DUKE EYE CENTER

VISION

FALL/WINTER 2008 VOLUME 24, NUMBER 2

A Family Practice

The teamwork and tenacity of many helped restore Rebecca Borum's sight

CHAIRMAN'S CORNER

The cover story in this issue reflects some of the Duke Eye Center's greatest strengths. Rebecca Borum's case was complex: Her vision was already compromised in one eye, and her symptoms were difficult to treat. Moreover, they were the result of an underlying, undiagnosed illness that put her at risk for a variety of serious health problems. She needed expertise across several specialties, for both her immediate health crisis and for long-term vision enhancement and preservation. The treatment that worked for her required a deep understanding of current research—not to mention the boldness to apply new research to a clinical case.

There are many ways that we've worked in 2008 to enhance all of these strengths at the Eye Center. We've built our research program through innovative investigation and recruitment of talented clinician scientists (see pages 8 through 10). We've worked hard to coordinate care between our staff and referring physicians outside Duke, as well as between different subspecialty services and other Eye Center resources such as our Low Vision Rehabilitation Service. **We've fostered a culture that enables and encourages the translation of evidence-based research breakthroughs into clinical expertise, so that our patients can benefit from the discoveries made here and elsewhere.**

We've also made important strides in enhancing our patients' experience, by launching major construction initiatives to expand both parking and our clinical and clinical research space. On page 6 you can read about the Eye Center's plans to create a new clinical eye facility on our main campus adjacent to the Wadsworth Building—as well as our latest outreach effort to serve patients in Wake County at the Duke Medicine Plaza on Duke Raleigh Hospital's campus.

The annual review section of this issue of *Vision* will highlight some of our most exciting research about disabling eye disease, our education efforts, and our strong national rankings and funding base. I hope that as you read this issue you'll join me in celebrating the progress of the Duke Eye Center during 2008, and in pledging all our efforts to work toward greater successes in 2009.

My best wishes to you and your family for a happy, healthy holiday season and new year.

David L Epstein, M.D.

David L. Epstein, MD
Chair, Department of Ophthalmology

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A Family Practice

The teamwork and tenacity of many helped restore Rebecca Borum's sight

To say that Rebecca Borum has had her fair share of eye troubles is an understatement. Borum, 82, of Greensboro, North Carolina, has suffered an astonishing number of ocular problems over the years. A referral to the Duke Eye Center prevented her from losing her sight completely.

Below: In the Low Vision Rehabilitation Service, Gerald Mansell, LDO, shows Rebecca Borum a photo of his granddaughter using a video camera that enlarges text and photographs. Left: Diane Whitaker evaluates Borum at the clinic.

Many years before she first came to Duke, Borum had cataract surgery and corneal transplants in both eyes. She had been doing well visually until 1998, when she developed an ischemic central retinal vein occlusion in her right eye—a blood clot in a retinal vein in the back of her eye.

"When I suddenly lost the sight in my right eye, my primary care doctor referred me to a retina specialist in Winston-Salem," Borum says. "He gave me a laser treatment, sent me home, and told me to come back in three weeks." But Borum's sight did not improve, and she was left blind in her right eye.

Then, in June 2000, she suffered another central retinal vein occlusion—this time in her better-seeing left eye. There is no proven treatment available to restore the blood flow in cases of retinal occlusion. Although it's more apt to strike people 65 and older, this type of vascular disease is relatively uncommon. "My son said, 'Mom, we're doing something different this time,'" Borum says. "So we asked for a referral and my ophthalmologist in Greensboro referred us to Duke." Borum was referred to Sharon Fekrat, MD, FACS, of the Vitreoretinal Surgical Service, who has significant expertise in retinal vein occlusion and is widely published on the disease.

> "The vision loss in her left eye was so significant that she couldn't even see the eye chart."
>
> Sharon Fekrat, MD

From counting fingers to 20/80

When Borum arrived at Duke Eye Center two days after her symptoms had started, the occlusion had left her with no useful vision in her left eye. "The vision loss in her left eye was so significant that she couldn't even see the eye chart," says Fekrat. "She could only count fingers in front of her face.

"When people develop this condition in both eyes, it's often due to an underlying

By Jeni Baker

medical problem," Fekrat says. "So we did a lot of blood work at her initial evaluation to get to the root of the problem." In fact Borum has what's known as anticardiolipin antibody syndrome, a clotting disorder that can cause other serious problems such as heart attack, stroke, and deep-vein thrombosis.

Borum's medical doctor agreed to treat Borum with the blood thinner Coumadin to lower Borum's risk of future concerns. But the Coumadin would not help reverse the vision loss Borum had already suffered. In fact, there were no approved treatments Fekrat could recommend.

Fekrat's diagnosis not only addressed Borum's vision loss, but also caught an underlying condition that elevates Borum's risk for other serious problems such as heart attack.

"There was one experimental treatment to consider, albeit without much of a foundation to rely on," says Fekrat. "This is where the 'art of medicine' took over."

After much discussion with Borum and her family, they decided to try the treatment: injecting recombinant tissue plasminogen activator (rt-PA) into the vitreous gel of the affected eye. A clot-busting drug often used to treat acute heart attacks, rt-PA also was speculated to be effective as an off-label therapy for eyes with decreased vision from a central retinal vein occlusion when administered within three weeks of the onset of vision loss. The procedure is done in-office.

"Data show that in cases like Mrs. Borum's, 80 percent of untreated patients don't get better," Fekrat says. "So had we done nothing, chances are that her vision would not have improved at all."

"I felt that I really had nothing to lose at that point, so we decided to give it a try," says Borum.

The rt-PA injection paid off. "About a month after the injection, I was sitting on my porch one day when I realized I could see the clothesline and the power line out back," Borum recalls, adding that her vision in that eye continued to improve for several months. By August, Fekrat says, it had improved to 20/80.

Bumps in the night

Borum fared well for the next year and continued to improve slowly. Then, in August 2001, she suffered a vitreous hemorrhage in her functional eye. "It happened when I was visiting a cousin in Pinehurst, and it scared the heck out of me," Borum recalls. "We were out to lunch when I suddenly started having trouble seeing, and I could see blood trickling inside my eye. When I got home and called my son, I could hardly see the numbers on the large-number telephone."

Fekrat says these hemorrhages are often caused by the growth of a patch of new blood vessels. Borum underwent vitrectomy surgery and laser treatment to cause the bleeding blood vessels to shrivel up. "That helped a lot, and her vision improved to 20/50," Fekrat says. "By 2002, her vision was 20/30 in that eye, which is very good."

Later that year, Borum suffered another setback: an open-globe injury, or rupture of her eyeball, sustained when her fist hit her left eye as she turned over in bed. "She popped open her corneal transplant wound," Fekrat says. "Luckily, we were able to surgically repair that injury."

Specialized care for optimal functioning

Thankfully, Borum hasn't suffered any major setbacks to her left eye since 2003, and she now sees Fekrat only once a year for follow-up evaluations. Although the vision in that eye is markedly improved it is still not normal, so Fekrat referred Borum to Diane Whitaker, OD, to allow Borum to maximize the visual potential in that eye.

Whitaker leads the Duke Eye Center's Low Vision Rehabilitation Service, a program designed to sustain and maximize the remaining vision of patients who have exhausted their medical and surgical options. Her area of expertise is helping patients perform daily-living activities and improving their quality of life.

"We evaluate every patient for his or her ability to perform tasks such as self-care, eating, driving, and money and medication management," says Whitaker. "We ask about things like mobility, anxiety, and depression; talk to them about specific things they want to be able to do; and then work with them to address any challenges and maximize their visual function so that they can achieve those goals.

"We can do a lot for both near and far vision with telescopic, magnifying, and lighting devices, and things like special sunglasses that improve color contrast," Whitaker continues, adding that Borum also has been fitted for a highly customized contact lens to compensate for an astigmatism in her left eye related to her corneal transplant repair.

Magnifiers, for example, are available in both conventional and electronic-camera-based styles, says Whitaker. And the non-profit Lighthouse International now offers computer software for the visually impaired called LowBrowse, which is downloadable at no charge and offers large text, high contrast, and special navigation tools.

This type of help is particularly important for Borum, a grandmother of five who recently moved into a Greensboro retirement community. "I am deeply thankful for the vision I do have and for the people at the Duke Eye Center. They're really the greatest," Borum says, adding that her family was so grateful that after her husband, Marvin, passed away last summer the Borum family asked that contributions be made to fund Fekrat's research. Those memorial contributions raised $10,000 for the Eye Center.

Fekrat notes that the Borum family had an equal role to play in this success story. "Because the time frame for seeking expert treatment is critical with something like sudden vision loss, Mrs. Borum's son did the right thing by getting her to Duke quickly in 2000," Fekrat says. "People who experience any type of serious visual symptoms should seek ophthalmologic care promptly."

To learn more about the Duke Eye Center and the Low Vision Rehabilitation Service, visit **dukeeye.org**.

"We can do a lot for both near and far vision with telescopic, magnifying, and lighting devices, and things like special sunglasses that improve color contrast."

Diane Whitaker, OD

Whitaker and other staff on the Low Vision Rehabilitation Service help patients achieve their personal vision goals for day-to-day living.

