FOCUS: VEI's Expanding Footprint

Community Practices • East Tennessee ROP Care
National Outreach • VEI Overseas • Collaboration on Genetics

PROFILE: Armie Harper, M.D.
Dear Friends,

In this issue of Vanderbilt Vision, we present the significant growth of the Vanderbilt Eye Institute reflected both by the increase in our footprint of offices across the region, as well as in the size of our faculty. Since 2003, we have grown from 14 to 41 faculty members, who run the gamut of clinical subspecialties, as well as those dedicated to laboratory research and education. When an organization gets this large, it becomes difficult sometimes to communicate with all parties involved; however it is even more challenging to craft settings where the faculty can have meaningful dialogue surrounding our goals and operations. The traditional monthly faculty meetings allow dissemination of information, but leave little time for substantive discussion.

To address this need, we initiated a series of Mission-Specific Faculty Meetings. At each, we blocked out four hours from 4pm to 8pm to allow extensive review and discussion of our clinical, research, and educational missions. Leaders of the various components of the organization presented their thoughts on accomplishments, goals, and challenges in their areas, followed by questions and discussion. Specific “takeaway items” were gathered and reviewed by a task force of faculty and staff, resulting in action plans proposed to the department’s Executive Committee.

For the clinical enterprise, these included a demographic analysis of the region to determine needs for additional faculty, reevaluation of the University’s vision care contract, and specific suggestions for new and updated equipment. For the research enterprise, there was consensus around formalizing mentoring committees for scientists and clinician scientists, allocating funds to support collaborative research endeavors, upgrading our clinical trials program, and expanding the administrative infrastructure for our growing number of funded grants. The educational meeting discussed development of a defined program to assess resident examination skills, ways to increase faculty engagement in medical student education to promote interest in ophthalmology, greater faculty participation in the training of graduate students and postdoctoral research fellows, and the establishment of an orthoptic training program.

The most gratifying aspect of these meetings was the near 100% attendance of the faculty and their participation as active listeners and discussants for the entire four hours. In fact, the Elliott Lecture Hall was filled for the most recent education meeting, as a result of attendance by so many of our community volunteer faculty! It was incredibly gratifying to see active contributions by clinicians about the research priorities, and by researchers about our resident training program. We are excited about this new model for faculty engagement, and look forward to sharing it with other departments at Vanderbilt and programs across the nation.

Sincerely yours,

Paul Sternberg, Jr., M.D.
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EDITOR'S NOTES

Vanderbilt Vision is a publication of Vanderbilt Eye Institute, a department of Vanderbilt University Medical Center. Vanderbilt Vision provides ophthalmologists with information on current research and state-of-the-art clinical applications.

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Vanderbilt Vision is written for physicians and friends of the VEI and does not provide a complete overview of the topics covered. It should not replace the independent judgment of a physician about the appropriateness or risk of a procedure for a given patient.

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Release date: April 29, 2010
Vanderbilt University Medical Center

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Cover: Globe floating through a forest. (photo artwork: Tony Richardson)
Vanderbilt Eye Institute is reaching out to communities across Tennessee and beyond. All in the quest to bring the best eye care to the world.
Beyond the Vanderbilt Campus: Partnering with Community Practices

In 2008, when the Vanderbilt Eye Institute purchased the ophthalmology practice of Drs. James Felch, Daniel Weikert and Mark Kroll, (VEI Vision, Spring 2008), it took its first steps to reach out to the communities south of Nashville. Acquiring these offices in Franklin and Bellevue was just the beginning. Today, with offices in Murfreesboro and Spring Hill and visiting partnerships in Lawrenceburg, Lewisburg, Pulaski and Tullahoma, the VEI continues to identify need and extend its scope of care to communities in southern Middle Tennessee.

Lawrenceburg and Lewisburg

Mark Kroll, M.D., learned of the need for comprehensive ophthalmology in Lawrenceburg from a nurse-anesthetist friend at Crockett Hospital. Joseph Remke, O.D., had been partnering with a cornea specialist from Memphis for several years to do cataract screenings and surgery, but the relationship had ended. Dr. Kroll saw a way for Vanderbilt to reach out. He now sees patients three times a month at the Remke Eye Clinic.

