowing sclera remodeling. Every eye has collagen crosslinks that connect the collagen fibers of the sclera with each other. Grytz believes that these crosslinks can prevent the micro-deformations that underlie scleral remodeling in myopia. Collagen crosslinks naturally accumulate as we age but can be incorporated artificially. Grytz proposes to inhibit scleral remodeling and progressive myopia by artificially crosslinking the sclera. Grytz believes that scleral crosslinking can become a feasible treatment option for controlling the most severe cases of myopia, where currently no good treatment option exists. Crosslinking has been applied to the cornea and successfully used to control keratoconus for over ten years, but this method has not yet been established for the sclera or myopia control.

Scleral remodeling is a rather slow process and the underlying micro-deformations take place over days, months, or years. No researcher has been able to see these micro-deformations because they take place over such a lengthy period of time. Grytz is partnering with the UAB High Resolution Imaging Facility to use their advanced microscope to induce artificial markers into the micro-structure of living scleras. Grytz's laboratory has developed an organ culture system to image these markers as the sclera remodels over a period of days. Through partnership with the UAB High Resolution Imaging Facility, Grytz now has the ability to quantify micro-deformations in living tissues of the sclera, which has never been done before. If Grytz can uncover some of the fundamental mechanisms behind scleral remodeling in myopia, he can then look toward developing new treatments.

“There are things we can do to help children and young adults fight myopia. For instance, exposure to sunlight for two hours a day helps prevent myopia. However, at the rate this diagnosis is increasing, these tactics aren't enough anymore. Researchers need to find the root cause and mechanisms driving this myopia increase. If we can stop myopia from forming at the most elementary level, we would have the ability to attack it at all fronts. My five-year, fully funded R01 grant will help the scientific community get closer to this goal,” says Grytz.



(Above): Optical coherence tomography (OCT) image of the optic nerve head in the back of the eye, where the retinal neurons that transmit visual signals exit the eye on their path to the brain. This shows an optical cross-section through the optic nerve head, taken at the location noted by the bright green line in the image. (Right): Dr. Downs and his laboratory staff.

👁️ Downs receives BrightFocus Foundation glaucoma research grant

The BrightFocus Foundation has awarded a glaucoma research grant for more than \$149,000 to J. Crawford Downs, PhD, of the University of Alabama at Birmingham, for his work on a new wireless system to measure and control fluid pressure around the optic nerve.

The pressure inside the eye, or intraocular pressure (IOP), has long been thought to play a dominant role in glaucoma, but recent work suggests that pressure from cerebrospinal fluid surrounding the optic nerve exiting the eye is also involved. The pressures are not easy to measure, but Downs and his fellow researchers have developed a new system to wirelessly measure and record the IOP continuously in research subjects, and now want to extend that system to measure the pressure around the nerve exiting the eye.

Using this system, Downs hopes he can definitively determine whether the pressure around the optic nerve is important in glaucoma, which could lead to new treatment approaches for the blinding disease.

BrightFocus, a nonprofit based in Maryland, awarded a total of 62 new grants in 2016. These awards are given for research to end Alzheimer's disease, macular degeneration, and glaucoma. The grants were approved after peer review by panels of the leading scientists in each field. BrightFocus manages a portfolio of more than 150 research projects around the globe.

Jim Johnston, MD, a pediatric neurosurgeon at UAB and Children's of Alabama, and Brian Samuels, MD, PhD, ophthalmologist and glaucoma specialist at UAB, will be working with Downs on the project.

EDUCATION



Resident Spotlight: HongVan Le, MD

How did you become interested in ophthalmology?
Ophthalmology is a challenging field, both clinically and surgically. However, you can make a significant impact on your patients' vision and subsequently their quality of life by doing something as simple as prescribing glasses or performing challenging surgeries, like cataract surgery. It is this potential to change someone's quality of life that initially drew my interest to ophthalmology.

Why did you choose the UAB Department of Ophthalmology for your residency over other programs?

I chose UAB Ophthalmology because it has a reputation for training residents to be great clinicians, surgeons, and educators — no matter our chosen specialty.

Why should future residents consider applying to our residency program?

The UAB Department of Ophthalmology Residency Training Program is well-known as a clinically and surgically strong program, with a diverse patient population and a state-of-the-art training facility. I know the education offered here is one-of-a-kind.

Where are you from originally?

Baton Rouge, Louisiana

Where did you attend medical school?

Louisiana State University School of Medicine in New Orleans

When is your anticipated residency completion date?

I am in my second year of residency and hope to complete the program in June 2018.

How do you feel about Birmingham?

Birmingham feels like a home away from home for me. It has enough of the small-town feel with all the amenities of a large city.



HongVan Le, MD

What do you think will be your specialty focus in ophthalmology?

I enjoy all aspects of ophthalmology, but I particularly enjoy working with children, so pediatric ophthalmology really appeals to me.

Do you have any hobbies or pastimes that you enjoy when you aren't training as a resident?

I enjoy thrift shopping, sewing, and baking.

What TV shows do you enjoy watching during your time away from the hospital?

I enjoy Game of Thrones, Westworld, and Supernatural.

Residents and Fellows



THIRD-YEAR RESIDENTS

William Gannon, MD
Austin Gerber, MD
Elizabeth Keeble, MD
Adam Quinn, MD
Michael Rolfsen, MD

SECOND-YEAR RESIDENTS

Peter Daniel, MD
Kristen Jijelava, MD
HongVan Le, MD
Katherine Orman, MD
Arthur "Jordan" Stanley, MD

FIRST-YEAR RESIDENTS

Bernard Dib, MD
Robert Knox, MD
Richard Martindale, MD
Alex McGaughy, MD
Nishi Shah, MD

FELLOWS



Joseph Armenia, MD
Oculoplastics



Kevin Bray, MD
Retina



Jay Craddock, MD
Glaucoma



Jason Crosson, MD
Retina



Jay Glover, MD
Retina



Andrew McFarland, MD
Retina



David Neely, MD
Retina



Jack Parker, MD
Cornea



Neely (left) discusses his experience during his research track with Read (right).

New Options for Residency in Ophthalmology Open for Young Researchers

The UAB Department of Ophthalmology is enhancing its residency program with a new track, giving incoming residents the option to participate in an in-depth clinical or basic research project of their choice.

Both the traditional clinical path and the more research-intensive academic path provide training in research methodology, but residents who choose the academic path will have protected research time during their second year, allowing them to complete an 18-month research project.

In the first year of the program, residents on both tracks complete a one-year project focusing on background, current state of knowledge, and a clinically relevant research component.

In the second year, academic-path residents will begin an 18-month research project. This provides more intensive research experience than previously possible. Projects will culminate with presentations at the department's symposium during their third year.

"The first group of academic path residents will set the stage for those that follow," says Russell Read, MD, the Max and Lorayne Cooper Professor for Ophthalmology Residency Training director. "We were very fortunate that in the first year we offered this research track, we had three of our five first-year residents express interest and choose to follow the track."

THE FIRST CLASS

The department recently saw its first three residents complete the research-intensive program: Jack Parker Jr., MD, Pooja Godara, MD, and David Neely, MD.

Each resident partnered with a research faculty mentor to develop a project that resulted in multiple presentations and manuscripts.

Dr. Parker's research focused on a new surgical option for patients with advanced keratoconus called Bowman layer transplantation. Keratoconus is a progressive eye disease in which the normally round cornea thins and begins to bulge into a cone-like shape. This cone shape deflects

light as it enters the eye on its way to the light-sensitive retina, causing distorted vision.

The use of Bowman layer transplantation could be a way to halt progressive advanced keratoconus.

"Bowman layer fragmentation is one of the earliest and most significant changes in keratoconus," Parker says. "Perhaps by replacing the Bowman layer, we can mechanically bolster and shore up the cornea, protecting it from further progression."

Pooja Godara, MD, researched the measurement of ocular perfusion pressure in nonhuman studies via continuous radio telemetry, and what that means for the study of glaucoma. Ocular perfusion pressure is the pressure at which blood enters the eye. Glaucoma is the second leading cause of blindness worldwide, with more than 50 million people affected, according to the World Health Organization.

"Glaucoma is conceivably a disease of multiple pressures, more than just intraocular pressure," Godara says.

Dr. Neely's research assessed a link between subretinal drusenoid deposits (SDD) and age-related macular degeneration (AMD). To determine whether SDD in eyes in normal macular health increases risk for early AMD, this study examined the association between the presence of SDD at baseline in a cohort of older adults in normal macular health and incident of AMD three years later.

Results suggest that SDD in older eyes with normal macular health is a risk factor for the development of early AMD. Older adults in seemingly normal macular health yet having SDD may warrant closer clinical monitoring for the possible onset of early AMD.

NEXT STEPS FOR THE PROGRAM

Dr. Read says he expects one resident per year on average to select the research track, as it is a demanding curriculum for residents still responsible for clinical activities, call, lecture and conference attendance.

The research track offers the residents five weeks of dedicated block time during their second year to conduct the bulk of their research data gathering.

"These residents are experiencing firsthand, and early on, the realities of life as a clinician-scientist," he says. "They learn how to balance clinical responsibilities and demands with those of their research program."

Read says the program is important because it teaches the residents clinically relevant issues that require additional understanding and knowledge required to reduce or alleviate human suffering.

"The UAB Ophthalmology Residency program is already a top-tier clinical training program," Read says. "This new option gives our residents the opportunity to continue to make a difference in patients' lives one at

POWERFUL PARTNERSHIPS

Alumni Challenge Fund

The Alumni Challenge Fund was established to offer our alumni an opportunity to invest in the UAB Department of Ophthalmology Residency Training Program. In the Department of Ophthalmology, we have the distinct privilege and crucial responsibility of preparing our graduates to serve as the next generation of leaders in vision health.

This year, the Alumni Challenge Fund was able to fund new instruments for the surgical practice lab, which allows our residents to train as specialty surgeons with the latest and most advanced equipment. The eye health challenges facing our aging society can only be met if we continue training young surgeons.

As we look to the future of our Residency Training Program, we plan to offer specialty learning experiences in both research and health administration to allow for a broader range of training experiences. By adding resident participation in these areas, our program will teach the skills needed to practice in an increasingly complex health care environment.

These critical new initiatives would not be possible without the support of our Alumni Challenge Fund.

To learn more about giving to the Alumni Challenge Fund, please contact Morgan Quarles at nmrobinson@uabmc.edu or 205-325-8112.

a time via excellent clinical care, but also to add to our ophthalmologic knowledge base, enhancing the practice of all ophthalmologists — which is a huge force multiplier in our battle against blinding diseases."

The hope for this program, Read says, is to light the fire of scientific inquiry in those who participate so that they go on to make the important discoveries needed to improve the care of patients.

"At the least, we expect that participation in the research track will enlighten them to the processes involved in research so they have a fuller understanding and are able to read the scientific literature with an informed, critical eye. That will make them better ophthalmologists and lifelong learners."



The WOOs meet a few times a year over dinner or social activities to support one another on a personal and professional level.

Women of Ophthalmology (WOO) Group Sees the Value of Fellowship

Virginia Lolley, MD, FACS, Assistant Professor in the UAB Department of Ophthalmology, knows how it feels to be an accomplished ophthalmologist in a medical field once labeled “a gentleman’s subspecialty.”

After graduating from Tulane University School of Medicine, she came to UAB to begin her residency in 1995. At the time there were only three female ophthalmologists in Birmingham, and two were UAB faculty members affiliated with the Department of Ophthalmology’s Residency Training Program. Dr. Lolley, like many other women before her, was the only female resident in her class.