Injecting rt-PA into the vitreous gel of Borum's affected eye restored her vision to 20/80.

The Convenience Factor

Duke Eye Center of Raleigh
Duke Medicine Plaza
3480 Wake Forest Road, Suite 300
Raleigh, NC
919-862-5380

Patients are a priority as the Eye Center expands facilities at Duke and in Wake County.

In September, Duke Eye Center opened a full-service clinic at Duke Medicine Plaza, the newest addition to the Duke Raleigh Hospital campus that is home to several Duke specialty practices. Patients in Raleigh now can receive care from Duke Eye Center specialists in glaucoma, cornea, retina, and pediatrics right in their own community. The Eye Center will open a similar clinic in Knightdale next year.

"It is exciting to be part of these larger Duke Health System initiatives to create multidisciplinary clinical destinations around the region," says Duke Eye Center administrative director Charles Mansfield. "These new clinics will make our ophthalmology services more convenient and accessible for the people we serve."

The two new clinics are part of a more than15-year effort by the Duke Eye Center to expand specialty services beyond the main clinic at Duke University Medical Center, reaching out into the surrounding communities to provide easier access for patients. Eye Center faculty members have historically provided services in Winston-Salem; Danville, Virginia; Wilmington; Wilson; Cary; and several locations around Durham. Most recently, the Eye Center expanded services in the Cary office and opened a retina clinic in Fayetteville.

Home Improvements

Meanwhile, back on the Duke University Medical Center campus, plans are taking shape to create a new, more spacious, patient-friendly facility that will be the cornerstone Duke Eye Center Pavilion.

"The Wadsworth Building, where our current clinic is located, was built in 1972 and was designed to accommodate eight clinicians and 20,000 patients a year," Mansfield explains. "Today, we have close to 50 clinicians serving more than 80,000 patients a year. It's imperative at this point that we create a new facility that is more conducive to fulfilling our commitment to outstanding patient care."

Because space on campus is limited—and because the Eye Center will continue to see patients while the new facility is being built—the construction process will take place in two stages. A new parking deck next door to the current clinic will be completed in early 2010. While the parking structure is under construction, design of the new Eye Center Pavilion, which will be built in front of the existing facility, is under way. Completion of the new clinical facility is slated for 2012.

The master plan for the Eye Center is to have the Albert Eye Research Institute, which was completed three years ago, serve as home to all of the Eye Center's basic science research initiatives and faculty, while the current facilities in Wadsworth Building and the new clinical building will house the Eye Center's growing clinical and clinical-research services.

"This is an opportunity to create a state-of-the-art eye care facility for provision of world-class clinical services," says Mansfield, who notes that the Eye Center is now looking for leadership contributors to this project. "At the same time, this expansion will allow us to expand our focus on our research and teaching programs. When this new facility is complete, the Duke Eye Center will have both a program and a physical campus that rivals any ophthalmology program in the nation."

The new pavilion will be built in front of the current facility and will house the Eye Center's growing clinical and clinical-research services.

At the opening of Duke Eye Center of Raleigh, the new practice's physicians gather for a photo op: Leon Herndon, Eric Postel, department chair David Epstein, Jill Koury, Christopher Boehlke, and Tammy Yanovitch.

Duke Eye Center of Raleigh
Duke Medicine Plaza
3480 Wake Forest Road, Suite 300
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Faculty include:
Christopher Boehlke, MD, cornea
Leon Herndon, MD, glaucoma
Jill Koury, MD, glaucoma
Eric Postel, MD, vitreoretinal
Tammy Yanovitch, MD, pediatric and strabismus

Paving the Way for Convenience

January 2010 is the projected opening month for the new seven-story parking deck adjacent to the Eye Center, which will provide more convenient parking for patients. The 1,900-space deck with 300 spaces reserved for patient parking is being built in the Sands parking lot, between Research Drive and the entrance to the Duke Eye Center on Erwin Road.

Anthony Kuo, MD

Clinician-scientist and
cornea/vision correction specialist

After completing a fellowship in cornea, external disease and refractive surgery at Duke Eye Center, Anthony Kuo, MD, has joined the Duke faculty as a clinician-scientist.

Kuo is one of a handful of Duke ophthalmology faculty members to receive a prestigious K12 grant from the National Eye Institute. K12 grants are awarded to promising clinician-scientists to give them time to focus on research early in their careers and to develop the tools they'll need to be effective researchers down the road.

"We're thrilled to have someone of Anthony's caliber join our cornea and refractive surgery faculty," says Terry Kim, MD, who mentored Kuo during his fellowship. "His inquisitive mind and ability to analyze problems with a scientific approach make him an ideal candidate for a K12 grant. We look forward to his clinical and research accomplishments and collaborations."

For the next three years, Kuo will spend much of his time pursuing clinical research. He is currently working with Duke biomedical engineer Joe Izatt, PhD, to determine how innovative laser-imaging systems designed by Izatt can be used for the early diagnosis and treatment of corneal diseases and for vision correction surgery.

"Current imaging techniques can show us various structures in the cornea, but they don't reveal as much as some of the more advanced techniques already used in retina and glaucoma," Kuo explains. "These new systems will allow us to see the cornea in much greater detail, almost at a cellular level. We're in the early stages of this work, but we're excited about its potential."

Kuo also will see patients at Eye Center satellite clinics for routine eye exams and treatment of corneal disease, cataract surgery, and corneal transplants. In addition, he will perform vision correction surgeries such as LASIK and PRK.

Kuo, who completed his undergraduate degree and medical school at Vanderbilt University and his ophthalmology residency at the University of Pittsburgh, pursued a fellowship at Duke for the opportunity to spend a year of his fellowship doing research. "Under Dr. David Epstein, the department has a strong track record for producing clinician-scientists, and Duke also is strong clinically in cornea," Kuo says. "So I knew this would be a great place to train."

"These new imaging systems will allow us to see the cornea in much greater detail, almost at a cellular level. We're in the early stages of this work, but we're excited about its potential."

Kuo and his wife, a Duke radiologist, have a two-year-old son. Kuo says he chose ophthalmology as a career because "it's a great combination of medical and surgical care, and it can have a dramatic impact on patients' lives. And, the microsurgery is really amazing!"

Thomas Hunter, MD

Comprehensive ophthalmologist

The Duke Eye Center's newest comprehensive ophthalmologist is Thomas Hunter, MD, who joined the faculty as a clinician in the comprehensive service after completing a fellowship in glaucoma at Duke.

Hunter provides urgent care and routine eye exams, as well as treatment and management of cataracts, glaucoma, macular degeneration, and diabetic eye diseases. He will split his time between the main Duke Eye Center campus and the Durham VA Medical Center. Hunter is also involved in teaching Duke medical students and residents.

Hunter's interest in—and journey to become—an ophthalmologist began when he was seven years old, after he suffered a traumatic eye injury involving a pencil. "The injury to my eye really piqued my interest, not only in medicine, but specifically in the eye and how it functions," he says. The medical care he received compelled him to begin a journey to become an ophthalmologist—it was the only field of medicine he considered.

Hunter began his glaucoma fellowship at Duke in 2007, after completing medical school at the University of Tennessee at Memphis in 2003, and residency at Howard University Medical Center in 2007. He says, "I chose to come to Duke because of its reputation as a leader in ophthalmology and in glaucoma studies. For me, it was an easy decision." That reputation is also what ultimately kept him here after completing his education. The relationships he forged while studying at Duke convinced him that this is where he would like to start his career.

"I chose to come to Duke because of its reputation as a leader in ophthalmology and in glaucoma studies. For me, it was an easy decision."

Robin Vann, MD, comprehensive service chief, who helped recruit Hunter after his fellowship, was impressed by Hunter's interaction with patients. "He has an excellent way of communicating, and in addition to his comprehensive ophthalmology skills he brings additional expertise in glaucoma surgery and management to our patients, both at the Eye Center and the VA Medical Center."

In addition to caring for his patients, Hunter is also excited about the opportunity to train the next generation of ophthalmologists. "The way I teach reflects the amazing training I received throughout my medical education," he says, "and I hope that I am as positive an influence to them as my mentors were to me."

Henry Tseng, MD, PhD

Glaucoma clinician-scientist

Glaucoma specialist Henry Tseng, MD, PhD, has joined the Duke Eye Center faculty and has been awarded a prestigious K12 clinician-scientist grant from the National Eye Institute that allows him to focus on research to better understand the molecular and cellular basis of visual loss in glaucoma.

"We are very excited to have Dr. Tseng join the Glaucoma Service at the Duke Eye Center," says R. Rand Allingham, MD, director of the Glaucoma Service. "In addition to his outstanding clinical skills, he is a superb scientist who is dedicated to finding out exactly how glaucoma genes cause vision loss and blindness. Dr. Tseng is a perfect addition to a glaucoma research group that is already second to none."

Tseng first came to Duke in 2003 as an ophthalmology resident, after completing the MD/PhD program at the University of Pennsylvania. He completed a clinical and research fellowship in glaucoma at Duke. During the second year of his fellowship, he began working with Mike Ehlers, MD, PhD, a Howard Hughes Medical Institute scientist and professor in Duke's Department of Neurobiology. Now, as a faculty member, Tseng is continuing to collaborate with Ehlers on glaucoma research.