“I had moved here from California and was new to the practice when it was acquired by Vanderbilt,” explains Kroll, also a cornea specialist. “This presented an opportunity to grow my practice and expand the Eye Institute’s scope of care to an area of need. Plus, it extends the VEI’s name and reputation and generates referrals to our other specialists.”

Case in point: It quickly became clear that a retina specialist was needed at the practice. Lawrenceburg’s patient population of 15,000 is predominantly older, including many patients with macular degeneration and diabetes who needed retina specialists. Some had severe glaucoma damage because they had postponed treatment. In stepped Franco Recchia, head of the VEI’s retina division.

Today, Dr. Recchia treats many retinal conditions on site at Remke Eye Clinic, while Dr. Kroll performs cataract surgery at a local hospital. More complicated surgeries come to the VEI in Nashville.

It means something to Joe Remke to have VEI professionals on site. Before the Vanderbilt partnership, the community had four optometrists but no ophthalmologist, and no retina specialist anywhere nearby.

“I believe that our partnership with Vanderbilt is preventing some eye disease from progressing into more severe conditions,” says Remke. “Early detection and care means everything.”

Dr. Jeff Jordan is an optometrist in Lewisburg, a community of 10,000 south of Franklin. Today, Dr. Kroll is also traveling to his office each month to perform cataract surgery, coordinating pre-op and post-op services with Dr. Jordan.

Performing exams and utilizing surgery centers close to home lessens the burden on the rural population. Many just won’t travel to “the big city” for eye care, especially if it means going back several times for re-checks. “It’s great for our patients to get this world-class care at home,” says Dr. Jordan.

(continued on page 4)
Lawrenceburg and Lewisburg offer a change in atmosphere from the Nashville and Franklin offices that VEI professionals appreciate. And the patients love the “chairside manner” of the visiting doctors, a sentiment that is heartily returned. “I really enjoy the patient population,” says Dr. Kroll. “They’re always friendly and glad to see me.”

“The people here will hug you when you come in,” says Dr. Jordan. “Country folk will bring you some cookies...They’re a little more appreciative.”

**Murfreesboro and Points Southeast**

Dr. Ted Cherney had a successful ophthalmology practice for 30 years, 15 of those in Middle Tennessee. When he decided to devote more time to teaching, research and running an ophthalmology association in Russia *(see article, page 9)*, he moved his office to Vanderbilt and his practice was acquired by the VEI.

But Dr. Cherney, a retina specialist, didn’t leave his patients entirely behind. He and his VEI retina colleague, Janice Law, M.D., see patients in his old Murfreesboro

“I believe that our partnership with Vanderbilt is preventing some eye disease from progressing into more severe conditions.”

- Joe Remke, O.D., Remke Eye Clinic, Lawrenceburg, TN

*Mark Kroll, M.D., wears his coat to the car to have when he arrives at Lawrenceburg and Lewisburg (photo by Rusty Russell)*
office once a week and in Tullahoma and Pulaski twice per month.

The recently remodeled Murfreesboro site is now a VEI office and has been expanded to include pediatric ophthalmology lanes. Families who otherwise might have had to go out of their way for eye exams can now drive up to the neighborhood office and park steps from the front door.

Pediatric ophthalmologist Dr. Nancy Benegas visits the Murfreesboro office every Monday. As the fourth subspecialist in the VEI’s pediatric practice, the Rutherford County expansion helps her find new patients without pulling them from the other doctors in the practice.

Local referrals are a big source of new patients. To help generate them, Benegas was accompanied by Rachel Hackler, a Monroe Carell Jr. Children’s Hospital liaison, to meet local pediatricians in Smyrna, Murfreesboro, Lebanon and Mt. Juliet.

“In pediatrics, we build our practice by seeing new patients,” Benegas says. “In our satellite offices, we get patients who may not have come into Nashville, so it expands the department’s reach.”

North into Kentucky: Bowling Green and Glasgow

The Vanderbilt Eye Institute has had a presence in Kentucky for several years. In a collaboration with Blanchfield Army Hospital at Ft. Campbell, Kentucky, third-year residents spend one of their 10-week rotations performing twice-weekly refractive eye surgery on 10-20 eyes per day (see VEI Vision, Fall 2007). This partnership has provided a much-needed service for Ft. Campbell and a valuable training ground for the VEI.