“This is just how it was for years,” Lolley says. “Usually one out of every six residents was female. It wasn’t until the mid-2000s that we finally began to see a rise in women entering ophthalmology residency programs. The pattern changed, and we started bringing in more and more female residents. As women came into the program and graduated, some would scatter throughout the

country, but others would stay right here in Birmingham and set up practice locally, at a nearby hospital, or join the faculty at UAB. Now there are numerous female ophthalmologists throughout central Alabama.”

CAMARADERIE AMONG PEERS

In 2013, several local female ophthalmologists, including UAB faculty members, decided to get together for dinner. They didn’t know it then, but this was the beginning of a local group known as the WOOs (Women of Ophthalmology). The WOOs meet 2-4 times a year. The get-togethers could be dinner at a faculty member’s home or a cooking class at Sur la Table, but the core idea is the same: women coming together to support one another on a personal and professional level. The group eventually expanded beyond female ophthalmologists in the department. Practicing female ophthalmologists from across the area, along with optometrists, psychologists, researchers, and female residents, were all included.

This type of mentoring during the early stages of a career can be associated with career satisfaction and may guide the development of professional expertise for a young resident. It also increases the chances of helping others as a mentor during their own careers. It serves as an opportunity for residents to get to know physicians, researchers, and other medical professionals outside of the classroom.

“I am not an ophthalmologist like most of the other women in the group,” says Laura Dreer, PhD, director of Psychological and Neurological Clinical Research Services in the Department of Ophthalmology. “When I started attending WOO events, I knew it was a great opportunity to learn more about my fellow female colleagues who are in a different field of study, because as women, we share so many of the same issues, such as careers, work-family balance, and leadership. For me, this was a very exciting cross-discipline opportunity to collaborate and bounce ideas off one another, but it also allows for fellowship among female peers. I can say that the WOO events are something I really look forward to and enjoy.”

A GUIDING LIGHT THROUGH RESIDENCY

Currently, in the Department of Ophthalmology Residency Training Program, nearly one-third of the residents are female. These residents are included in WOO events, giving young doctors the opportunity to interact with their faculty advisors and mentors on both a professional and personal level.

“I was the only female resident in my class,” says Sara Mullins, MD, a clinical instructor in the Department of Ophthalmology. “So I understand the associated stress that comes from being not only a resident, but a female resident. It can be a challenge to balance personal and work life, so having a group of women to rely on, who understand what you are going through, is so important. The WOOs didn’t plan on becoming role models for other women, but it has evolved into that. I didn’t have these types of opportunities when I was in my residency. Which is why I think it is important – now more than ever – for women to support other women.”

This type of mentoring during the early stages of a career can be associated with career satisfaction and may guide the development of professional expertise for a young resident. It also increases the chances of helping others as a mentor during their own careers. It serves as an opportunity for residents to get to know physicians, researchers, and other medical professionals outside the classroom.

“Three out of the five residents in my class are women,” says second-year resident Kristen Jijelava, MD. “I am not from the Birmingham area, so becoming close with my classmates and surrounding faculty members has made my residency a much more enjoyable experience. From advice on managing time to balancing personal life, I feel like I have really received lessons from the WOOs for how to make my commitments work.”

Residents often have questions or concerns they don’t know how to address because the topic could be uncomfortable or personal. The WOO meetings provide an opportunity for female residents to open up to faculty members and become more comfortable as medical professionals.

“As women, we all have different perspectives and plans for how we want to set up our lives,” Lolley says. “We wear many different hats and juggle family and work on a daily basis. The WOOs are valuable to both working professionals and young residents as they begin their careers as ophthalmologists. It is important for women to know that we support and value one another. Women supporting other women – you can’t get much better than that.”



PATIENT CARE



By offering the most advanced clinical practice, treatments, and technology, the experts at UAB Callahan Eye Hospital and the Department of Ophthalmology provide the highest quality continuum of vision care services. Treating more than 98,000 ophthalmic patients each year, the hospital operates the only 24-hour, 7 days-per-week eye emergency room in the state and one of only two Level I Ocular Trauma Centers in the nation. Callahan offers excellence in eye trauma, retinal, vitreal, cornea, cornea transplant, glaucoma, cataract, laser cataract, oculoplastics, orbital reconstruction, and pediatric eye surgeries.

UAB Callahan Eye Hospital Clinics

Delivering the same outstanding vision care associated with UAB Callahan Eye Hospital to convenient locations throughout Central Alabama.



Dedicated Eye Care Facility



MORE THAN 11,500	Surgery procedures
4,931	Cataract surgeries in 2016
1 MINUTE	Lowest OR room turn time
1,200+	Surgery cases per room

6,213	Emergency Department visits in 2016
78,952	Total clinic visits in 2016
12,721	New clinic patients in 2016



POWERFUL PARTNERSHIPS

Three Lead Donors Support Operating Room Expansion

Hill Crest Foundation, Alabama Eye Bank, and Alabama Lions Sight were all significant philanthropic partners in our vision of expanding operating room capacity. This partnership helps us continue providing much-needed eye care services to our patients.

For nearly 25 years, the Hill Crest Foundation has supported UAB endeavors, and the latest gift to the Department of Ophthalmology exemplifies the foundation's generosity as well as its commitment to our progress and to improving the quality of eye care across Alabama. The Alabama Eye Bank has a long history of partnering with the Department to expand and enhance our mission of restored vision for residents across Alabama and the United States. The Alabama Lions Sight partnered with us during our last expansion project – renovating the emergency department and the Lions Eye Clinic – and we are grateful for its continued commitment to UAB Ophthalmology.

UAB Callahan Eye Hospital is among the leading facilities of its kind. Our vision for the future calls for providing more surgical space to deliver needed eye care to a growing population. Together, we are helping change the lives of patients who come to Callahan Eye Hospital in need of surgical services.

The growth in the number of aging patients from the Baby Boomer generation, coupled with a loss of Boomer-age providers, places a responsibility on hospitals to stay abreast of the newest advances in technology. This influx of new patients coming into the health care system now also includes some who did not have access to medical insurance in the past.

Hospitals must begin preparing for this fast-approaching era of increased patient volume. People are managing more and more chronic conditions, utilizing more health care services in the process. Meeting health care needs – both now and in the future – requires more resources, new approaches to delivery of care, and a greater focus on research and prevention.

“The UAB Callahan Eye Hospital has a rich heritage of serving the people of Alabama and the southeast,” says Brian Spraberry, president and CEO of UAB Callahan Eye Hospital and Clinics. “The eye hospital has been a part of our community for more than 50 years and I am always pleased to hear the wonderful stories about how patients’ eyesight was saved by one of our incredible surgeons. Not only does Callahan house one of only two level one ocular trauma centers in the nation, but we have just completed expanding our operating capacity to 16 operating rooms from nine, making us one of the largest eye facilities in the US. We are truly fortunate to have the highest level of care available here, close to home at UAB.”

At Callahan Eye Hospital, we are prepared to meet these needs by expanding both our operating room capacity and our number of clinic locations. The health care system may be larger and more complex, but we are looking for ways to streamline the process for patients and health care professionals. These important expansion projects are in response to the growth of the health care system and the needs of the community.

ADDING OPERATING ROOMS

The number and use of operating rooms often are important factors in maintaining patient services within a hospital. As the need for health care continues to rise, so does the increase in surgical cases. Callahan Eye Hospital was built over 50 years ago, and medicine has evolved greatly since that time. Surgeries now are more complex and utilize the newest technologies and more equipment. With this expansion comes more efficient operating room workflow for doctors, nurses, staff, and patients through increasing capacity.

“As our population ages, people are staying in optimal health for a longer amount of time,” says Michael Callahan, MD, board president of the International Retinal Research Foundation and an ophthalmologist in private practice at Callahan Eye Hospital. “We want to make sure our patients are able to keep their independence, and access to vision care is the first step toward this quality-of-life care. Through service and operating room expansion, we are positioning ourselves to take care of our community.”

IMPROVING ACCESS TO CLINICAL SERVICES

Providing access to vision care across the region will continue to be a priority for Callahan Eye Hospital as the demand for such services increases. We recognize that patients may have difficulty coming to our downtown location for appointments or surgical services. This is why we operate many clinic locations across central Alabama, giving patients convenient, timely access to UAB ophthalmologists, advanced technology, and groundbreaking research – no matter where they live. The hospital opened a new clinic on Cahaba River Road in the Altadena community in fall 2016. Our newest clinic location is opening soon in the Pell City community and will offer comprehensive adult ophthalmology and optometry services.

“By increasing our number of our clinic locations, we are expanding our platform to deliver care to patients across Alabama,” says Christopher A. Girkin, MD, Chair of the Eyesight Foundation of Alabama and the Department of Ophthalmology. “To address the needs of a rapidly growing population we must be able to offer integrated care including telemedicine, imaging, diagnostics, and therapeutics.”



Grand opening of UAB Callahan Eye Hospital Operating Rooms.

Expanding Access to Vision Care



Ribbon cutting at UAB Callahan Eye Hospital Clinic on Cahaba River Road, in the Altadena community.



Integrated Pediatric Care

Physicians with 64 years combined pediatric experience available at Callahan Eye Hospital Clinics

Children are often overlooked as a population in need of routine eye exams and vision screenings. Early vision screenings help detect the presence of disorders at an early stage when treatment is more likely to be effective, identifies children who may be at a high-risk for eye disease, and provides valuable information and education about eye health. All children, even those who show no signs of vision impairment, should have a comprehensive eye exam.

The ability to see clearly isn't an automatic response. A child's brain learns how to use eyes to see, just as the brain uses legs to walk or the mouth to speak. The longer a vision problem goes undiagnosed and untreated, the more a child's brain learns to accommodate the vision problem. This dilemma makes eye exams invaluable to children.

Uncorrected refractive errors such as myopia, hyperopia, and astigmatism in preschool-age children are associated with delays in school readiness. Other significant vision conditions, such as glaucoma and cataracts, among children can also be detected during a screening. To provide for this need, Callahan Eye Hospital has formed a partnership between ophthalmologists and optometrists to increase pediatric patient access to care.

"I cannot stress how important vision screenings in infancy and toddler years are in preventing lifelong permanent vision loss. Because many of these conditions have absolutely no outward signs or obvious symptoms for parents to notice; they will be missed 100% of the time without the screening. The gratitude parents have when they find out their baby will avoid vision problems due to early intervention and treatment is priceless and as a physician it never gets old to see that relief on their faces."



Ann Marie Arciniegas-Bernal, MD

— Ann Marie Arciniegas-Bernal, MD



UAB Callahan Eye Hospital is here to help you protect your child's vision. Our ophthalmologists and optometrists can help your child complete a vision screening exam at any of our eight locations. The following are just a few statistics regarding children and vision problems that a vision screening could prevent:

- Nearly 3% of children younger than 18 are blind or visually impaired, defined as having trouble seeing even when wearing glasses or contact lenses.
- Amblyopia is found in about 2% of six to 72-month-old children, and is the most common cause of vision loss in pediatric patients.
- Between 2% and 4% of children under the age of 6 years old have strabismus, a misalignment of the eyes that can lead to the development of amblyopia.
- 4% of children ages six to 72 months of age are diagnosed with myopia. That number more than doubles to 9% in children ages five to 17 years old.
- 21% of children ages six to 72 months of age are diagnosed with hyperopia, or farsightedness.
- 15% to 28% of children ages five to 17 years are diagnosed with astigmatism, an irregularly shaped cornea or lens that causes blurry vision at all distances if not corrected.