"Dr. Ehlers is a leader in the field of synaptic function and the molecular biology of neurons," says Tseng, whose PhD is in neuroscience. "We are working together to understand why and how retinal ganglion cells die in glaucoma, which is ultimately how patients lose vision. What is interesting is that these cells seem to die through a neurodegenerative process similar to neurological diseases such as Alzheimer's, Parkinson's, and Huntington's disease."

Tseng and Ehlers are focusing on a newly discovered protein called optineurin, which is produced by a gene associated with familial normal pressure glaucoma. They hope to understand what this protein does and how mutations in optineurin cause retinal ganglion cell death in glaucoma.

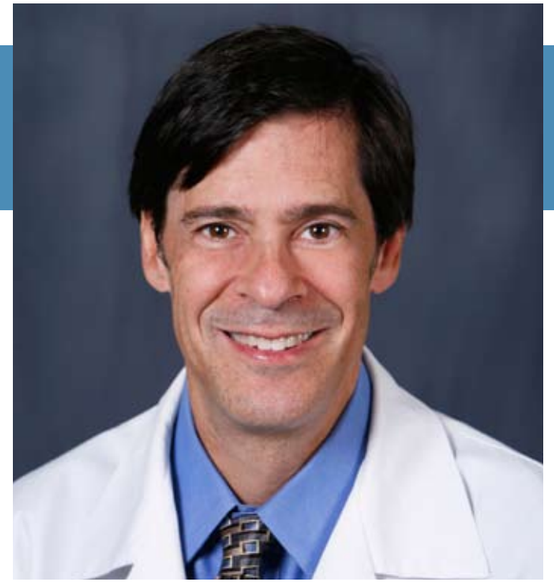
"This is a very challenging and daunting task for the field right now, but there's a lot of potential to make an impact on our understanding of glaucoma, especially here at Duke," notes Tseng. "One of Duke's greatest strengths is that we have an entire university beyond the Eye Center, with world-class departments in fields like neurobiology, cell biology, and cancer biology. It's a terrific place to do the interdisciplinary and translational research needed to see further progress in glaucoma and develop novel therapies."

"This is a very challenging and daunting task for the field right now, but there's a lot of potential to make an impact on our understanding of glaucoma, especially here at Duke."

While Tseng spends most of his time in the laboratory, he also performs laser and incisional surgeries at Duke Eye Center and provides routine eye care and management of glaucoma and cataracts to patients at the Duke Eye Center at Southpoint. He also enjoys mentoring students in Duke's MD/PhD program, teaching residents to perform surgeries at the VA hospital, and training glaucoma fellows.

In addition to his scientific credentials, Tseng is a classically trained pianist. His wife—whom he met while living in the same dorm at Stanford University—is also a physician; the couple enjoy spending time with their two children.

Jaffe Is Retina Service Chief



Glenn Jaffe, MD, tenured professor of ophthalmology, was named chief of the vitreoretinal service June 30. He replaces Brooks McCuen, MD, who stepped down after nearly 19 years as chief of the service.

Jaffe has been a pioneer in the development of sustained drug delivery systems to treat ocular inflammatory disease. He has participated in numerous clinical trials of new therapies for uveitis and vitreoretinal diseases and directs a basic research program funded by the National Institutes of Health to investigate the mechanisms responsible for macular degeneration and wound-healing disorders.

Brooks McCuen, MD

"Glenn Jaffe is the quintessential MD clinician-scientist—an outstanding surgeon and clinician who is highly recognized for both his clinical and basic research," says David Epstein, MD, chair of the Department of Ophthalmology. "His breadth of skills and values are exactly what are required to lead Duke ophthalmology in all of its missions of patient care, translational research, and education."

Jaffe joined the Eye Center faculty in 1989. He received his medical degree and did his ophthalmology residency training at the University of California, San Francisco. He completed a two-year combined clinical and research vitreoretinal fellowship at the Medical College of Wisconsin.

Jaffe has published over 135 articles in peer-reviewed journals and has an active clinical and basic-science research program. He treats patients with a variety of medical and surgical vitreoretinal and uveitis diseases. His clinical research interests include the use of optical coherence tomography in clinical retinal treatment trials, novel medical and surgical therapies of uveitis, and other posterior segment disorders.

In addition to his new post, Jaffe is the founder and director of the Duke Reading Center, an organization that collects and interprets images obtained by a variety of retinal imaging techniques, for multicenter clinical research trials conducted around the world. He also serves on the editorial board of the journals *Ophthalmology*, *Retina, Current Opinions in Ophthalmology,* and *Ocular Surgery News* and reviews manuscripts for a variety of clinical and investigative ophthalmology journals.

Natalie Afshari, MD,

Cornea and Refractive Surgery Service, has been elected as the American Academy of Ophthalmology's council deputy section leader representing all subspecialties in ophthalmology. She was an invited speaker at the cornea subspecialty day of the American Academy of Ophthalmology, where she talked about techniques of DSEK surgery. Her research continues to focus both on DSEK surgery and Fuchs endothelial corneal dystrophy, for which she has an NIH-funded genetics study. Afshari has published multiple papers this year on DSEK and Fuchs; she was also selected once again as a "Best Doctor in America."

Rand Allingham, MD,

Glaucoma Service, leads the POAG (Primary Open-Angle Glaucoma) genetic research project that is studying the DNA of more than 3,000 people to find the genes that cause glaucoma. Allingham joined the National Geographic Genographic Project film team in the fall to discuss the results of research with the Aeta people of Luzon in the Philippines. He is leading a study of another indigenous population, the Ati, on the island of Iloilo—located several hundred miles from Luzon—to determine how common glaucoma is in this population. Allingham's research is funded by the NIH, private foundations, and individual donors.

Vadim Arshavsky, PhD,

Scientific Director, Research, and Joseph Izatt, PhD, professor of biomedical engineering, received a $150,000 Incubator Award from the Duke Institute for Brain Sciences to collaborate on developing methodologies that combine optical and electrophysiological approaches to studying retina function and pathology.

Sanjay Asrani, MD,

Glaucoma Service, received the Helen Keller mid-career scientist grant from the American Glaucoma Society and the Achievement Award from the American Academy of Ophthalmology. He presented a keynote talk at the Pan American Glaucoma Congress in Mexico City in September and at the annual meeting of the Romanian Ophthalmological Society in October. His research in narrow angle glaucoma was featured in local, national, and international media outlets. Asrani and Rand Allingham, MD, received FDA approval for their new glaucoma drainage device for open angle glaucoma.

Srilaxmi Bearelly, MD,

Vitreoretinal Diseases and Surgery Service, received a National Institutes of Health K23 grant award for her clinical research, "Retinol, Lipofuscin & Autofluorescence in Dry Age-Related Macular Degeneration." She and collaborator Scott Cousins, MD, are continuing to recruit patients with dry macular degeneration for this clinical study. Bearelly also received the "Retinal Degenerations 2008 Young Investigator Award" and presented her findings on autofluorescence imaging at the XIII International Symposium on Retinal Degenerations, which was part of the International Society of Eye Research (ISER) meeting held in China.

Tariq Bhatti, MD,

Neuro-Ophthamology Service, published several papers including "Acute Inflammatory Demyelinating Optic Neuritis: Evidence" in *Neurologist*, "Ocular Health in Sleep Apnea: A Comprehensive Overview" in *Neuro-Ophthalmology,* "Failed DBS for Palliation of Visual Problems in a Case of Oculopalatal Tremor" in *Parkinsonism Related Disorders* and "Multiple Sclerosis Risk after Optic Neuritis: Final Optic Neuritis Treatment Trial follow-up" in *Archives of Neurology*. He mentored resident Preeya Gupta, MD, on her first-year research project, "Differentiation of Glaucomatous from Non-glaucomatous Cupping by OCT: A Pilot Study," for which Gupta received the Machemer Research Award.

Edward Buckley, MD,

Pediatric Ophthalmolgy and Strabismus Service and Neuro-Ophthalmology Service, had a triple honor this year at the annual American Association of Pediatric Ophthalmology and Strabismus meeting. He presided as president, gave the keynote Costenbader lecture, and received the Lifetime Achievement Award. He also participated at the World Ophthalmology Conference in Hong Kong, giving several lectures on complicated eye muscle surgery. This fall he gave the "Claude Worth Lecture" in England.

Alan Carlson, MD,

Cornea and Refractive Surgery Service, taught the Eleventh Annual VISX Laser Certification Course in September. Carlson delivered five lectures at the annual West Virginia Academy of Ophthalmology meeting addressing modern cataract surgery, corneal transplantation, and refractive surgery. He lectured on recent advances in presbyopia correcting intraocular lenses in Aspen, Colorado, and on recent developments in antibiotics used to treat serious infections of the anterior segment in New Bern, North Carolina. He also mentored second-year resident Jonathan Etter, MD, for his entry in the national resident competition. He taught the skills transfer class on modern cataract surgery at the AAO Meeting in Atlanta in November.

Pratap Challa, MD,

Glaucoma Service, was featured on ABC.COM regarding urgent eye care.

Laura Enyedi, MD,

Pediatric Ophthalmology and Strabismus Service, was team captain for the Eye Center's VisionWalk team for Foundation Fighting Blindness. They raised nearly $3,000 for the foundation.