(continued on page 6)
With its proximity and easy Interstate access, southern Kentucky has always looked to Nashville as its closest urban neighbor. When John Downing, M.D., a general ophthalmologist, needed specialists for his Bowling Green, Kentucky area practice with four locations, he turned to Vanderbilt for help.

Dr. Downing has been on Vanderbilt’s clinical faculty for 39 years and a longtime supporter of patient relationships in the area. For many years, his retina patients had seen a visiting specialist from Louisville. But when that relationship ended, he called Paul Sternberg, VEI Chairman and a retina specialist, who began traveling to Bowling Green himself.

Now several years later, Dr. Steve Kim has taken over the weekly trip. Dr. Nancy Benegas visits the Bowling Green clinic once a month to see pediatric patients. Dr. Mark Melson, an oculoplastics specialist, visits twice per month.

“It’s a big advantage for us, our patients and for the Eye Institute.” - John Downing, M.D., Downing McPeak Vision Centers, Bowling Green, KY

“Before we started bringing in a retina specialist, our patients had to travel to Nashville or Louisville to get the treatment they needed. Now they can see specialists here. And the Vanderbilt doctors get to see a broader range of patients than at their offices in Nashville.”
East Tennessee
Filling the Gap in ROP Care

One out of eight babies born is premature – roughly 500,000 infants per year. The number of these births has increased about 30% over the last two decades. As technology helps more “preemies” survive, hospitals also see more severe cases of retinopathy of prematurity (ROP), a condition that may require laser surgery to save a child’s sight. Of the 500 to 1,000 children in the United States who go blind each year from ROP, most cases are preventable.

Retinopathy of prematurity requires treatment and monitoring in the critical first months of a patient’s life. But somewhere along the line, eye professionals came up against a crisis in ROP care. Increasing liabilities have wreaked havoc on malpractice insurance rates – and the eye care community. Settlements in malpractice cases involving ROP are among the highest in medicine, approaching $20 million per child.

Cities across the nation have had trouble finding professionals to perform the all-important eye exams. “While the hospital workload for these services has gone up in the past ten years,” explains Vanderbilt Eye Institute retina specialist Franco Recchia, M.D., “the available workforce has gone down 50%.”

But to maintain their certification and funding, neonatal intensive care units are required to provide ROP screening. That’s why Johnson City Medical Center, in Johnson City, Tennessee, and Erlanger Health Systems in Chattanooga contacted the Vanderbilt Eye Institute.

“We’re fortunate because we’re part of this big umbrella here at Vanderbilt where we’re self-insured,” explains Sean Donahue, M.D., Ph.D., VEI’s head of pediatric ophthalmology.

A few years ago, the ROP rates in Johnson City’s Niswonger Children’s Hospital stood significantly higher than national and international averages. Soaring malpractice premiums had left the community with no qualified doctors in town willing to perform necessary eye exams and surgeries. “The hospital was at risk for losing accreditation for their nursery because they couldn’t get anybody to see the babies,” says Dr. Donahue.

(continued on page 8)
“While the hospital workload for ROP services has gone up in the past 10 years, the available workforce has gone down 50%.”

- Franco Recchia, M.D.

(from page 7)

Today, VEI specialists make biweekly visits to the Johnson City NICU. Babies born before 32 weeks’ gestation are screened for ROP based on birth age and weight – generally 3.3 pounds. Children who seem clinically unstable or high-risk are also examined. On a typical visit, VEI pediatric ophthalmologists screen an average of one to eight infants at JCMC.

Dr. Recchia recalls the day his office got the phone call from T.C. Thompson Children’s Hospital at Erlanger, which is affiliated with the University of Tennessee at Chattanooga. “Within 48 hours, we had drafted a contract and our doctors had agreed to provide the service.”

Now VEI’s retina team travels bi-weekly to Erlanger. Dr. Recchia and his colleague, Dr. Steve Kim, screen 15-20 infants and perform laser surgery on-site. Children needing urgent exams, close observation or infant eye surgery can be transported to Vanderbilt should the need arise.