(Statistics per Prevent Blindness)

"Children living with undetected eye problems are at risk for poor visual development. Children who experience visual problems from an early age may assume that their vision is normal and tend not to complain, leaving parents unaware that a problem exists. Screenings may detect children who have, or who are at risk of developing, eye problems such as eye turns, cataracts, and glaucoma. These screenings are a very important first step in diagnosis, but in order to address any issues suspected in children, a complete eye exam that includes dilation, is necessary."

— UAB Callahan Eye Hospital Optometrists
Marcella Frazier, OD and Sarah Lee, OD



UAB Saves Vision for Kayleigh Bolding

Martin Thomley, MD



Left: Kayleigh was sitting in the backseat of this car when it was struck by a deer, bending the door and breaking the window. Right: Kayleigh receives care immediately after arriving at Callahan Eye Hospital Emergency Department.



“The doctors were really nice to me, and told me what was going on with my eye. I was scared but they said I would be fine, and that made me feel better.”

– Kayleigh Bolding

Kayleigh Bolding was excited about Valentine’s Day in 2016. She was in the third-grade at Greenville Elementary School and her class was not only throwing a Valentine’s party, but she was also receiving a laptop as a Valentine’s Day gift from her grandmother, Joyce Oswald, and father, James Bolding. Just before dusk a few days prior to the holiday, the family made the drive to pick up Kayleigh’s laptop. They were traveling on a county road when their car was struck by a deer.

James was driving, Joyce was in the passenger seat, and Kayleigh was in the backseat—which is where the deer made impact with the vehicle. James and Joyce jumped out of the car to check on Kayleigh. Glass was everywhere, but Kayleigh’s only apparent injuries were a few bruises and a cut on her head that was mended with stitches at the local emergency room in Greenville. She was about to be released when Joyce Oswald noticed something odd about her granddaughter’s right eye.

“We were all so shaken up from the wreck and were relieved when they told us Kayleigh was alright and we could go home,” Joyce says. “But when I leaned down to look at her, something wasn’t right with her eye. The closer I got to her I could see there was something in her pupil. It was glass. The doctor came back in and said we needed to be seen at UAB Callahan Eye Hospital in Birmingham.”

Emergency services transported Kayleigh to Birmingham, AL where she was immediately seen by staff and her surgeon, Martin Thomley, MD, Associate Professor in the Department of Ophthalmology. Thomley determined that Kayleigh needed emergency surgery.

“Kayleigh came to Callahan Eye Hospital at the right time,” says Dr. Thomley. “If this injury had been missed and she had gone home, numerous complications could have occurred. The worst case scenario is Kayleigh could have lost vision in that eye.”

After the surgery, Kayleigh recalls seeing a stuffed animal next to her in the recovery room. The stuffed animal, which Kayleigh named Mr. Monkey, was a gift from the care team at UAB Callahan Eye Hospital. Kayleigh had a patch on her eye and an IV in her arm, as did Mr. Monkey. The doctors and nurses told Kayleigh that the procedure went well and the glass was removed, and that Mr. Monkey had undergone the same procedure so they could recover together.

“I thought she would lose her vision in that eye,” Joyce says. “But I knew from the moment we got to Callahan that Kayleigh was in good hands. The doctors, nurses, and staff were so kind to her, and coached her through the surgery. She was frightened, but the entire care team was so attentive to her needs.”

Kayleigh and her family returned to Callahan Eye Hospital a few times after the surgery for follow-up appointments over the coming months to check on the stitches in her eye, at which time she received another stuffed animal, Mrs. Monkey. Kayleigh now has 20/20 vision in the eye her grandmother once thought would be permanently impaired. She is now in the fourth grade, enjoys science class, and excels as an A/B honor roll student.



Left: Anderson wears his patch as he celebrates Christmas as a toddler. Above: Anderson currently loves to play minimal-contact sports, but always wears his protective glasses.

Confronting Congenital Cataracts

Congenital cataracts, an opacification of the eye lens, are typically diagnosed at birth or infancy. As an embryo's eye begins to form, a blood vessel develops that runs through the gel of the eye and functions much like an umbilical artery. The vessel inserts in the developing lens and surrounds it with nourishing blood vessels. This is similar to an umbilical cord, but instead, this cord nourishes the lens, says Martin S. Cogen, MD, professor and Division Chief of Pediatric Ophthalmology and Strabismus in the Department of Ophthalmology. Typically, after the lens is fully developed this artery isn't needed anymore and just disappears near the second trimester.

Once in a while this process goes awry and part of the artery doesn't disappear properly—leaving a defect in the lens. This defect progresses and eventually forms a cataract in the eye, continuing to cloud the lens until the child can't see anymore. This is one of the more common forms and causes of congenital cataracts in children.

This was the case for then 8 month-old Anderson Glover, of Knoxville, Tennessee. In 2010, Anderson was

diagnosed with a congenital cataract in his left eye. His family was told by a pediatric ophthalmologist in Knoxville they had detected the cataract too late, and that it wasn't going to be fixable.

Anderson's parents, Melissa and Brandon Glover, conducted their own research and decided they should get a second opinion with Dr. Cogen at Callahan Eye Hospital. They traveled to Birmingham over the long Martin Luther King Jr. holiday weekend in January 2011, and were right away comforted and impressed by Cogen's frankness and passion for pediatric ophthalmology.

"He was a straight shooter from the start," Melissa says. "He explained our options from worst to best-case scenario. He told us what this meant for our child. Dr. Cogen gave us hope and a chance to correct Anderson's vision, and that is all we needed. At this visit we decided to go ahead with cataract surgery using an artificial lens implant, and returned to Birmingham in February 2011 to have the surgery."

"Amblyopia is when the brain starts putting all of its eggs in one basket, with the working, healthy eye. As a surgeon, I can surgically correct the eye, but if I don't address the amblyopia it won't matter because the brain won't communicate with both eyes, only the working eye."



Martin S. Cogen, MD

— Martin S. Cogen, MD

"Over time, the pediatric ophthalmology community has learned that, in many cases, artificial lens implants are a desirable way to treat congenital cataracts," Cogen says. The cataract has to be removed surgically, and then an intraocular lens can be implanted to replace the defective human lens. After the surgery, the real work begins by patching the child's dominant eye—a tedious process of covering a child's better-seeing eye for multiple hours a day to allow the brain to communicate with the weaker eye."

After the surgery, the Glover family began patching Anderson's dominant eye. For any parent with a young child, this can be a difficult task. Having to cover their child's better-seeing eye for several hours a day, along with driving back to Birmingham to check on Anderson's progress, was a lot to juggle for two working parents with small children. The experience was a challenge, but as Dr. Cogen informed them, it would be worth the struggle.

Dr. Cogen described the process as a marathon, not a sprint, informing the Glovers that if they continued patching Anderson's good eye, then he would have restored vision for the rest of his life. Patching time for Anderson has decreased to just two hours a day, three days a week. During their last appointment over the 2016 Thanksgiving week, the Glovers learned that, for post-surgical unilateral congenital cataracts, vision is often 20/200. Then they learned that Anderson's vision was 20/25. Needless to say, the family was thrilled.

"In the beginning, I cried because it was so challenging, so much worry, and lots of anxiety," Melissa says. "Now I cry because my child can see and I am so thankful."

It comes down to dedicated physicians like Dr. Cogen, because I know he is one of the best at what he does and this is why we drive multiple times a year, from out-of-state, to see an ophthalmologist at Callahan Eye Hospital. He takes his time and is patient with us."

Properly patching a child's eye is important because congenital cataracts can lead to amblyopia. Amblyopia is decreased or loss of vision in one or both eyes because of abnormal visual input during the first few years of life. If cataracts are caught too late, the chances of amblyopia are high because the brain has already had significant time to communicate with the good eye, neglecting the unhealthy eye. This makes amblyopia difficult to treat because, as long as the brain adapts for vision from one eye, a child will report no symptoms. By the time the child is old enough to realize that one eye is dominant, it may often be too late to reverse the condition.

"Amblyopia is when the brain starts putting all of its eggs in one basket, with the working, healthy eye," Cogen says. "As a surgeon, I can surgically correct the eye, but if I don't address the amblyopia it won't matter because the brain won't communicate with both eyes, only the working eye. It's kind of like if you have a great camera with a beautiful lens that takes great images, but if it isn't connected to a computer those pictures don't mean anything."

Anderson recently turned 7, and he loves science and football. It was his dream to be a football player, but Cogen has discouraged this because of possible injury to the artificial lens implant. So instead, Anderson has decided he is going to be a kicker. He says his ultimate dream is to be a marine biologist on the weekdays and a kicker on the weekends. He is in the highest reading group for his school grade, and his family couldn't be more thankful. Melissa says all of these activities Anderson gets to participate in are miracles, because he was supposed to be blind in his left eye.

The Glover family has learned a lot from this experience, but one of the most important lessons is the value of early vision screenings for children.

"As parents we do so many things to protect and nurture our children," Melissa says. "We read to them and try to give them the right food with nutrients and vitamins. Really, at the end of the day, if they can't see, then none of those other things matter. This is why it is so important for parents to take that hour out of their day to see a vision specialist. Parents take their children to the dentist when they start to get teeth so they should absolutely take their child to the eye doctor. If we hadn't seen Dr. Cogen when we did, it would have been too late. Anderson would have permanently lost vision in his left eye."

GIVING BACK



Ben Roberts serves as a medical missionary in Kenya.

A Call to Kenya: Ben Roberts Seeks to Restore Vision Near and Far

How far would you travel to help someone see? For Ben Roberts, MD, that answer is simple — Kenya.

Since 2006, Roberts and his family have served as medical missionaries at Tenwek Hospital in Bomet, Kenya. The Roberts family lives there for four years, then spends one year in the United States.



Roberts' small team of physician assistants, nurses, and local volunteers performs one of the nearly 2,600 surgeries completed in a given year.



Roberts graduated from the UAB School of Medicine and did residency training in the Department of Ophthalmology. He began working as a staff vitreoretinal surgeon at Retina Consultants of Alabama (RCA) following completion of his fellowship training in 2005. RCA is located in UAB's Callahan Eye Hospital. During his fourth year as a medical student, Roberts did a rotation at Tenwek.

"My wife and I knew after a month of being there that it was where we wanted to be," Roberts said.

Tenwek Hospital, one of the largest mission hospitals in Africa, was founded in 1937 by World Gospel Mission missionaries and has since grown to be a leading provider of quality health care and medical education in western Kenya. It is a nonprofit hospital functioning under the leadership of Africa Gospel Church in partnership with World Gospel Mission. Tenwek is a 300-bed teaching hospital with a wide range of surgical, medical, maternity, and pediatric services. It provides primary health care to 600,000 people within a 32-kilometer radius and serves as a referral center for a much larger region.

CHALLENGING, BUT REWARDING

When Roberts performs surgery, he does so with few resources and a small staff. His team of physician assistants, nurses, and local volunteers sees approximately 16,000 patients per year and performs 2,600 surgeries. Many are cataract surgeries; but he also performs glaucoma, retina, cornea, plastic, and pediatric eye surgeries. One of the major challenges he faces is the lack of supplies at Tenwek.

"Tenwek is a very resource-limited place. For example, we have to re-sterilize instruments and reuse them," Roberts said. "We get most of our supplies from India because it is cheaper. I couldn't provide retina care if people at Callahan Eye Hospital didn't save supplies to send us as well."