David Epstein, MD, MMM

chairman of ophthalmology, lectured in March at the NEI/FDA Glaucoma Clinical Trial Design and Endpoints Symposium in Bethesda, MD. He spoke on "What is the Future of Glaucoma?: The Role of Disruptive Innovation" at the Pearls XI Symposium for the dedication of the new Vanderbilt Eye Institute in Nashville, Tennessee, in April. He also presented "Schlemm's Canal Surgery: Why You May Not Get the IOP Low Enough Yet" and "Why Glaucoma Diagnosis and Therapy Will Change: The Role of Disruptive Innovation" at the Midwest Glaucoma Symposium in Omaha, Nebraska in May. He delivered "The Search for a Glaucoma Outflow Drug" at Genentech in San Francisco, California, in June, and he presented "Reflections on 20+ Years of Glaucoma" at the Duke Fall Glaucoma Symposium in September.

Sharon Fekrat, MD, FACS,

Vitreoretinal Diseases and Surgery Service, has been promoted to associate professor with tenure. She was also named to the Best Doctors in America list for 2008. She spoke at the Midwest Ocular Angiography Conference in August in Lake Louise and at the combined North Carolina/South Carolina ophthalmology meeting in Hilton Head, South Carolina. Fekrat has recently published in the *American Journal of Ophthalmology* on her work with Avastin for macular degeneration.

Sharon Freedman, MD,

Pediatric Ophthalmology and Strabismus Service, was scientific program chair for the 2008 annual meeting of the American Association for Pediatric Ophthalmology and Strabismus, was elected director-at-large of that board, and was senior author on three abstracts and co-author on three additional presentations. Freedman and clinical fellow Alice Lin, MD, won the Pediatric Glaucoma and Cataract Family Association Award for best glaucoma project. She was a keynote speaker at the 2008 scientific meeting of the Pediatric Glaucoma and Cataract Family Association in Toronto, Canada. Freedman and co-authors recently published in the *Journal of AAPOS*. Three other manuscripts with colleagues in the department are in press.

Parag Gandhi, MD, Oculoplastic and Reconstructive Service -Winston-Salem, was an invited speaker for the Principles of Craniomaxillofacial Trauma and Reconstruction Course held by AO-North America in Williamsburg, Virginia, and lectured on reconstructive management of orbital trauma in June. In July he was inducted into the American Society of Ophthalmic Plastic & Reconstructive Surgery (ASOPRS) at the Spring Meeting in Washington, D.C. Duke Eye Center is the first in the country to successfully use the Synthes SynPOR titanium-reinforced porous polyethylene smooth barrier implant for repair of a large orbital blowout fracture. Gandhi is currently expanding the experience into a reportable patient series with favorable outcomes.

Leon Herndon, MD, served on the American Academy of Ophthalmology Maintenance of Certification faculty in Chicago in July. Herndon was the keynote speaker at the New Orleans Academy of Ophthalmology quarterly dinner meeting in August. He joined the faculty at the Duke Eye Center of Raleigh in September. Herndon spoke at Glaucoma Subspecialty Day at the American Academy of Ophthalmology meeting in Atlanta in November.

Glenn Jaffe, MD, Vitreoretinal Diseases and Surgery Service, was appointed chief of that service, replacing Brooks McCuen, MD, who stepped down after nearly 19 years of heading the service. Jaffe also was program chairman for the Macula Society Annual Meeting in Palm Beach, Florida, and invited speaker on intraocular drug delivery for ocular inflammation at the World Congress of Ophthalmology in Hong Kong. With Janet Chieh, MD, a vitreoretinal fellow at Tufts New England Medical Center, and Alan Carlson, MD, he published in the *American Journal of Ophthalmology*, the first description of combined surgery to insert a sustained-delivery steroid implant, remove a cataract, and insert an intraocular lens implant in eyes with cataract and intraocular inflammation (uveitis), with very favorable outcomes.

Terry Kim, MD, Cornea and Refractive Surgery Service, contributed a chapter to an authoritative textbook on transitioning to refractive IOLs, edited by David Chang, MD. He also served as senior author in peer-reviewed publications: "Novel Adhesives in a Chicken Cornea Model" with Jonathan Berdahl, MD, in *Archives of Ophthalmology*; "Refractive Changes Following DSEK Surgery" with Bokkwan Jun, MD, in *Cornea*; and "The Vulnerability of Clear Corneal Incisions" with Jonathan Etter, MD, in *JCRS*. Kim was a visiting professor at Emory University, University of Wisconsin-Madison, UC-Denver, and UT-Southwestern, and lectured at the Storm Eye/ASCRS Clinical Update Meeting, Eye on Excellence Fellowship Program, and the annual AAO meeting.

Gordon Klintworth, MD, PhD, Research, was an invited participant in the recent World Ophthalmology Congress (WOC2008) in Hong Kong. He chaired a session on clinically relevant ophthalmic pathology and presented a paper on fungal diseases at a symposium on ocular inflammation and infections, and he participated in the World Ophthalmic Education Colloquium. On his return trip, Klintworth lectured on the Corneal Dystrophies at the Yonsei University College of Medicine in Seoul, Korea. In July, Klintworth received a grant from the NEI to continue his research on a major corneal protein that causes several different inherited corneal diseases when mutated.

Jill Koury, MD, Glaucoma Service, was featured in the May issue of *Southern Living Magazine* discussing healthy vision practices. She is seeing patients at the new Duke Eye Center of Raleigh.

Brooks McCuen, MD, Vitreoretinal Diseases and Surgery Service, participated in the Retina Advisory Counsel Meeting for Alcon, Inc. in Dallas, Texas in July, where he consulted on advancement and emerging technology for vitreoretinal surgery. He was an invited speaker at the Oculaws 2008 ophthalmological meeting in Chicago in September. He spoke on silicone oil and liquid perfluorocarbons in vitreoretinal surgery and cataract challenging retinal surgery. He also participated in the annual meeting of the Retina Society in Scottsdale, Arizona, and the American Academy of Ophthalmology annual meeting in Atlanta, Georgia. McCuen stepped down as service chief of the Vitreoretinal Diseases and Surgery Service after nearly 19 years of service in that capacity.

Philip McKinley, MD, MPH, Comprehensive Service-Winston-Salem, spent two weeks working in the northeast area of Honduras in March. He went to the Moravian Mission Hospital in Ahuas, in the la Mosquita area, and to Limon along the northeast coast. He also met with the Ponces, two Honduran ophthalmologists in La Ceiba, Honduras, who perform free surgery for impoverished people from these areas and with whom he has worked for several years. In the spring he spoke in Winston-Salem on patient centered care, dealing with how to compassionately communicate with patients about their problems; he also gave a short program on mission eye care.

Prithvi Mruthyunjaya, MD, Vitreoretinal Diseases and Surgery Service, lectured at the 16th Duke Advanced Vitreous Surgery Course in April on ocular drug delivery and biopsy techniques for ocular tumors. He was senior author on a paper describing a patient seen and diagnosed by him in the Duke Ocular Oncology Clinic with a rare thyroid tumor that had spread to the eye. Mruthyunjaya continues his research on novel pathways in ocular blood vessel growth as part of a National Eye Institute K12 grant.

Kelly Muir, MD, Glaucoma Service, and her colleagues published a manuscript titled "Health Literacy and Vision-Related Quality of Life" in the *British Journal of Ophthalmology* in June. Her research focuses on helping glaucoma patients participate more fully in the management of their disease. Muir received a grant from the American Glaucoma Society to develop low-literacy glaucoma patient educational materials.

Eric Postel, MD, Vitreoretinal Diseases and Surgery Service, has helped develop a test for AMD risk genes that will soon be available to patients. He is also seeing patients at the new Duke Eye Center of Raleigh.

Terry Semchyshyn, MD,

Cornea and Refractive Surgery Service-Winston-Salem, volunteers at the Community Care Center in Winston Salem, which provides care to the underserved. He is also the team ophthalmologist for the local pro ice hockey team, the Twin City Cyclones. Semchyshyn travels once a month to the Asheville Veterans Administration Hospital to proctor the Duke resident physicians.

Cynthia Toth, MD, Vitreoretinal Diseases and Surgery Service, received a $150,000 unrestricted grant from Alcon and a $3.3 million grant from Genentech (see page 18) to establish the AREDS2 Ancillary Spectral Domain Optical Coherence Tomography (A2A SDOCT) study. Toth presented lectures on "SDOCT in Macular Degeneration" to the Research and Rehabilitation meeting in Mobile, Alabama, in March, the Virginia Society of Ophthalmology in June, and the American Academy of Ophthalmology Meeting (AAO) in November. She gave The Annual Donald M. Gass, MD, Memorial Lecture at the AAO Ophthalmic Photographer's Society Meeting and spoke at the Frankfurt Retina Meeting in Germany in April. She presented at the Spectral OCT meeting in Milan, Italy, in October.