These new expansions aren’t a hop, skip, and jump away. Dr. Donahue has driven out of Nashville during rush hour to arrive in Johnson City at midnight and get up in time to examine babies at 7:00 a.m.

“You’re only on the ground for an hour and a half to two hours,” he points out, “but it’s five hours in the car each way.” His colleague, Dr. David Morrison, recently drove the ten hours to see only one infant. Dr. Robert Estes, another pediatrics colleague, also makes the drive.

Since the relationship with Johnson City began, ROP care has changed substantially. When Dr. Donahue and his colleagues arrived at Niswonger, they noticed a substantial number of children needing laser treatment – many more than they felt should have occurred based on the number of babies in the unit.

“The amount of treatable ROP they had was greater than what we would expect by chance alone,” says Donahue. The VEI doctors and the Niswonger nurses and clinical staff dug down and worked with the neonatologist to “change policies and examine what was different.”

The effort has paid off in more ways than one. Johnson City Medical Center’s NICU staff recently received the Mountain States Health Alliance President’s Quality Award, the health system’s highest honor for quality improvement. But more important – the area’s ROP rate dropped well below the international average.

As more and more communities face the ROP crisis and a dwindling number of local professionals, the VEI is poised to bring the same kind of ophthalmology care they deliver in Nashville to patients farther afield – especially to those who are the most vulnerable of all.
Going Global: The VEI Overseas

Upper left, clockwise: Amy Chomsky, M.D., examines a patient in the field hospital in Haiti; attendees at White Nights Conference, St. Petersburg, Russia; Winter Palace on Palace Square in St. Petersburg; scrub station for the OR at the field hospital in Haiti. (all photos submitted)
In November 2008, Vanderbilt Eye Institute Chair Paul Sternberg asked faculty member Amy Chomsky, M.D., to form and chair a global outreach committee. The committee’s first task was to determine where the VEI should become involved.

**The Greatest Need**

For years, Dr. Denis O’Day, former VEI Chairman and longtime faculty member, has served on the foundation board of Visitation Hospital in Petite Riviere Dernier, Haiti. The hospital is located three hours from Port-au-Prince. Dr. O’Day had often returned from Haiti – the poorest nation in the Western Hemisphere – to report that eye services were scarce. Dr. Chomsky’s outreach committee decided to explore the possibility of establishing an eye clinic there.

Chomsky traveled to Haiti twice before the recent earthquake and has been there once since the disaster. While in Haiti, she has worked closely with Janet Nicotera of the Institute for Global Health. Nicotera, an infectious diseases nurse with a dual appointment at Vanderbilt and Cornell, works out of Gheskio Center, in the heart of Port-au-Prince.

Gheskio is a well-established pediatric and HIV/Infectious Diseases clinic. With Vanderbilt’s connections at Gheskio and at Visitation Hospital, the two decided it made the most sense to establish an eye care station in Port-au-Prince, with rural outreach at Visitation.

After the earthquake, Chomsky returned to Haiti with Vanderbilt ER physician Seth Wright, who has been involved in global medicine through the nonprofit Doctors without Borders. At this writing, Dr. Wright is still in the country.

“There was a lot of chaos after the earthquake, and a lot of disorganization,” Chomsky recalls. “The USS Comfort was trying to set up post-op units onshore, and it was originally thought that Visitation Hospital would be one of those units.”

Drs. Chomsky and Wright flew into Port-au-Prince on a small private plane and thus couldn’t bring many supplies – including glasses, which Chomsky had brought along on previous trips.

Many people had left Port-au-Prince and moved out to rural areas after the earthquake, where tent cities had been set up. Dr. Chomsky helped emergency health care workers by removing sutures and assisting with wound care at the enormous tent city set up outside Visitation Hospital.

On her second trip, Dr. Chomsky delivered eye services at the rural facility for the first time. She saw a little boy who needed an enucleation, but the surgery had fallen through because the OR needed for the surgery no longer existed post-earthquake. She has connected with the American Academy of Ophthalmology to make other arrangements for the child.