Mondays are typically busy clinic days, according to Roberts, because most patients are walk-ups and there are long lines of people waiting to be seen. Patients are screened, and those who have serious conditions are immediately admitted. Surgeries are performed Tuesday through Wednesday, and Fridays are reserved for mostly post-operation clinics.

According to the World Health Organization, approximately 90% of visually impaired people live in developing countries like Kenya.

Because of the lack of eye care in Kenya, Roberts says he has seen things there that doctors usually don't see in the United States.

"People in that environment will sit at home and stay blind if it isn't life-threatening," Roberts said. To remedy that, a few times a year, Roberts will take his team out into rural areas or neighboring South Sudan for a one-week traveling clinic performing 400 to 500 cataract surgeries.



According to the World Health Organization, approximately 90% of visually impaired people live in developing countries like Kenya.

BY FAITH, NOT BY SIGHT

Roberts says his faith is the biggest driving force behind what he does. Since Tenwek is a Christian mission hospital, he says people know there is something different when they walk through the doors.

"It's our desire to bring the best care we can, but we're trusting Jesus to heal these people's lives," he said. "We treat. Jesus heals."

Roberts says he and his team share stories from the Bible about restoration of vision and healing.

"Doing cataract surgery — a routine procedure in the States — and restoring someone's vision is very rewarding," Roberts said. "We get patients from Kenya and Sudan who are literally led to our clinics by their seeing-eye grandchildren. You do an operation, and you change their life."

A HELPING HAND

Roberts and his wife, Jenny, and sons, Luke, Nate and Isaac, spend a year back in Alabama between their four-year stints in Kenya. While in Birmingham, Roberts serves as a surgeon with Retina Consultants of Alabama (RCA).

"I'm very thankful to RCA and Callahan Eye Hospital for letting me work while I'm in the country," he said.

While World Gospel Mission sponsors Roberts and his family while in Kenya, he says many churches, both local and statewide, also provide support, including Briarwood Presbyterian Church and Shades Mountain Baptist Church in Birmingham.

Tenwek Hospital, one of the largest mission hospitals in Africa, was founded in 1937 by World Gospel Mission missionaries and has since grown to be a leading provider of quality health care and medical education in western Kenya.

The Alabama Eye Bank has also supported Roberts and Tenwek since 2010, when he and his fellow surgeons began performing corneal transplants. Tissue was needed because there is no viable eye bank in Kenya.

"The Alabama Eye Bank has been incredible," he said. "They'll ship me corneas within three or four days, and we're able to offer those services to the people there."

The Andalusia, Alabama, native, his wife and three children returned to Kenya in August, 2016 and while they will always be from Alabama, they now consider Kenya to be home. "There are always challenges, but the work we get to do has so many positive ramifications for so many people."

FACULTY LISTING

Full Professor



MICHAEL A. CALLAHAN, MD

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of California, San Francisco
Fellowship: Indiana University
TITLE: Professor
CLINICAL SPECIALTY: Comprehensive



MARTIN S. COGEN, MD

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of Alabama at Birmingham
Fellowship: James Hall Eye Center/Scottish Rite Children's Hospital
TITLE: Chief of Division of Pediatric Ophthalmology and Strabismus, Professor
CLINICAL SPECIALTY: Pediatric Ophthalmology and Strabismus



CHRISTINE A. CURCIO, PHD

EDUCATION:
Doctoral Training: University of Rochester
Postdoctoral Training: Boston University, School of Medicine; University of Washington School of Medicine
TITLE: Professor
RESEARCH INTEREST: Age-related macular degeneration, validation of clinical imaging (optical coherence tomography and autofluorescence)



J. CRAWFORD DOWNS, PHD

EDUCATION:
Master's Degrees: Tulane University
Doctoral Degree: Tulane University
Postdoctoral Fellowship: LSU Eye Center, Louisiana State University
TITLE: Vice Chair of Research; Director, Ocular Biomechanics and Biotransport Program; Professor
RESEARCH INTEREST: Ocular biomechanics, glaucoma



PAUL D. GAMLIN, PHD

EDUCATION:
Doctoral Degree: State University of New York Stony Brook
Postdoctoral Training: University of Alabama at Birmingham
TITLE: Professor
RESEARCH INTEREST: Neural control of eye movements



CHRISTOPHER A. GIRKIN, MD, MSPH, FACS

EDUCATION:
Medical School: University of Arkansas
Residency: University of Alabama at Birmingham
Fellowship: Wilmer Eye Institute, Johns Hopkins University; Shiley Eye Center, University of California, San Diego
TITLE: Chair, EyeSight Foundation of Alabama; Professor
CLINICAL SPECIALTY: Glaucoma
RESEARCH INTEREST: Clinical and basic research into glaucoma, health disparities



LANNING B. KLINE, MD

EDUCATION:
Medical School: Duke University
Residency: McGill University
Fellowship: Bascom Palmer Eye Institute, University of Miami; Montreal Neurological Institute
TITLE: Professor
CLINICAL SPECIALTY: Neuro-ophthalmology



CYNTHIA OWSLEY, PHD, MSPH

EDUCATION:
Master's Degree: University of Alabama at Birmingham
Doctoral Degree: Cornell University
Postdoctoral Training: Northwestern University
TITLE: Nathan E. Miles Chair of Ophthalmology; Director, Clinical Research Unit; Vice Chair of Research Administration; Professor
RESEARCH INTEREST: Aging-related vision impairment and eye disease; vision and driving; improving eye care access and quality for underserved populations



RUSSELL W. READ, MD, PHD

EDUCATION:
Residency: University of Washington Seattle
Fellowship: Doheny Eye Institute, University of Southern California
TITLE: Max and Lorayne Cooper Professor for Ophthalmology Residency Training
CLINICAL SPECIALTY: Uveitis/ocular inflammatory disease
RESEARCH INTEREST: Health disparities in uveitis outcomes



HAROLD SKALKA, MD, FACS

EDUCATION:
Medical School: New York University
Residency: New York University
Fellowship: New York University
TITLE: Professor
CLINICAL SPECIALTY: Electrophysiology

**JASON C. SWANNER, MD, FACS**

EDUCATION:
Medical School: University of South Alabama
 College of Medicine
Residency: University of Alabama at Birmingham
Fellowship: Massachusetts Eye and Ear Infirmary,
 Harvard School of Medicine
TITLE: Professor
CLINICAL SPECIALTY: Glaucoma

**MICHAEL S. VAPHIADES, DO**

EDUCATION:
Medical School: University of New England
Medical Internship: Brown University
Residency: Loyola University
Fellowship: Michigan State University
TITLE: Chief, Neuro-Ophthalmology and
 Electrophysiology Services; Professor
CLINICAL SPECIALTY: Neuro-ophthalmology

**SHU-ZHEN WANG, PHD**

EDUCATION:
Doctoral Degree: Virginia Polytechnic Institute
 & State University
Postdoctoral Training: Virginia Polytechnic Institute
 & State University; Wilmer Eye Institute,
 Johns Hopkins University School of Medicine
TITLE: Professor
RESEARCH INTEREST: Photoreceptor regeneration
 in the mammalian eye

**C. DOUGLAS WITHERSPOON, MD, FACS**

EDUCATION:
Medical School: St. Louis University
Residency: University of Alabama at Birmingham
Fellowship: University of Tennessee
TITLE: Professor
CLINICAL SPECIALTY: Retina and vitreous; ocular trauma
RESEARCH INTEREST: Retina and vitreous; ocular trauma

Associate Professor**MICHAEL A. ALBERT JR., MD**

EDUCATION:
Medical School: West Virginia University School
 of Medicine
Residency: University of Alabama at Birmingham
Fellowship: Retina Consultants of Alabama
TITLE: Associate Professor
CLINICAL SPECIALTY: Retina and vitreous

**R. JEFFREY CRAIN, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of Alabama at Birmingham
TITLE: Director, Birmingham Veterans Affairs Medical
 Center Ophthalmology Service; Associate Professor
CLINICAL SPECIALTY: Comprehensive

**DAWN K. DECARLO, OS, MS, MSPH**

EDUCATION:
Doctoral Degree: University of Alabama at Birmingham,
 School of Optometry
Master's Degrees: University of Alabama at Birmingham,
 School of Optometry; University of Alabama at
 Birmingham, School of Public Health
Residency: Hines Central Blind Rehabilitation;
 Chicago West Side Veterans Administration
 Medical Center
TITLE: Director, UAB Center for Low Vision
 Rehabilitation; Associate Professor
CLINICAL SPECIALTY: Low vision rehabilitation
RESEARCH INTEREST: Low vision rehabilitation,
 pediatric vision impairment

**LAURA DREER, PHD**

EDUCATION:
Master's Degree: University of Hartford
Doctoral Degree: Central Michigan University
Postdoctoral Training: Duke University Medical Center;
 University of Alabama at Birmingham
TITLE: Associate Professor
RESEARCH INTEREST: Adjustment to chronic health
 conditions; development of health promotion
 interventions

**RICHARD M. FEIST, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of Illinois, Eye and Ear Infirmary
Fellowship: University of Iowa
TITLE: Associate Professor
CLINICAL SPECIALTY: Retina and vitreous

**MARCELA FRAZIER, OD, MPH, FAOD**

EDUCATION:
Doctoral Degree: University of Alabama at Birmingham,
 School of Optometry
Residency: University of Alabama at Birmingham,
 School of Optometry
TITLE: Associate Professor
CLINICAL SPECIALTY: Pediatric optometry

**D. WADE JOINER, MD**

EDUCATION:
Medical School: University of South Alabama
Residency: University of Alabama at Birmingham
Fellowship: New York Eye and Ear Infirmary
TITLE: Associate Professor
CLINICAL SPECIALTY: Glaucoma

**JOHN O. MASON, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of Alabama at Birmingham
Fellowship: Wills Eye Hospital, Philadelphia,
 Pennsylvania
TITLE: Associate Professor
CLINICAL SPECIALTY: Retina and vitreous

**ANDREW MAYS, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of Alabama at Birmingham
Fellowship: University of Florida
TITLE: Associate Professor
CLINICAL SPECIALTY: Glaucoma

**CAROL ROSENSTIEL, OD, FAOD**

EDUCATION:
Doctoral Degree: University of Alabama at Birmingham,
 School of Optometry
TITLE: Director, Contact Lens Service;
 Associate Professor
CLINICAL SPECIALTY: Primary eye care and contact
 lens services

**MARTIN THOMLEY, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: Bascom Palmer Eye Institute,
 University of Miami
Fellowship: Bascom Palmer Eye Institute,
 University of Miami
TITLE: Associate Professor
CLINICAL SPECIALTY: Retina and vitreous

**JEFF YEE, MD, MS**

EDUCATION:
Master's Degree: UCLA
Medical School: University of California-Irvine
Residency: University of South Florida
TITLE: Medical Director, Lions Eye Clinic;
 Associate Professor
CLINICAL SPECIALTY: Comprehensive

**CECIL JAMES MCCOLLUM, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of Alabama at Birmingham
Fellowship: Duke University
TITLE: Director of Emergency Services,
 Clinical Assistant Professor
CLINICAL SPECIALTY: Emergency services; cornea

**SHILPA REGISTER, OD**

EDUCATION:
Doctoral Degree: University of Alabama at Birmingham,
 School of Optometry
Postdoctoral Training: The Ohio State University, College
 of Education and Human Ecology; Harvard University;
 UAB School of Medicine
TITLE: Clinical Assistant Professor
CLINICAL SPECIALTY: Primary eye care