Robin Vann, MD,

Comprehensive Service, gave lectures on axial length biometry and IOL calculation for cataract surgery in Fayetteville, North Carolina, and Fort Lauderdale, Florida. He lectured at the 4th Annual Harvard Intensive Cataract Surgery Course. Last summer he also lectured on astigmatism treatment in cataract surgery for the Christian Ophthalmologic Society in Callaway Gardens, Georgia. Vann lectured to ophthalmic technicians for the Joint Commission on Allied Health Personnel in Ophthalmology's national meeting in Atlanta, Georgia. He was featured in the June issue of *Parade Magazine*. He has been training for an Olympic distance triathlon.

David Wallace, MD, MPH,

Pediatric Ophthalmology and Strabismus Service, presented "Spectacles for Amblyopia" at the World Ophthalmology Congress in Hong Kong. He led a workshop, "Current Controversies in Retinopathy of Prematurity," at the American Association for Pediatric Ophthalmology and Strabismus meeting in Washington, DC. Wallace's American Ophthalmological Society thesis, "Computer-Assisted Quantification of Vascular Tortuosity in Retinopathy of Prematurity," was published in the *Transactions of the AOS*. He chairs AAPOS's Costenbader Lecture Committee and serves on AAPOS's Research Committee. He is vice-chair of AAO's Ophthalmic Knowledge Base Panel for Pediatric Ophthalmology, and he was an instructor for AAO's Maintenance of Certification Exam Review Course in Chicago.

Molly Walsh, MD, MPH,

Glaucoma Service, presented "Glaucoma Surgery Management" and "Glaucoma and the Body" to the Southern Medical Association in Pinehurst, North Carolina, last summer. In November she presented "Global Gene Expression and Protein Profiling of Retinas Exposed to Elevated Intraocular Pressure" at the Society for Neuroscience meeting in Washington, DC. Additionally, she is a member of the members-in-training committee for ARVO, and she is planning the Clinician-Scientist Forum for ARVO 2009 in Fort Lauderdale, Florida.

Diane Whitaker, OD,

Vitreoretinal Diseases and Surgery Service, presented a three-hour workshop, "Addressing the Psychosocial Aspects of Vision Loss," a lecture, "Evaluating Fitness to Drive," and a poster, "Prevalence and Patterns of Comorbid Cognitive Impairment in Low Vision Rehabilitation" at the Envision Conference in San Antonio, Texas, in September. She presented "Function Limitations Associated with Glaucomatous Vision Loss" at the Duke Glaucoma Symposium in September.

Julie Woodward, MD,

Oculoplastic and Reconstructive Service, presented "The Use of Botulinum Toxin in Dystonia and Related Disorders" at Duke's fall symposium for dystonia in September.

Tammy Yanovitch, MD,

Pediatric Ophthalmology and Strabismus Service, was selected as the recipient of a Fight for Sight grant-in-aid for her project, "Candidate Gene Screening and Genotype-Phenotype Correlations in African American Patients with Primary Congenital Glaucoma." She attended the annual Christian Ophthalmology Society Meeting in Callaway Gardens, Georgia, in July. Yanovitch also is seeing patients at the new Duke Eye Center of Raleigh.

Terri Young, MD,

Pediatric Ophthalmology and Strabismus Service, was the keynote Sekjin Chew Memorial Lecturer for the 12th International Myopia Conference in Cairnes, Australia, in July. She lectured at the Governor Morehead School for the Blind annual Teacher's Retreat in Raleigh in August, the Duke Children's Hospital Neurofibromatosis Conference in October, and the 60th Anniversary symposium of the National University of Singapore Department of Community Medicine in October. She was awarded research grants from the Singapore Biomedical Research Council, a three-year NIH R21, and the Lew Wasserman Award from Research to Prevent Blindness, Inc. She presented six research abstracts at the American Society of Human Genetics meeting in Philadelphia, Pennsylvania, in November.

Carol Ziel, MD,

Glaucoma Service-Winston-Salem, and second-year resident Jonathan Etter, MD, presented "Results of Cataract Surgery after Laser Iridectomy" at the annual Duke Residents' and Fellows' Day in June. She also spoke on multifocal implants and glaucoma at the annual Duke Glaucoma Symposium in Durham and the Fall McKinley Conference in Winston-Salem in September. Ziel gave a talk on refractive surgery and glaucoma at the American Academy of Ophthalmology meeting in Atlanta in November.

Mary Walter Is New Director of Development

At age three, Mary Walter learned the joys of non-profit organizations while "Trick-or-Treating for UNICEF," she says. She collected not only her share of candy, but also money for the organization. It was at this young age that Walter realized that giving to a worthwhile cause was important—so important, in fact, that she made it her career to help others do the same. "The adrenaline that runs my life is facilitating charitable giving," she says.

A graduate of Beloit College in Wisconsin, Walter joined the Eye Center in October 2008 as the new director of development. She has an impressive background in major gift facilitation, most recently as the assistant director of development at Duke University Libraries, where she increased donor participation by 21 percent and annual fund income by 16 percent. Prior to joining Duke in 2006, she spent eight years as the director of development at the Academy of the Sacred Heart in Michigan, where she raised over $6 million for capital improvements. Walter was also one of the first Certified Fundraising Executives (CFRE) in the country.

Berdahl and Gupta Receive the Machemer Award

John Berdahl, MD, third-year resident, and **Preeya Gupta, MD,** first-year resident, received the prestigious Robert A. Machemer Research Award at the Annual Residents' and Fellows' Day program in June.

The Robert A. Machemer Research Award recognizes a resident, clinical fellow, or research fellow whose clinical or basic science research proposal demonstrates high intellectual curiosity, outstanding scientific originality, and has a significant impact on the clinical management of persons with ophthalmic disease. The award honors Robert A. Machemer, MD, a past chair of the Duke Department of Ophthalmology.

Chau and Awdeh Receive the Ocular Innovation Award

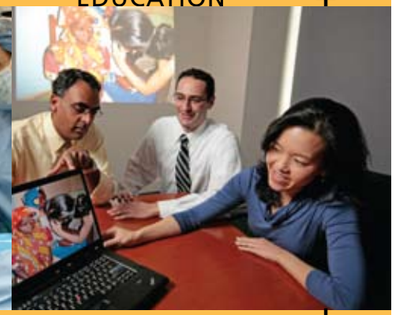
Felix Chau, MD, and **Richard Awdeh, MD,** third-year residents, received the Duke Eye Center Ocular Innovation Award at the Annual Residents' and Fellows' Day in June.

The cash award is given annually to the residents who have published the best article in a national eye journal (peer or peer-reviewed) of an original concept, operation, instrument, or invention in ophthalmology. Innovation counts more highly for this award than do reviews of the literature, reports on a series of operations, descriptions of diseases or cases, or quantification of former concepts. The award is sponsored by a former Eye Center resident.

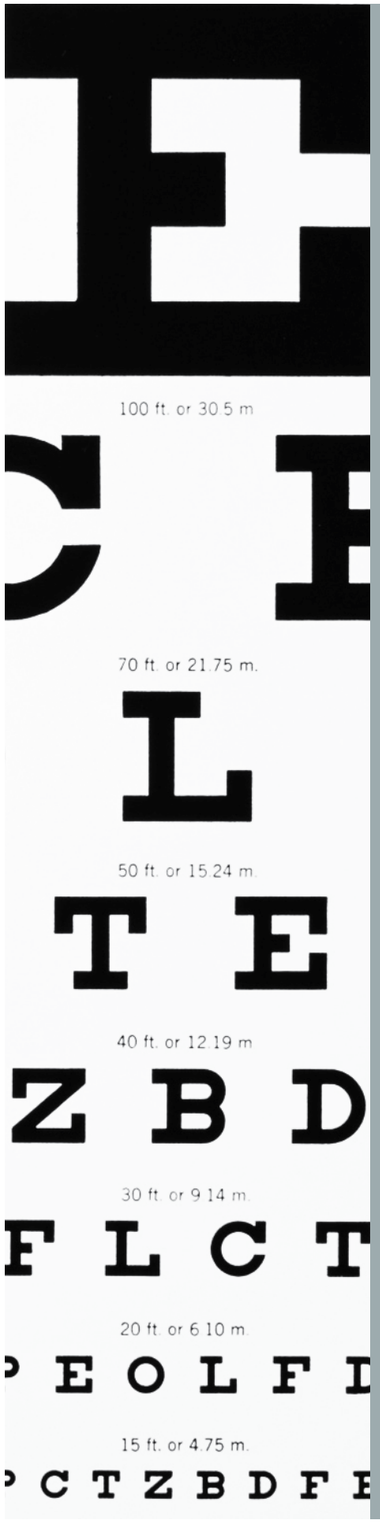
Toth Receives $3.3 Million Grant

Cynthia Toth, MD, professor of ophthalmology and biomedical engineering, received a $3.3 million Genentech grant to chair a five-year, multi-center clinical trial that builds upon the current Age-Related Eye Disease Study 2 (AREDS2). The new study, AREDS2 Ancillary Spectral Domain Optical Coherence Tomography Study (A2A SDOCT), is recruiting AREDS2 subjects and controls from four clinical sites: Duke Eye Center; Devers Eye Institute in Portland, Oregon; Emory University Eye Center in Atlanta, Georgia; and the National Eye Institute in Bethesda, Maryland. The newly established Duke Advanced Research in SDOCT Imaging Laboratory (DARSI) will grade and analyze the SDOCT images for this study.

PATIENT CARE RESEARCH EDUCATION



ANNUAL REVIEW 2007–2008



FACULTY

David Epstein, MD, MMM	Chairman, Department of Ophthalmology
Paul Lee, MD, JD	Vice Chairman, Department of Ophthalmology
Leon Herndon, MD	Medical Director, Department of Ophthalmology
Eric Postel, MD	Director, Eye Center Perioperative Services
Vadim Arshavsky, PhD	Scientific Director, Research Ophthalmology
Robin Vann, MD	Service Chief, Comprehensive Ophthalmology
Alan Carlson, MD	Service Chief, Cornea and Refractive Surgery
Rand Allingham, MD	Service Chief, Glaucoma
Edward Buckley, MD	Service Chief, Neuro-Ophthalmology, Pediatric Ophthalmology Director, Appointments, Promotion, and Tenure
Julie Woodward, MD	Service Chief, Oculoplastic and Reconstructive Surgery
Brooks McCuen, MD	Service Chief, Vitreoretinal Diseases and Surgery
Sanjay Asrani, MD	Chair, Education Program
Dana Blumberg, MD	Director, Continuing Medical Education
Jill Bryant, OD	Director, Contact Lens
Scott Cousins, MD	Director, Translational Research Program Director, Center for Macular Diseases
Karl Csaky, MD, PhD	Director, Ophthalmic Clinical Trials Unit at the Duke Clinical Research Institute (DCRI) Director, Site-Based Research (SBR) Program
Paulo Ferreira, PhD	Assistant Director, Translational Research Program
Sharon Freedman, MD	Director, Pediatric Low Vision Program
Glenn Jaffe, MD	Director, OCT Reading Center
William Rafferty, OD	Director, Optometry Education
Ivan Suñer, MD	Chief, Division of Ophthalmology at the Durham VA Medical Center
Cynthia Toth, MD	Liaison, Duke BioEngineering
David Wallace, MD, MPH	Assistant Director, Site-Based Research (SBR) Program
Diane Whitaker, OD	Director, Vision Rehabilitation Program
Julie Woodward, MD	Director, Public Education Program
Terri Young, MD	Director, Pediatric Genetics Program Faculty Liaison, Singapore
Rand Allingham, MD	Director, Fourth-year Medical Student Program
Catherine Bowes Rickman, PhD	Director, Third-Year Medical Student Program
Pratap Challa, MD	Director, Duke Ophthalmology Residency Program
Sharon Fekrat, MD	Director, Second-Year Medical Student Program
Terry Kim, MD	Director, Duke Ophthalmology Fellowship Program
Jo Anne Legacki, COMT	Director, Ophthalmic Technician Program

STAFF

Charles Mansfield, MBA	Chief Administrative Officer
Nick Hernandez, BS	Senior IT Manager
Michael Howard, MBA, FAHEC	Director of Operations
Evelyn Kelly	Health Center Administrator
Alice Lockhart, BA	Director, Marketing
James Pait, MBA	Director, Finance
Lynnette Thacker, CRA	Director, Sponsored Programs Administration
Renee Dawson	Coordinator, Continuing Medical Education, Director, Education Program Staff

MISSION STATEMENT

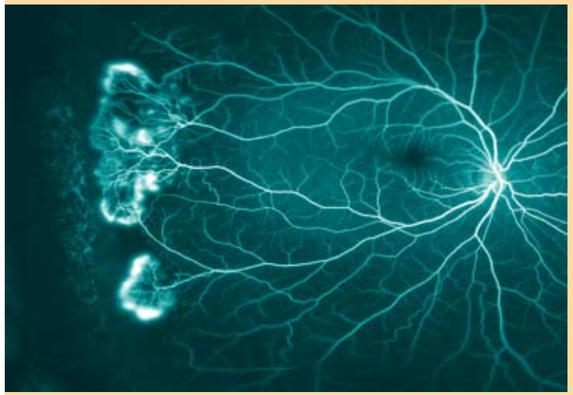
Duke Eye Center seeks to preserve and restore the sight of current and future generations by continuing to provide the highest quality and most complete health care to our patients, by developing new knowledge and skills, and by passing on our knowledge to other health care providers and patients.

SEEING THE BIG PICTURE:

New technology enables unprecedented eye imaging

Duke Eye Center is now home to two of the most sophisticated ocular imaging technologies available.

The Optos Ultra Wide-Angle Retinal Imaging Camera takes fluorescein dye-assisted angiography, color, and black-and-white images that show 82 percent of the retina in one image—versus the 11 percent visible with standard imaging—yielding unprecedented panoramic views of the retina, optic nerve head, and blood vessels.



A fluorescein angiogram of a patient with sickle cell disease reveals leaking blood vessels (top) and guides the use of laser photocoagulation to seal them. A standard retinal camera must take 10 shots to depict an image this large, which can be arduous for patients.

"Retinal imaging has been limited in the past due to the need to combine photographs, especially when trying to see the borders of an eye tumor," says manager of clinical imaging Michael P. Kelly, whose team worked with the manufacturers to refine both technologies.

"Now these images can be precisely recreated and measured to track changes."

The center's spectral domain optical coherence tomography (SD-OCT) equipment yields an ultra-fast, ultra-high-resolution 3D "virtual biopsy" of retinal layers.

Non-invasive SD-OCT imaging applies up to 65,000 data points, producing unsurpassed images that help clinicians see minute changes in a variety of disorders, enabling earlier intervention and more effective tracking of treatment than with standard imaging.

Both types of imaging are reimbursable by many insurers using standard current procedural terminology codes.

Imaging research may improve narrow angle glaucoma diagnosis

Sanjay Asrani's imaging research may help prevent glaucoma by detecting early signs of risk for the disease.

Duke Eye Center researchers have developed an imaging instrument that can detect and help identify patients at risk for glaucoma decades before the disease does irreversible damage.

"We've been talking about treating glaucoma for a long time," says Sanjay Asrani, MD, lead author of research on this technology, which appeared in the June issue of *Archives of Ophthalmology*. "Now we're changing the paradigm. We want to prevent it."

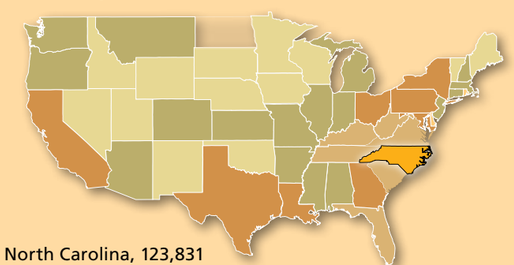
The new instrument is fourier domain optical coherence tomography (FDOCT), and it lets doctors make a 2D and cross-sectional image of the eye using high-resolution, high-speed beams of light without any direct contact with the eyeball. This process addresses shortcomings in gonioscopy, the standard technique for diagnosing narrow angle glaucoma. Using a special contact lens that is pressed to the eye, doctors performing gonioscopy can see if the canal is narrow and expected to close in the near future, scarred, or abnormally shaped. However, because the gonioscope lens presses against the eye, it can make the drain appear open. Also the bright light on the microscope used to view the eye can make the pupil constrict and distort the angle of the drain.

"Because FDOCT is done with infrared light spectrum rather than artificial light, we can check the drain with the room lights on and off to know what patients experience in real dark and light settings," Asrani says. "It's also a great tool to show the patients what we are seeing. And help them understand the necessity of preventive procedures such as laser surgery."

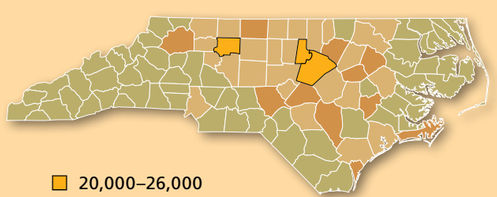
The FDOCT test cannot look at the drain from 360 degrees as the gonioscopy can, nor can it detect new blood vessel growth on the drain. But Asrani hopes FDOCT will make the gonioscopy test more accurate and better train ophthalmologists to assess patients for glaucoma risks.

Just as important, this new imaging device has "improved our understanding of glaucoma, especially narrow angle," says Asrani. "It opens up the possibility of visualizing changes to eye structures using different pharmacologic agents and following surgery. It may even lead to new areas of treatment."

Where our patients come from

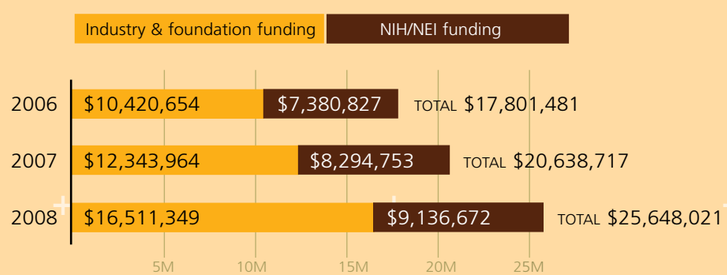


Total patient visits in 2008: **136,023**

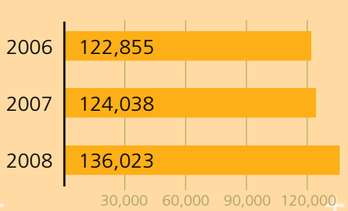


The Eye Center has **11** locations in North Carolina and Virginia.