Assistant Professor**ANN MARIE ARCINIEGAS-BERNAL, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: Henry Ford Hospital, Detroit, Mich.
Fellowship: W.K. Kellogg Eye Center, University
 of Michigan
TITLE: Assistant Professor
CLINICAL SPECIALTY: Pediatrics

**RITA ARMITAGE, MD**

EDUCATION:
Medical School: University of Kentucky
Residency: University of Alabama at Birmingham
TITLE: Assistant Professor
CLINICAL SPECIALTY: Comprehensive

**J. WAID BLACKSTONE, MD**

EDUCATION:
Medical School: University of Alabama at Birmingham
Residency: University of Alabama at Birmingham
TITLE: Assistant Professor
CLINICAL SPECIALTY: Comprehensive

**ANDREW W. EVERETT, MD**

EDUCATION:
Medical School: University of South Alabama
Residency: University of Alabama at Birmingham
Fellowship: University of Alabama at Birmingham
TITLE: Assistant Professor
CLINICAL SPECIALTY: Comprehensive

**MASSIMO ANTONIO FAZIO, PHD**

EDUCATION:
Master's Degree: University of Calabria, Calabria, Italy
Doctoral Degree: University of Calabria, Calabria, Italy
Postdoctoral Fellowship: Devers Eye Institute,
 Portland, Oregon
TITLE: Assistant Professor
RESEARCH INTEREST: Ocular biomechanics, glaucoma

**PRISCILLA FOWLER, MD**

EDUCATION:
Medical School: University of South Alabama
Residency: University of Alabama at Birmingham
Fellowship: Wills Eye Institute
TITLE: Director, Cornea Service; Assistant Professor
CLINICAL SPECIALTY: Cornea

**SARAH GORDON, OD**

EDUCATION:
Doctoral Degree: University of Alabama at Birmingham,
 School of Optometry
TITLE: Assistant Professor
CLINICAL SPECIALTY: Primary eye care

**RAFAEL GRYTZ, PHD****EDUCATION:**

Master's Degree: Ruhr University Bochum, Germany
Doctoral Degree: Ruhr University Bochum, Germany
Postdoctoral Training: Devers Eye Institute, Portland, Oregon
TITLE: Assistant Professor
RESEARCH INTEREST: Growth and remodeling mechanisms in myopia, keratoconus, and glaucoma

**TYLER A. HALL, MD****EDUCATION:**

Medical School: Wright State University School of Medicine, Dayton, Ohio
Residency: University of Alabama at Birmingham
Fellowship: Emory University, Atlanta, Georgia
TITLE: Assistant Professor
CLINICAL SPECIALTY: Cornea, cataract, and external disease

**MIYOUNG KWON, PHD****EDUCATION:**

Doctoral Degree: University of Minnesota
Postdoctoral Training: University of Southern California; Schepens Eye Research Institute, Harvard Medical School
TITLE: Assistant Professor
RESEARCH INTEREST: Low vision and research

**SARAH DILLE LEE, OD, MSPH, FAAO****EDUCATION:**

Doctoral Degree: University of Alabama at Birmingham, School of Optometry
Postdoctoral Training: University of Alabama at Birmingham, School of Public Health
TITLE: Associate Professor
CLINICAL SPECIALTY: Pediatric optometry

**VIRGINIA LOLLEY, MD, FACS****EDUCATION:**

Medical School: Tulane University School of Medicine
Residency: University of Alabama at Birmingham
TITLE: Assistant Professor
CLINICAL SPECIALTY: Comprehensive, Refractive
 Cataract Surgery

**LINDSAY RHODES, MD****EDUCATION:**

Medical School: Northwestern University Feinberg School of Medicine
Residency: University of Alabama at Birmingham
Fellowship: University of Alabama at Birmingham
TITLE: Assistant Professor
CLINICAL SPECIALTY: Glaucoma
RESEARCH INTEREST: Health services research; novel methods for care delivery, such as telemedicine

**BRIAN C. SAMUELS, MD, PHD****EDUCATION:**

Medical School: Indiana University
Residency: University of Alabama at Birmingham
Fellowship: Duke University
TITLE: Assistant Professor
CLINICAL SPECIALTY: Glaucoma
RESEARCH INTEREST: Role of the central nervous system in the development and progression of glaucoma

**YUHUA ZHANG, PHD****EDUCATION:**

Master's Degree: Chinese Sciences Academy, China
Doctoral Degree: Tianjin University, China
Postdoctoral Training: Beijing Institute of Technology; Auckland University, New Zealand
TITLE: Assistant Professor
RESEARCH INTEREST: Adaptive optics high-resolution retinal imaging; age-related macular degeneration

Instructor**SARA MULLINS, MD****EDUCATION:**

Medical School: LSU Health Sciences Shreveport
Residency: University of Alabama at Birmingham
TITLE: Instructor
CLINICAL SPECIALTY: Comprehensive

Callahan Eye Hospital Medical Staff Physicians

Michael Albert, MD	John Fannin, MD	John Mason III, MD	Mathew Sapp, MD
Ryan Almeida, MD	R Wyatt Feagin, MD	Andrew Mays, MD	Alethia Sellers, MD
Ann Arciniegas-Bernal, MD	Joel Feinstein, MD	Philip McArdle, MD	Douglas Shaw, MD
Joseph Armenia, MD	Richard Feist, MD	Jay McCollum, MD	Roland Short, MD
Rita J Armitage, MD	Priscilla Fowler, MD	Andrew McFarland, MD	Sabina Siddiqi, MD
Evans Bailey, MD	Marcela G Frazier, OD	Kelly Mercer, MD	Jeffrey Simmons, MD
Kristin Bains, MD	Michael Froelich, MD	Thomas Metz Jr, MD	Vinodkumar Singh, MD
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Michael Bernstein, MD	Jay Glover, MD	Gary Monheit, MD	Harold Skalka, MD
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Kevin Bray, MD	Tyler Hall, MD	Taylor Mosley, MD	Jeremy Smith, MD
Brandon Brooks, MD	Christopher Harmon, MD	S Kathleen Mullican, MD	Joshua Smith, MD
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Jonathan Cappel, MD	Cara Heath Cox, MD	Peter Nagi, MD	Perry Smith, MD
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Do-Yeon Cho, MD	Jose Humanez, MD	Matthew Oltmanns, MD	Mark Tavakoli, MD
Martin Cogen, MD	James Hunter Jr, MD	John Owen, MD	Martin Thornley, MD
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Ashley Dahl, MD	Robert Kim, MD	Albert Pierce, MD	Jason T Vice, OT
Jyoti Dangle, MD	Lanning Kline, MD	Jorge Pino, MD	Matthew Vicinanza, MD
Jennifer Davidson, MD	Promil Kukreja, MD	William Potter, MD	Stacy Wade, MD
Dawn K DeCarlo, OD	Prentiss Lawson, MD	Mark Powell, MD	Brant Wagener, MD
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Jeffrey Dobyms, MD	Sarah D Lee, OD	Shilpa J Register, OD	Marsha Wakefield, MD
Michelle Downing, MD	Marissa K Locy, OD	Lindsay Rhodes, MD	Douglas Witherspoon, MD
George Dumas, MD	Virginia Lolley, MD	Ronald Roan, MD	Bradford Woodworth, MD
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Susan Eiland, MD	Mark Mandabach, MD	Craig Samford, MD	
Spencer Evenhuis, MD	Justin Mann, MD	Brian Samuels, MD	

* This list notes surgeons/physicians who manage patients at UAB Hospital, the VA, Children's of Alabama, and Callahan Eye Hospital.

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APPENDICES

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C E, Moore, EL, Klein, R, Hauser, MA, Postel, EA, Courtenay, MD, Schwartz, SG, Kovach, JL, Scott, WK, Liew, G, Tan, AG, Gopinath, B, Merriam, JC, Smith, RT, Khan, JC, Shahid, H, Moore, AT, McGrath, JA, Laux, R, Brantley, MA, Jr, Agarwal, A, Ersoy, L, Caramoy, A, Langmann, T, Saksens, NT, de Jong, EK, Hoyng, CB, Cain, MS, Richardson, AJ, Martin, TM, Blangero, J, Weeks, DE, Dhillon, B, van Duijn, CM, Doheny, K F, Romm, J, Klaver, CC, Hayward, C, Gorin, MB, Klein, ML, Baird, PN, den Hollander, AI, Fauser, S, Yates, JR, Allikmets, R, Wang, JJ, Schaumberg, DA, Klein, BE, Hagstrom, SA, Chowers, I, Lotery, AJ, Leveillard, T, Zhang, K, Brilliant, MH, Hewitt, AW, Swaroop, A, Chew, EY, Pericak-Vance, MA, DeAngelis, M, Stambolian, D, Haines, JL, Iyengar, SK, Weber, BH, Abecasis, GR, Heid, IM A large genome-wide association study of age-related macular degeneration highlights contributions of rare and common variants. *Nature Genetics* 2016. PMID 26691988

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Wall M, Falardeau J, Fletcher WA, Granadier RJ, Lam BL, Longmuir RA, Patel AD, Bruce BB, He H, McDermott MP, NORDIC Idiopathic Intracranial Hypertension Study Group (**Vaphiades M**). Risk factors for poor visual outcome in patients with idiopathic intracranial hypertension. *Neurology* 2015.

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Zhang C, Tatham AJ, Abe RY, Hammel N, Belghith A, Weinreb RN, Medeiros, Liebmann JM, **Girkin CA**, Zangwill LM. Macular ganglion cell inner plexiform layer thickness in glaucomatous eyes with localized retinal nerve fiber layer defects. *PLoS One* 2016. PMID 27537107

Zweifel SA, Mihic-Probst D, **Curcio CA**, Barthelmes D, Moarof I, Maisano F, Thielken A, Keller PM, Sax H, Böni C, Hasse H. Mycobacterium chimaera associated chorioretinitis. *Ophthalmology* 2016. PMID 27871762

Zhang Y, Wang X, Gordara P, Zhang T, **Witherspoon CD**, Spaide RF, **Owsley C**, **Curcio CA**, Dynamism of dot subretinal drusenoid deposits in age-related macular degeneration demonstrated with adaptive optics imaging, *Retina* November 2016. NIHMSID: 838250

Invited Lectures & Presentations

CHRISTINE A. CURCIO, PHD

Invited lecturer. "Histopathologic findings in the evolution of atrophy in AMD" Scientific Advisory Board, Genentech and Novartis, Zurich, Switzerland, December 4, 2015

Invited lecturer. "Update on subretinal drusenoid deposit." UniversitätsSpital Zürich, Department of Ophthalmology, December 7, 2015

Invited lecturer. "We Can See It All in the Clinic – Histology Informs Imaging of Retinal Cells", Ospedale Sacco, Department of Ophthalmology, Milan, Italy; residents and fellows December 9, 2015

Invited faculty. "Imaging-histology correlations in neovascular AMD" Third International Congress on En Face OCT Imaging, Rome, Italy, December 2015

Invited lecturer. "AMD by the layers: If we can see it we can treat it." Macular Vision Research Foundation SupportSight Seminar, Birmingham, AL, March 8, 2016.