Research funding growth



Patient Visits Growth



Selected Faculty Publications, 2007-2008


Sanjay Asrani, MD


Karl Csaky, MD, PhD

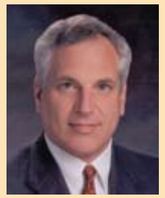

Catherine Bowes Rickman, PhD

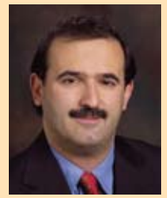

Pedro Gonzalez, PhD

David Epstein, MD, MMM


Vadim Arshavsky, PhD


Vasantha Rao, PhD


Scott Cousins, MD


Paulo Ferreira, PhD

Asrani S, Sarunic M, Santiago C, Izatt J. Detailed visualization of the anterior segment using fourier domain optical coherence tomography. ***Archives of Ophthalmology*** June 2008:126(6); 765–71.

Csaky KG, Richman ER, Ferris FL. Clinical trial design and endpoints symposium. ***Invest Ophthalmol Vis Sci.*** 2008:49(2); 479–489.

Ding JD, Lin J, Mace BE, Herrmann R, Sullivan P, Bowes Rickman C. Targeting age-related macular degeneration with Alzheimer's disease based immunotherapies: Anti-amyloid-beta antibody attenuates pathologies in an age-related macular degeneration mouse model. ***Vis. Res.*** 2008:48; 339–345.

Liton PB, Lin Y, Luna C, Li G, Gonzalez P, Epstein DL. Cultured porcine trabecular meshwork cells display altered lysosomal function when subjected to chronic oxidative stress. ***Invest Ophthalmol Vis Sci.*** 2008:49(9); 3961–9.

Lobanova ES, Finkelstein S, Herrmann R, Chen YM, Kessler C, Michaud NA, Trieu LH, Strissel KJ, Burns ME, Arshavsky VY. Transducin gamma-subunit sets expression levels of beta- and alpha-subunits and is crucial for rod viability. ***J. Neurosci.*** 2008:28; 3510–3520.

Lobanova ES, Finkelstein S, Song H, Tsang SH, Chen CK, Sokolov M, Skiba NP, Arshavsky VY. Transducin translocation in rods is triggered by saturation of the GTPase activating complex. ***J. Neurosci.*** 2007:27; 1151–1160.

Maddala R, Reneker LW, Pendurthi B, Rao PV. Rho GDP dissociation inhibitor-mediated disruption of Rho GTPase activity impairs lens fiber cell migration, elongation and survival. ***Developmental Biology*** 2008:315; 217–31.

Thill M, Strunnikova NV, Berna MJ, Natalya-Gordiyenko N, Schmid K, Cousins SW, Thompson D, and Csaky, KG. Characterists of late outgrowth endothelial progenitor cells from patients with age-related macular degeneration (AMD). ***IOVS*** 2008:49; 2696–708.

Wallace DK. Computer-assisted quantification of vascular tortuosity in retinopathy of prematurity (an American Ophthalmological Society thesis). ***Transactions of the American Ophthalmological Society*** 2007:105; 594–615.

Yi H, Friedman J and Ferreira PA. The cyclophilin-like domain of RanBP2 modulates selectively the activity of the ubiquitin-proteasome system and protein biogenesis. ***J. Biol. Chem.*** 2007:282; 34770–34778.

For a complete list of faculty publications, visit dukeeye.org

Asrani receives AGS's Young Investigator's Award

Sanjay Asrani, MD, associate professor of ophthalmology, received a $40,000 Young Investigator's Award from the American Glaucoma Society for his project, "Evaluation of the ICare Rebound Tonometer as a Home Intraocular Pressure Monitoring Device." These awards provide an additional source of research funding for young investigators between five and 20 years out of fellowship.

Yanovitch receives Fight for Sight award

Tammy Yanovitch, MD, assistant professor of ophthalmology, was selected as the recipient of a $20,000 Fight for Sight Grant-In-Aid for her project "Candidate Gene Screening and Genotype-phenotype Correlations in African American Patients with Primary Congenital Glaucoma." This study will establish a DNA and clinical database of African American patients affected with PCG and evaluate this database for mutations of genes that are known to cause juvenile and primary open angle glaucomas. Yanovitch is also a K12 grant recipient and sees patients in Durham as well as the new Duke Eye Center of Raleigh.

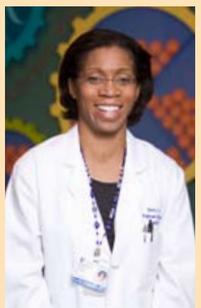

Vadim Arshavsky, PhD

Arshavsky honored by Alcon Research Institute

Vadim Arshavsky, PhD, scientific director and professor of ophthalmology, pharmacology and cancer biology, received a prestigious $100,000 Alcon Research Institute Award in April 2008. The Alcon Research Institute seeks and honors outstanding ophthalmology researchers from around the world. Nominees are selected by an elite group of national and international researchers.

Young receives Research to Prevent Blindness award

Terri Young, MD, received a $60,000 Lew R. Wasserman Merit Award from Research to Prevent Blindness. Established in 1995, the award provides unrestricted support to mid-career MD and PhD scientists who hold primary positions within ophthalmology departments and who are engaged actively in eye research at medical institutions in the United States. RPB is the world's leading voluntary organization supporting eye research. Founded in 1960, RPB has facilitated the advancement of research to develop more effective treatments, preventions, and cures for eye diseases.



2008 OMTT class, top row: Ray Fligman (manager, clinic operation), Nicole Papworth-Jones, MaryAnne Barnes, Victoria Lee, Julie Woodward, MD, (assistant professor, oculoplastic service) Brittany Hunter, Emily Reid, Ashley Simmons, Jo Anne Legacki (training coordinator). Bottom row: Rosita Farzannick, Betty Lim, Ellen Chien, Megan Hayes and Jessica Campbell

Revamped ophthalmic technician program graduates first class

In June the Duke Eye Center's Ophthalmic Medical Technician Training Program graduated its first class since the revamping of the program. Eleven students from California, Georgia, North Carolina, Iran, and Canada completed the one-year program. Graduates receive a certificate from Duke University Medical Center and qualify to apply for the Certified Ophthalmic Technician national examination administered by the Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO). One graduate, Megan Hayes, joined the Eye Center staff.

2007 *Ophthalmology Times* Ranking

Pratap Challa

Special-interest rotation gives residents a chance to follow their own leads

The Duke Ophthalmology Residency Program has launched a unique elective rotation to give residents a chance to pursue personal research or clinical interests (whether around the country or around the world) before they complete their residency, to help provide a jump start on their future careers.

Duke ophthalmology residents may spend 10 weeks of their final year of training pursuing an experience tailored to their individual interests. The program allows residents to take part in laboratory or clinical research at academic centers and agencies around the country, to participate in international medical programs, and to work in the biomedical industry.

"Our goal is to tailor the program to what each individual resident would like to get out of it," says Pratap Challa, MD, assistant professor of ophthalmology and director of the residency program. "Residency programs tend to be in terms of what rotations you do and what kind of experiences you get. We've created this program in an effort to broaden the training experience for our residents and give them more input into how to shape their training."

Tarra Wright, MD
Chief Resident/ Glaucoma

Christopher Boehlke, MD
Cornea

Matthew Caldwell, MD
Cornea

Anthony Kuo, MD
Cornea

Lina Amini, MD
Glaucoma

Mohammed El Mallah, MD
Glaucoma

Thomas Hunter, MD
Glaucoma

Pedro Rivera, MD
Glaucoma

Henry Tseng, MD, PhD
Glaucoma

Aziz Khanifar, MD
Medical Retina

Henry Leder, MD
Medical Retina

David Lederer, MD
Medical Retina

Shawn Ronan, MD
Medical Retina

Mays El-Dairi, MD
Neuro-Ophthalmology

Suzanne Johnston, MD
Pediatrics

Alice Lin, MD
Pediatrics

Kristina Price, MD
Plastics

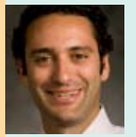
Zinaria Williams, MD
Plastics

Sai Chavala, MD
Surgical Retina

Pouya Dayani, MD
Surgical Retina

Jawad Qureshi, MD
Surgical Retina

Adrienne Scott, MD
Surgical Retina



Richard Awdeh, MD
Third Year

John Berdahl, MD
Third Year

Felix Chau, MD
Third Year

Byron Deen, MD
Third Year

Annie Lee, MD
Third Year

Yassine Daoud, MD
Second Year

Jonathan Etter, MD
Second Year

Anna Hong, MD
Second Year

Priyatham Mettu, MD
Second Year

Dana Wallace, MD
Second Year

Gabriel Chong, MD
First Year

Jessica Chow, MD
First Year

Francis DeCroos, MD
First Year

Derek Del Monte, MD
First Year

Preeya Gupta, MD
First Year

COMPREHENSIVE OPHTHALMOLOGY

Jill Bryant, OD	Assistant Professor of Ophthalmology
Aaleya Koreishi, MD	Assistant Professor of Ophthalmology
Jill Koury, MD	Assistant Professor of Ophthalmology
Philip McKinley, MD, MPH (W-S)	Assistant Professor of Ophthalmology
Laurie Pollock, MD	Assistant Professor of Ophthalmology
Tina Singh, MD	Assistant Professor of Ophthalmology
Robin Vann, MD	Assistant Professor of Ophthalmology Service Chief