Invited lecturer. "Visualizing retinal pigment epithelium phenotypes in the transition to geographic atrophy – autofluorescence and optical coherence tomography." International Retinal Imaging Symposium IV, Los Angeles, CA, March 19, 2016

Invited lecturer. "Reclaiming lipofuscin as a marker of cellular health: laboratory autofluorescence insights." Asia-Pacific Academy of Ophthalmology, Taipei, Taiwan, March 24, 2016

Invited lecturer. "Visualizing RPE fate in AMD through histology and OCT." Asia-Pacific Academy of Ophthalmology, Taipei, Taiwan, March 24, 2016

Invited lecturer. "Geographic atrophy of AMD: what it is, what it is not, what it means." University of Alabama at Birmingham, Department of Ophthalmology Grand Rounds, April 8, 2016

Invited lecturer. "Cholesterol, lipoproteins, and the specific lesions of age-related macular degeneration." Regeneron Pharmaceuticals, Tarrytown, NY, April 15, 2016

Invited lecturer. "Special Interest Group on Geographic Atrophy, 'Lessons from histopathology in Geographic Atrophy.'" Annual meeting of the Association for Research in Vision and Ophthalmology, Seattle, Washington, May 2, 2016

Invited lecturer. "What age-related macular degeneration taught us about the retinal pigment epithelium" Annual meeting of the Association for Research in Vision and Ophthalmology, Seattle WA, Symposium of Aging in the Eye, May 5, 2016

Invited lecturer. "Visualizing RPE Fate in Age-related Macular Degeneration." Emory University Eye Center and Atlanta Vision Research Community Symposium on Retinal Degeneration, Atlanta GA, May 18, 2016

Invited lecturer. "Geographic atrophy of age-related macular degeneration: what it is, what it is not, what it means." John Moran Eye Center, University of Utah, Grand Rounds, Salt Lake City, UT, June 8, 2016

Invited lecturer. "The 411 on subretinal drusenoid deposits in age-related macular degeneration" John Moran Eye Center, University of Utah, Research Seminar, Salt Lake City, UT, June 8, 2016

Invited speaker. "Lessons from histopathology of AMD. Classification of Atrophy 3", Taormina, Italy, June 19, 2016

Invited lecturer. "Imaging histology correlations in neovascular AMD." Retinal Imaging Symposium, Catania, Italy, June 21, 2016

Invited speaker. Borish Scholar, "Visualizing the Neurodegeneration of AMD through histology and multimodal clinical imaging." Indiana University, School of Optometry, September 2, 2016

Invited speaker. "Visualizing RPE fate in AMD through validated OCT and autofluorescence imaging." XXII Biennial Meeting of the International Society for Eye Research (ISER), Tokyo, Japan, September 26, 2016

Invited speaker. "Subretinal drusenoid deposit in AMD - histology and high-resolution imaging." XXII Biennial Meeting of the International Society for Eye Research (ISER), Tokyo, Japan, September 26, 2016

Invited speaker. "Visualizing Retinal Pigment Epithelium Fate in AMD by Histology and Optical Coherence Tomography." 4th Biennial International Symposium on AMD, MEEI-Schepens, Boston MA, October 21, 2016

Invited speaker. "Age-related macular degeneration: Subretinal drusenoid deposits, drusen, and the biology of rods and cones" Lions Eye Institute Seminar Series, University of Western Australia, Nedlands, November 14, 2016

Invited speaker. "Visualizing RPE fate in AMD through validated multimodal imaging" Save Sight Institute, University of Sydney, Australia, November 16, 2016

Invited speaker. "Basal linear deposit and subretinal drusenoid deposit" Australia-New Zealand Society of Retina Specialists, Festschrift for Shirley and John Sarks, Melbourne, Australia, November 19, 2016

Invited speaker. "Visualizing neovascular AMD in histology and optical coherence tomography", Royal Australia-New Zealand College of Ophthalmology, College Plenary Session, Melbourne, Australia, November 20, 2016

Invited speaker, Novartis Global Ophthalmics, "Histopathology of choriocapillaris and RPE in atrophic AMD", 12/12/16

Invited Lectures & Presentations

Invited speaker, Novartis UK Ophthalmics, “*Histological guidance for SDOCT atrophy metrics in age-related macular degeneration*”, 12/13/16.

Invited speaker, Novartis UK Ophthalmics, “*Approaches to understanding subretinal tissue in neovascular age-related macular degeneration*”

Invited speaker, Queens University Belfast Centre of Experimental Medicine (Belfast, UK), 12/15/17; “*The specific lesions of age related macular degeneration and the biology of rods and cones*”

DAWN K. DECARLO, OD, MS, MHP

Evaluation and Treatment of the Child with Vision Impairment. American Academy of Optometry Annual Meeting, New Orleans, LA. October 7, 2015

Low Vision Rehabilitation for Patients with AMD. American Academy of Optometry Annual Meeting, New Orleans, LA. October 9, 2015

Leber Hereditary Optic Neuropathy. UABSO Evening CE presentation, Birmingham, AL. February 4, 2016

Low Vision Rehabilitation. Macula Vision Research Foundation Support Sight program. Birmingham, AL, March 8, 2016

Evaluation and Treatment of the Child with Vision Impairment. UABSO Alumni CE Retreat. March 20, 2016.

“*Research in the UAB Center for Low Vision Rehabilitation.*” Southern Dames of American National Assembly, Birmingham, AL, June 4, 2016

Bioptic Driving. AIDB Technology Symposium. Talladega, AL June 14, 2016

J. CRAWFORD DOWNS, PHD

Visiting Professor, “*Ocular Biomechanics in Glaucoma.*” Visiting Professor, North Texas Eye Research Institute, University of North Texas Health Sciences Center, Fort Worth, Texas. November 12, 2015

Invited Speaker. “*Optic Nerve Head Biomechanics in Aging.*” Invited Lecture, 5th Optic Nerve Conference, Obergurgl, Austria. December 13, 2015

Invited Lecturer. “*Ocular Biomechanics in Aging and Disease.*” Cornea to Cortex Invited Lecture Series, Cardiff University, Cardiff, Wales, UK. December 16, 2015

Invited Speaker. “*Optic nerve head biomechanics in aging and disease.*” International Conference on Diseases Involving Intraocular and Intracranial Pressure, Beijing, China, August 26, 2016

Invited Speaker. “*Lamina cribrosa remodeling in glaucoma.*” XXII Biennial Meeting of the International Society for Eye Research (ISER), Tokyo, Japan, September 23, 2016

LAURA DREER, PHD

“*Grief and loss: Strategies for coping.*” Invited by Bishop Robert Larkin, Sr. and Greater New Macedonia Ministries Inc. Leadership and Training Development Group. Half-day workshop. Birmingham, AL. November 2015

“*Vision and traumatic brain injury.*” Invited workshop presented at the 2016 Annual Medical Aspects of Rehabilitation Conference for the Alabama Department of Rehabilitation Services (ADRS). Birmingham, AL. January 28, 2016

“*Mental health needs of persons with vision impairments.*” Macula Vision Research Foundation Support Sight program. Montgomery, AL, March 2016

“*Return-to-think: Current status of research, resources, and clinical practice issues.*” 3rd Annual Concussion Summit. Children’s Hospital of Alabama. Birmingham, AL. April 2016.

“*UAB’s top innovations in concussion research symposium.*” 3rd Annual Concussion Summit. Children’s of Alabama. Birmingham, AL, April 2016

“*Concussion knowledge and management for school nurses.*” 2016 School Nurse Continuing Education Workshop. Children’s of Alabama. Birmingham, AL, June 2016

“*Detection and management of youth concussions across systems of care.*” Walker County School System, AL. May 2016

“*Behavioral approaches in glaucoma care.*” 2016 UAB Department of Ophthalmology Annual Clinical Research Symposium. Birmingham, AL. May 2016

Invited speaker, “*Low vision, stroke, and adjustment: Treating the whole person.*” Education Committee at the VA Blind Rehabilitation Center, Birmingham, Alabama. Oral presentation at the Stroke and Vision Rehabilitation Conference. Birmingham, AL. October 2016

Invited presentation, “*The role of social support for persons with low vision.*” Invited research presenter by the Alabama Department of Rehabilitation Services (ADRS), October 2016

Invited presentation, “*Traumatic brain injury as a chronic health condition.*” Symposium between Divisions 22 (Rehabilitation Psychology) and 19 (Military), American Psychological Association, Annual Convention, Denver, CO. August 2016

Invited Lectures & Presentations

MASSIMO ANTONIA FAZIO, PHD

“*The role of the cornea and sclera in susceptibility to glaucoma.*”, American Glaucoma Society (AGS), Fort Lauderdale, FL, March 4, 2016

Invited lecture, “*Ocular connective tissue biomechanics assessment by means of non-contact optical techniques.*”, Devers Eye Institute, Portland, OR, Dec 21, 2016

MARCELA FRAZIER, OD, MPH, FAAO

Invited presentation, *Amblyopia Treatment Update.* XIII International Conference in Vision Science, Bogota, Colombia. October 2016

Invited presentation, *Pediatric Optometry Panel.* XIII International Conference in Vision Science, Bogota, Colombia. October 2016

Invited presentation, “*Technology in amblyopia.*” Latin American Optometric Association Meeting, Rio de Janeiro, Brazil. November 2016

PAUL D. GAMLIN, PHD

“*Intrinsically-photosensitive Ganglion Cells in the Primate Retina: Anatomy, Physiology, and Behavioural Roles.*” Vanderbilt University, October, 2015

“*Intrinsically-photosensitive ganglion cells in the primate retina: Anatomy, physiology and behavioral roles.*” College of Optometry, University of Houston, February 2016

CHRISTOPHER A. GIRKIN, MD, MSPH

Invited Lecture. “*Silent Witness: Dead Men tell tales of Glaucoma: The implications of Variation in three-dimensional morphometry of the human lamina cribrosa on the pathogenesis of glaucoma.*” Moorfields International Glaucoma Symposium 2016, Royal College of Physicians, London, England, January 20, 2016

Invited Panelist. “*Into the Dragons Den: Clinical Case Rounds.*” Moorfields International Glaucoma Symposium 2016, Royal College of Physicians, London, England, January 21, 2016

Invited Lecture. “*Advances in Pediatric Glaucoma Surgery.*” 62nd Annual Meeting of the Flaum Eye Institute, University of Rochester Department of Ophthalmology, Rochester New York, March 18, 2016

Named Lecture, The Billitier Family Distinguished Professor Lecture: 62nd Annual Meeting of the Flaum Eye Institute. “*The implications of Variation in three-dimensional morphometry of the human lamina cribrosa on the pathogenesis of glaucoma.*” University of Rochester Department of Ophthalmology, Rochester New York, March 18, 2016

“*State of the Department of UAB Ophthalmology.*” Annual Clinical and Research symposium, Birmingham, AL, May 13, 2016

Invited Lecture. “*The Implications of Variation in 3-dimensional morphometry of the human lamina.*” 2016 Midwest Glaucoma Symposium, Vanderbilt University, Nashville, TN, August 5, 2016

Invited Lecture. “*Uncovering racial differences in glaucoma susceptibility.*” 2016 Midwest Glaucoma Symposium, Vanderbilt University, Nashville, TN, August 5, 2016

Named Lecture, Professor Samuel B. Johnson Memorial Lecture. “*The implications of Variation in three-dimensional morphometry of the human lamina cribrosa on the pathogenesis of glaucoma.*” The University of Mississippi Medical Center Department of Ophthalmology Annual Research Symposium, Jackson, Mississippi, June 17, 2016