CORNEA AND REFRACTIVE SURGERY

Natalie Afshari, MD	Associate Professor of Ophthalmology
Alan Carlson, MD	Professor of Ophthalmology Service Chief
Terry Kim, MD	Associate Professor of Ophthalmology
William Rafferty, OD (W-S)	Assistant Professor of Ophthalmology
Terry Semchyshyn, MD (W-S)	Assistant Professor of Ophthalmology

GLAUCOMA

Rand Allingham, MD	Professor of Ophthalmology Service Chief
Sanjay Asrani, MD	Associate Professor of Ophthalmology
Dana Blumberg, MD	Assistant Professor of Ophthalmology
Pratap Challa, MD	Assistant Professor of Ophthalmology
David Epstein, MD, MMM	Professor of Ophthalmology (Chairman) *Joseph A.C. Wadsworth Clinical Professor*
Leon Herndon, MD	Associate Professor of Ophthalmology (Medical Director)
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Stuart McKinnon, MD, PhD	Associate Professor of Ophthalmology Associate Professor in Neurobiology ++
Frank Moya, MD (W-S)	Assistant Professor of Ophthalmology
Kelly Muir, MD	Assistant Professor of Ophthalmology
Molly Walsh, MD, MPH	Assistant Professor of Ophthalmology
Carol Ziel, MD (W-S)	Assistant Professor of Ophthalmology

NEURO-OPHTHALMOLOGY

Tariq Bhatti, MD	Associate Professor of Ophthalmology Associate Professor of Medicine ++
Edward Buckley, MD	Professor of Ophthalmology Professor in Pediatrics ++ Service Chief Interim Dean of Education

OCULOPLASTIC AND RECONSTRUCTIVE SURGERY

Parag Gandhi, MD (W-S)	Assistant Professor of Ophthalmology
Michael Richard, MD	Assistant Professor of Ophthalmology
Julie Woodward, MD	Assistant Professor of Ophthalmology Assistant Professor in Medicine ++ Service Chief

PEDIATRIC OPHTHALMOLOGY AND STRABISMUS

Edward Buckley, MD	Professor of Ophthalmology Professor in Pediatrics ++ Service Chief Interim Vice Dean of Medical Education
Laura Enyedi, MD	Assistant Professor of Ophthalmology Assistant Professor in Pediatrics ++
Sharon Freedman, MD	Professor of Ophthalmology Professor in Pediatrics ++
David Wallace, MD, MPH	Associate Professor of Ophthalmology Associate Professor in Pediatrics ++
Terri Young, MD	Professor of Ophthalmology Professor in Pediatrics ++
Tammy Yanovitch, MD	Assistant Professor of Ophthalmology

VITREORETINAL DISEASES AND SURGERY

Srilaxmi Bearelly, MD	Assistant Professor of Ophthalmology
Scott Cousins, MD	Professor of Ophthalmology Professor in Immunology ++ *Robert Machemer, MD, Professor of Ophthalmology*
Karl Csaky, MD, PhD	Associate Professor of Ophthalmology
Sharon Fekrat, MD	Associate Professor of Ophthalmology
Glenn Jaffe, MD	Professor of Ophthalmology
Brooks McCuen, II, MD	Professor of Ophthalmology *Robert Machemer, MD, Professor of Ophthalmology* Service Chief
Prithvi Mruthyunjaya, MD	Assistant Professor of Ophthalmology
Eric Postel, MD	Associate Professor of Ophthalmology
Ivan Suñer, MD	Associate Professor of Ophthalmology
Cynthia Toth, MD	Professor of Ophthalmology Professor in Biomedical Engineering ++
Diane Whitaker, OD	Assistant Professor of Ophthalmology

RESEARCH OPHTHALMOLOGY

Vadim Arshavsky, PhD	Professor in Ophthalmology Professor of Pharmacology & Cancer Biology ++ Scientific Director
Catherine Bowes Rickman, PhD	Associate Professor of Ophthalmology Associate Professor in Cell Biology ++
Paulo Ferreira, PhD	Associate Professor in Ophthalmology Associate Professor of Molecular Genetics & Microbiology ++
Pedro Gonzalez, PhD	Associate Professor in Ophthalmology Associate Professor of Pathology ++
Hyuncheol Kim, PhD	Assistant Professor in Ophthalmology
Gordon Klintworth, MD, PhD	Professor of Pathology *Joseph AC Wadsworth Research Professor of Ophthalmology* ++
Paloma Liton, PhD	Assistant Professor in Ophthalmology
Goldis Malek, PhD	Assistant Professor in Ophthalmology
Vasantha Rao, PhD	Associate Professor in Ophthalmology Associate Professor in Pharmacology & Cancer Biology ++
Dennis Rickman, PhD	Assistant Professor in Ophthalmology Assistant Research Professor of Neurobiology ++
Nikolai Skiba, PhD	Assistant Professor in Ophthalmology
Sandra Stinnett, DrPH	Assistant Professor of Biostatistics & Bioinformatics Assistant Professor in Ophthalmology ++
Fulton Wong, PhD	Professor of Ophthalmology Professor in Neurobiology ++ Assistant Professor in Pathology +++

++ Secondary appointment +++ Tertiary appointment

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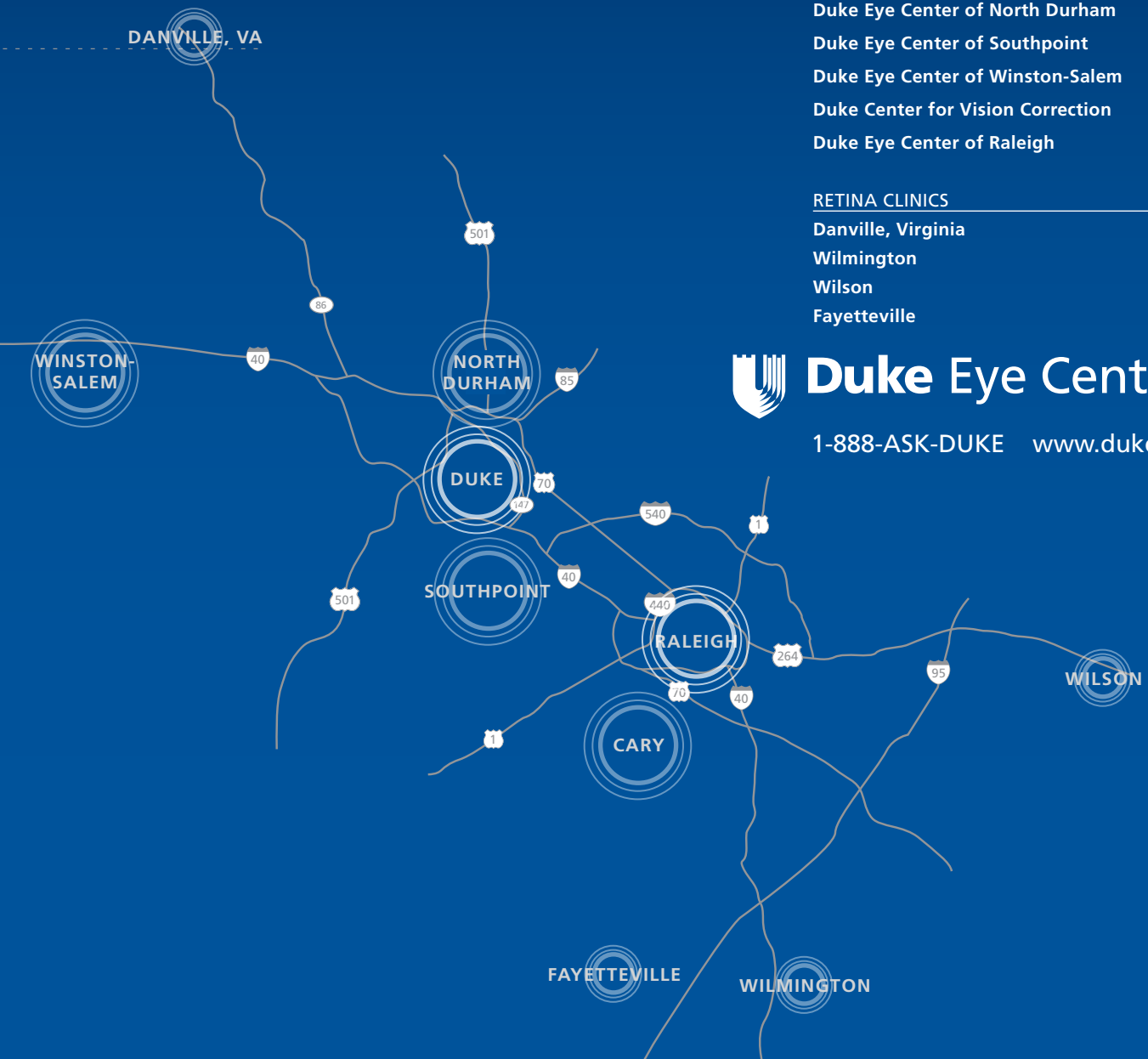

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