Invited Lecture. “*Its not glaucoma: Visual Field Loss due to Neurological cause.*” Glaucoma Subspecialty Day, Annual Meeting of the American Academy of Ophthalmology, Chicago, IL, October 15, 2016

Invited Lecture. “*Enhanced Detection and Clinical Assessment in Glaucoma Management.*” AAO/Heidelberg Engineering Technology Symposium, American Academy of Ophthalmology, Chicago, IL. October 15, 2016

TYLER HALL, MD

Invited Lecture. “*Cataract Surgery in Special Situations.*” Alabama Society of Ophthalmic Personnel, Birmingham, AL, September 24, 2016

Invited Lecture. “*Common Eye Problems.*” Alabama Academy of Family Physicians Fall Forum 2016, Birmingham, AL, December 10, 2016

MIYOUNG KWON, PHD

Invited lecture, “*Perceptual issues in low vision: Insights from simulated low vision studies.*” Biomedical Medical Engineering Seminar; BME, the University of Alabama at Birmingham, October 30, 2015

Invited lecture, “*Perceptual issues in impaired vision.*” Department of Psychology, University of Alabama at Birmingham (UAB), October, 2016

Invited presentation, “*Changes in spatial and temporal integration in impaired vision.*” Minnesota Laboratory for Low-Vision Research, University of Minnesota, Minneapolis, August, 2016

Invited Lectures & Presentations

JOHN O. MASON, MD

"25-Gauge Vitrectomy with Needle Biopsy of Choroidal Melanoma for Gene Expression Profiling During Brachytherapy." American Academy of Ophthalmology Annual Meeting, Las Vegas, Nevada, November 13-18, 2015

"Bilateral Pigmentation of the Posterior Segment." The Retina Society 49th Annual Scientific Meeting, San Diego, California, September 14-17, 2016

"Safety and Efficacy of 25-Gauge Vitrectomy with Needle Biopsy of Choroidal Melanoma For Gene Expression Profiling (GEP) During Brachytherapy." The Retina Society 49th Annual Scientific Meeting, San Diego, California, September 14-17, 2016

Senior Instructor. "Simplifying Treatment of Diabetic Retinopathy for the Comprehensive Ophthalmologist: What You Need Really Need to Know in 2015." American Academy of Ophthalmology Annual Meeting, Las Vegas, Nevada, November 13-18, 2015

Co-Instructor. "Vitreoretinal Tips for the Comprehensive Ophthalmologist: When to Watch, Treat, or Refer." American Academy of Ophthalmology Annual Meeting, Las Vegas, Nevada, November 13-18, 2015

Senior Instructor. "Simplifying Treatment of Diabetic Retinopathy for the Comprehensive Ophthalmologist: What You Need Really Need to Know in 2016." American Academy of Ophthalmology Annual Meeting, Chicago, Illinois, October 14-19, 2016

CYNTHIA OWSLEY, PHD, MSHP

"Visual risk factors and screening tests for motor vehicle collision involvement: A population-based study" Optical Society of America Fall Vision Meeting, San Jose, CA, October 17, 2015

"Rod-mediated dark adaptation: A functional biomarker for AMD", Beckman Institute for Macular Research, Irvine, CA, January 14, 2016

"Visual risk factors for motor vehicle collision involvement by older drivers and their relevance as screening tests for licensure" Maine Society of Eye Surgeons, Freeport, ME, May 6, 2016

"Driving with bioptic telescopes by persons with vision impairment", Maine Society of Eye Surgeons, Freeport, ME, May 6, 2016

Invited Lecturer, "Delayed dark adaptation as a functional biomarker for early AMD", Medical College of Wisconsin, Eye Institute, Milwaukee WI, October 1, 2016.

Invited presentation, "Low Vision Care in the United States: Who is Doing What and What is Needed", American Academy of Ophthalmology annual meeting, Chicago IL, October 15, 2016

Invited presentation. "Rod-mediated dark adaptation: A functional biomarker for AMD," Beckman Institute for Macular Research, Irvine, CA, January 14, 2016

Invited lecture. "Visual risk factors for motor vehicle collision involvement by older drivers and their relevance as screening tests for licensure," Maine Society of Eye Surgeons, Freeport, ME, May 6, 2016

Invited lecture. "Driving with bioptic telescopes by persons with vision impairment," Maine Society of Eye Surgeons, Freeport, ME, May 6, 2016

Invited Lecture. "Delayed dark adaptation as a functional biomarker for early AMD," Medical College of Wisconsin, Eye Institute, Milwaukee WI, October 1, 2016

Invited presentation. "Low Vision Care in the United States: Who is Doing What and What is Needed," American Academy of Ophthalmology annual meeting, Chicago IL, October 15, 2016

SHILPA REGISTER, OD

2015 "Leveraging Social Networking: Building Women Leaders". The University of Alabama System Scholars Institute. May. J Chiasera, S Register, M Wasko, L Schwiebert, T Synco, S Scott-Trammel.

Roundtable Discussion. 2016 "Career Mapping: Navigating Higher Education". The University of Alabama System Scholars Institute. May 2016.

Conversation Café Facilitator. 2016 National Center for Interprofessional Practice and Education. Minneapolis, MN. "How Do We Resource IPE in the Era of New Payment Models, Decreasing Costs, & Adding Value?" August 2016

Conversation Café Facilitator. 2016 National Center for Interprofessional Practice and Education. Minneapolis, MN. "New Models of Care Requiring New Models of Learning: Workforce Reframing, Retooling & Retraining". August 2016

Presenter. 2016 Assessment-Inquiry Connection, UAB SimConnect. September 2016

LINDSAY RHODES, MD

Invited presentation. "Using Telemedicine to Improve Glaucoma Care: An Emerging Eye Care Delivery Model", American Glaucoma Society Annual Meeting, March 5, 2016, Ft. Lauderdale, FL

MICHAEL S. VAPHIADES, DO

"Macular Degeneration and the Role of Lipids in Macular Disorders," Alabama Osteopathic Medical Association Science & Management CME Conference, Birmingham, AL, February 26, 2017

Invited Lectures & Presentations

"Ophthalmologic Manifestations of Craniopharyngiomas," Alabama Osteopathic Medical Association 26th Annual Emerald Coast Conference, Sandestin, FL, July 22, 2016.

"Neuro-Ophthalmology, Afferent and Efferent," Philadelphia College of Osteopathic Medicine, Georgia Campus, April 4, 2016

"Visual field defects," Children's Hospital Epilepsy Conference, April 20, 2016

"Ophthalmologic Manifestations of Craniopharyngiomas," Multidisciplinary Pituitary Conference, Birmingham, AL, April 16, 2016

"Higher Visual Disorders," Alabama Osteopathic Medical Association Winter Meeting," Birmingham, AL, February 26, 2016

YUHUA ZHANG, PHD

Invited speaker, "Adaptive optics imaging." December 31, 2016, Guangdong Province 2016 Summit Symposium on Heart-Brain-Psychology, Guangzhou, China.

Invited Lecture, "In-vivo study retinal structure and function at the cellular level with advanced adaptive optics imaging." December 29, 2016, Zhongshan Ophthalmic Center, Sun Yat-sen University, Guangzhou, China

Invited Lecture, "Ultrastructure of chorioretinal diseases revealed by adaptive optics," November 18, 2016, Jules Stein Eye Institute, University of California, Los Angeles, CA

Invited Lecture, "Ultrastructure of chorioretinal diseases revealed by adaptive optics," November 17, 2016, Doheny Eye Institute, University of California, Los Angeles, CA

Grants & Awards

MICHAEL A. ALBERT, MD

Safety and Efficacy of Abicipar Pegol (AGN-150998) in Patients with Neovascular Age-Related Macular Degeneration; Allergan Sales, LLC; 11/10/15—05/31/16

CHRISTINE A. CURCIO, PHD

Visualizing Aging in the Eye: A Personalized Strategy for Preserving Vision in the Aging Population in Europe; European Commission, Medical University of Vienna; 07/19/15—04/18/16

Validated Autofluorescence in Age-Related Macular Degeneration; NIH /DHHS, New York University; 09/10/15—08/31/19

Clinicopathologic correlation in age-related macular degeneration; Hoffman-LaRoche, Ltd.; 11/30/16—05/31/18

Technology enhancement towards validated hyperspectral autofluorescence imaging in AMD ; International Retinal Research Foundation; 11/10/16—11/09/17

DAWN K. DECARLO, OD, MS, MSPH

Prognostic Indicators for Reading and Pediatric Vision Impairment; Administration for Community Living/DHHS; 09/30/15—09/29/16

J. CRAWFORD DOWNS, PHD

IOP and OPP Fluctuation as Risk Factors for Glaucoma: EY024732; NEI/NIH/DHHS; 05/01/15— 04/30/16

IOP and OPP Fluctuation as Risk Factors for Glaucoma: EY026035; NEI/NIH/DHHS; 12/01/15—11/30/16

Age- and Race-Related Differences in Optic Nerve Head Structure and Biomechanics; NEI/NIH/DHHS; 04/01/15—03/31/16

Continuous Telemetric Measurement and Chronic Control of Cerebrospinal Fluid Pressure; BrightFocus Foundation; 07/01/16—03/31/16

UAB Vision Science Research Center - Program/Comp Core; NIH/DHHS; 09/01/16—07/31/21

LAURA DREER, PHD

Cognitive Behavioral Therapy (CBT) for Caregivers of Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) Service Members with Traumatic Brain Injury (TBI) - Field-Initiated Program; Administration for Community Living/DHHS; 10/01/15—09/29/16

Enhancing Glaucoma Medication Adherence Among African Americans; NEI/NIH/DHHS; 06/01/15—05/31/16

RICHARD FEIST, MD

GX 29176 A Phase III, Multicenter, Randomized, Double-Masked, Sham-Controlled Study to Assess the Efficacy and Safety of Lampalizumab Administered Intravitreally to Patients with Geographic Atrophy Secondary to Age Related Macular Degeneration; F.Hoffmann-La Roche Ltd.; 11/04/15—11/03/16

Grants & Awards

PAUL D. GAMLIN, PHD

Screening of Novel AAV Library in Non-Human Primate; Applied Genetic Technologies Corporation; 07/01/15—07/01/16

Intrinsically Photosensitive Retinal Ganglion Cells and their Central Projections; NEI/NIH/DHHS; 12/01/15—11/30/16

Motor Unit Diversity in Horizontal Eye Movement Control; NEI/NIH/DHHS; 08/01/15—07/31/16

Research to Prevent Blindness Disney Award for Amblyopia Research; Research to Prevent Blindness; 06/13/15—06/12/16

Developing Efficient AAV Vectors for Photoreceptor Targeting via the Vitreous; NIH/DHHS/University of Florida; 06/01/15—05/31/16

Midbrain Circuitry for Neuronal Control of Gaze; NIH/DHHS/University of Mississippi Medical Center; 04/01/15—03/31/16

UAB CSA: Melanopsin Photosensitivity and Psychopathology; NIH/DHHS/University of Pittsburgh; 08/01/15—05/31/16

UAB Vision Science Research Center - Instrument Core; NIH/DHHS; 09/01/16—07/31/21

CHRISTOPHER A. GIRKIN, MD, MSPH, FACS

Unrestricted Grant; Research to Prevent Blindness; 01/01/16—12/31/16

xADAGES III: Contribution of Genotype to Glaucoma Phenotype; NIH/DHHS/University of California, San Diego; 09/01/15—08/31/16

RAFAEL G. GRYTZ, PHD

Quantifying Collagen Remodeling of the Optic Nerve Head; Bright Focus Foundation; 07/01/15—06/30/16

Scleral Remodeling in Myopia; NEI/NIH/DHHS; 09/01/16—08/31/21

ANDREW J. MAYS, MD

Active-Controlled, Parallel-Group 12-Month Study Assessing the Safety and Ocular Hypotensive Efficacy of PG324 Ophthalmic Solution Compared to AR-3324 Ophthalmic Solution, 0.02% and Latanoprost Ophthalmic Solution, 0.005% in Subjects with Elevated Intraocular Pressure; Aerie Pharmaceuticals, Inc.; 11/09/15—11/08/16

CYNTHIA OWSLEY, PHD, MSPH

Inflammatory, Cholesterol and Genetic Characteristics in Older Adults in Normal Retinal Health as Potential Biomarkers for the Incident Development of Early Age-Related Maculopathy; EyeSight Foundation of Alabama; 07/01/15—06/30/16

Natural History of Dark Adaptation in Participants with Intermediate Age-Related Macular Degeneration; Genentech; 04/19/15—04/18/16

Improving Access to and Quality Eye Care in an At-Risk, Underserved Population; National Center for Chronic Disease Prevention & Health Promo/CDC/DHHS; 09/30/15—09/29/16

Older Drivers and Vision Impairment: Naturalistic Driving Studies; NEI/NIH/DHHS; 04/01/15—03/31/16

SHILPA J. REGISTER, OD

Incorporating Peer Assessment to Enhance Interprofessional Education in a Simulation Patient Care Environment; University of Alabama at Birmingham School of Medicine, Department of Medical Education PROSPER Curricular Enrichment and Innovations Award; 08/31/16—08/31/17

Targeted Diabetic Eye Interventions to Reduce Health Disparities in Diabetes Related Complications; Merle S and Mack C Hunt Diabetes Grant, Central Alabama Community Foundation; 07/01/16—07/01/17

Healthcare Simulation: Development of a Large Scale Interprofessional Simulation Focused on the Social Determinants of Health; UAB Faculty Development Grant; 05/01/16—08/31/17

NACDD Vision and Eye Health Initiative; Alabama Department of Public Health; 07/01/16—06/30/17

LINDSAY RHODES, MD

Using telemedicine to improve glaucoma care: An emerging eye care delivery model; NEI/NIH; 05/01/16—04/30/21

BRIAN C. SAMUELS, MD, PHD

NASA - Microgravity-Driven Optic Nerve/Sheath Remodeling Simulator; National Aeronautics & Space Administration/Georgia Institute of Technology; 10/01/15—09/30/16

Hypothalamic Control of IOP, ICP, and the Translaminar Pressure Gradient; NEI/NIH/DHHS; 08/01/15—07/31/16

Validation of the Tree Shrew as Model of Glaucoma; NEI/NIH/DHHS; 09/01/16—08/31/18

SHU-ZHEN WANG, PHD

Engaging the RPE for photoreceptor regeneration; NEI/NIH; 09/30/16—09/29/17

YUHUA ZHANG, PHD

In Vivo Ultrastructure of Chorioretinal Disease; NEI/NIH/DHHS; 01/01/16—12/31/16

PHILANTHROPY



Bob Perry with his grandsons Briggs Armentrout (2) and Beckett Armentrout (4).

Donor Profile: Bob Perry

Bob Perry, 77, remembers the first time he could see again after glaucoma surgery. He was able to see the face of his ophthalmologist, Christopher Girkin, MD, and nearly wept. He describes the experience as an emotional one, and he wanted to make sure that he contributed to the future of glaucoma care for other patients – across Alabama and around the world – who are still struggling with the disease.

“Glaucoma is a disease that is treatable, but not curable,” Perry says. “It lingers over time and progressively gets worse, so it needs to be caught at an early stage. This is why I give to the UAB Department of Ophthalmology. I know that the money I give goes to research, and this is where advancements are made that will help future generations of glaucoma sufferers.”

Both of Perry’s parents were blind when they died and had struggled with glaucoma for years. Perry has been treated for glaucoma since he was in his 30s, and today, at the age of 77, he knows that philanthropic support will make a significant difference in the vision care of tomorrow.

“My experience at UAB Callahan Eye Hospital was one of a kind,” Perry says. “I was surrounded by caring nurses, knowledgeable physicians, and a dedicated staff who were incredibly helpful. They always responded to my needs, and I couldn’t ask for better ophthalmologic care.”

2020 DISCOVERY INITIATIVE IN OPHTHALMOLOGY

The 2020 Discovery Initiative in Ophthalmology was established in 2015 with a goal of accelerating research, expanding access to care, attracting top talent, training the next generation of physicians, and strengthening our outreach to the community.

Philanthropic partners serve as a catalyst for new scientists, novel ideas, and programs that serve patients and the community, state, and country. By giving something, you can change everything. The 2020 Discovery Initiative is a \$10 million fundraising goal that will help us meet the eye care needs of our community. Here are some of our partners that have helped us get closer to our goal.

THE FOLLOWING ARE FOUNDING MEMBERS OF THE 2020 DISCOVERY INITIATIVE.



“We save vision, one eye at a time!”

– Michael Callahan, MD



“The Department of Ophthalmology is on a multi-year roll. George Patton famously said, ‘Reinforce success.’ That is great advice for UAB’s efforts to advance medical science for the human eye. We must reinforce these successes in ophthalmology with renewed support.”

– Hartwell Davis, Jr.



“Being involved with the UAB Department of Ophthalmology, the Callahan Eye Hospital, and the EyeSight Foundation of Alabama for over twenty-five years, I have observed the talented professionals, their great work, and the advancements made in eye care over the years. I have also seen the impact of impaired vision since my family has a history of age-related macular degeneration. The 2020 Discovery Initiative provides my family the opportunity to support a very important institution in our community and an extremely talented team in their efforts to improve vision for all of us.”

– James D. Davis



“We are devoted to the eye surgeons at UAB who have given us such excellent care. Contributing to their work, their training, and their research is an investment that will provide that same benefit to countless others for generations to come. We can’t think of a more fulfilling gift!”

– Torrey and Armand DeKeyser



“The partnership between UAB Callahan Eye Hospital and the EyeSight Foundation has allowed our department to evolve into a leading program in vision research, education, and clinical care focused on diminishing the burden of blinding diseases.”

– Christopher Girkin, MD



“The EyeSight Foundation of Alabama is committed to preserving eyesight through education, research, and access to care. Our mission would not be possible without our partnership with the UAB Department of Ophthalmology and Callahan Eye Hospital. Together, I know we can find ways to protect and restore vision for people across the globe.”

– Billy Hulsey



“My wife Louise and I have felt a special bond with the Department of Ophthalmology and Callahan Eye Hospital since we moved here in the mid-1990s, with no prior ties to Birmingham. I was welcomed onto the board of the hospital and then to the board of the EyeSight Foundation of Alabama. As a board member, I have seen the commitment to science and, even more importantly, to people, that the department and the hospital have, and it was an easy decision for us to make a small contribution to the future of eye research here at UAB.”

– Stephen A. Yoder, JD

THANK YOU



“I truly hope you have enjoyed the 2016 UAB Department of Ophthalmology Annual Report. I have been with the Department a little over a year and can already see the tremendous progress throughout our research and clinical endeavors. These achievements would not be possible without our philanthropic partners. Generous, philanthropic investments are an invaluable catalyst that allows us to find tomorrow’s cure for the most devastating eye diseases.

As we look to the future, the UAB Department of Ophthalmology has prioritized our areas of strategic growth to enhance our priorities of patient care, research, and education. Your support will play an instrumental role in helping shape the future of the Department of Ophthalmology. I invite you to partner with the Department, and we thank you for your support. When you give something, you can change everything.”

Morgan Quarles

Morgan Quarles
Major Gifts Officer

VISION FOR THE FUTURE



UAB Ophthalmology has a bright outlook for the future. As proud as we are of our accomplishments thus far, we truly believe the most meaningful advancements are yet to come and within our grasp.

The support of visionary philanthropic partners provides the potential for major breakthroughs in the treatment and care of blinding disease. With your support, we can achieve a brighter, healthier future.

OUR PRIORITIES

FACULTY SUPPORT

Foster an environment of collaboration and innovation by retaining and recruiting top physicians and scientists.



RESIDENT EDUCATION

Equip the next generation of ophthalmologists with a high degree of skill and lifelong thirst for knowledge.



RESEARCH AND INNOVATION

Accelerate the pace of discovery and efficiently translate key findings from bench to bedside.



ENHANCING FACILITIES

Expand access to the highest-quality patient care and research through focused enhancements to facilities.



PROGRAMMATIC SUPPORT

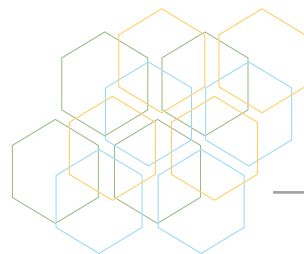
Strengthen our outreach programs that serve the needs of the community.



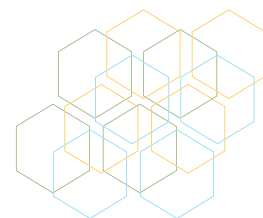
Thanks to support from donors large and small, we have made significant progress toward our ultimate goal of improving health by alleviating blinding disease. This generosity has served as a catalyst in the following key areas:

- **INNOVATIVE RESEARCH**
Support for innovative ideas allowed investigators to launch promising new research programs.
- **EDUCATION AND TRAINING**
Investments in education enhanced training for the next generation of ophthalmologists.
- **YOUNG SCIENTISTS**
Philanthropic commitment jumpstarted the early stages of promising careers for young scientists.
- **ADVANCED PATIENT CARE**
Facility and equipment improvements provided the latest in vision care to patients at all income levels.
- **TOP TALENT**
Gifts attracted world-class research talent to UAB.

SEEING THE IMPACT



the CAMPAIGN for UAB



GIVE SOMETHING | CHANGE EVERYTHING

HOW TO HELP



Contact us to learn more about where your help is needed most.

MORGAN QUARLES, Major Gifts Officer

Phone: 205.325.8112 • Email: nmrobinson@uabmc.edu
1720 University Boulevard, Suite 601 • Birmingham, AL 35233

Ways to Give:

Make a gift online, a simple and secure way to make an immediate impact: uabmedicine.org/perspective

Speak with our development office: **205.325.8112**

Mail in your gift: **1720 University Blvd., Suite 305 • Birmingham, AL 35233**

The \$1 billion Campaign for UAB is a visionary plan to align our resources with our aspirations and includes significant support for the School of Medicine. While strengthening our position as one of the nation's most productive and dynamic academic medical centers, the Campaign's success will change the world through the knowledge we teach, discover, and translate into patient care.



CAMPAIGN GOAL: \$1 BILLION

As of January 31, 2017

← **\$774,838,044**

← **\$501,138,370***

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Project Coordinators:
Coleman Upchurch and Jessica Martindale

Art Director:
Erick Guillen

Writers:
Jessica Martindale, Adam Pope,
David Pelfrey, and Don Milazzo

Photographers:
Nik Layman, Jennifer Spears, and Steve Wood

Contributors:
Andrea Bevan
Jackie Wood
Morgan Quarles

UAB MEDICINE

CALLAHAN EYE HOSPITAL
DEPARTMENT OF OPHTHALMOLOGY

UAB Callahan Eye Hospital
1720 University Blvd.
Suite 305
Birmingham, AL 35233

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