**Starting from Scratch**

In Port-au-Prince, the earthquake has delayed clinic setup. While no equipment was lost, Gheskio sustained building damage and now has an outside tent hospital and wound care area. Fortunately, Visitation Hospital just has cracks in
the walls. Vanderbilt Eye Institute's partnership plans to move forward with the original clinic at Gheskio, and Visitation will likely provide eyeglasses, set up an eye room and perform surgeries.

The Port-au-Prince clinic has gotten a substantial boost from an unexpected source. Dr. Armie Harper, a retina specialist in Austin, Texas, and a Vanderbilt alumnus, is donating equipment, money, and shipping materials to set up the eye room at Gheskio (see Profile, page 13). Dr. Chomsky has consolidated other donated supplies and delivered them to Harper, who will ship everything down in containers once the situation has stabilized.

"Haiti is a place where we can really make a difference at the ground level." – Armie Harper, III, M.D.
Austin Retina Associates, Austin, TX

With the Gheskio eye room, Dr. Harper saw a way to help the Haitian people while supporting a Vanderbilt global initiative. “I'm fortunate that I can write a check to help buy equipment,” he explains, “but it's so much more for me. I want to visit there myself...it's a place where we can really make a difference at the ground level.”

The VEI has also been discussing a Vanderbilt partnership with a Haitian ophthalmologist, Dr. Brigitte Hudicourt, whom Dr. Chomsky consulted for guidance on the clinics. Dr. Hudicourt has been working on an American Academy of Ophthalmology Haiti Task Force, helping to rebuild eye care in Haiti.

To Russia, with Love

Dr. Ted Cherney is a third generation physician. His interest in Russia began as a child. Although he grew up in the U.S., his father was born in Russia and escaped Lenin's persecution at age 15. His grandfather went to medical school in Tomsk, Siberia and his father at the University of California, San Francisco. Both were surgeons.

St. Petersburg, Russia is a sister city to Los Angeles. The Russian city had sent its own mayor to L.A. to meet with officials, including leaders of the Los Angeles Medical Association. "We are 40 years behind,” said the mayor. "We need to begin medical exchanges."

In 1991, while Dr. Cherney and his wife, Arlyn, were living in Los Angeles, they were invited to St. Petersburg along with an endocrinologist, a hospital administrator, and their spouses to evaluate the medical delivery system. In Russia, the group visited district hospitals, cancer hospitals, and emergency medical centers. Dr. Cherney gave a short talk, which was so well-received the Russian committee asked if he could come back for more. Further networking led to discussion of an ophthalmology conference.

Combating cultural distrust and governmental hurdles, Arlyn Cherney organized the logistics of the conference while her husband continued dialogue with his Russian colleagues. 1994 saw the first international medical meeting of any kind in Russia. “We focused on inter-ocular scarring,” Dr. Cherney recalls. “There were only 40 attendees.”

An Ongoing Commitment

Not only was the country severely behind in medical advances, but Cherney found that the lecture city of 8 million had only one Zeiss microscope available for the conference. The other equipment needed for demonstration had to be imported. (continued on page 12)
Through the years, the Cherneys have secured corporate sponsors to provide equipment and spent their own money to travel to Russia. Early on when they moved to Middle Tennessee to establish a private practice, they continued managing the conference.

Over the past 15 years the conference has expanded dramatically. Today it is known as the White Nights Congress, after the time of year when the St. Petersburg sky remains light until early morning. It takes place the last week of May and addresses a roster of ophthalmologic issues. Last year, more than 1,700 ophthalmologists descended on St. Petersburg from all over Russia, Eastern Europe, and even Western Europe.

Through the Congress, Russian ophthalmologists have made great strides on their country’s medical advances. “They have come 40 years in 15 years,” Cherney remarks.

Inspired by the lectures, one doctor created a diabetes center and brought in other specialties, reducing amputations in his city by 30%. The international collaboration, Cherney concludes, has “changed the way they teach medicine.”

When Dr. Cherney joined the Vanderbilt Eye Institute’s faculty in 2009, he brought the White Nights Congress with him, along with a generous donation to keep it afloat. The VEI provides support for the Congress and sends lecturing physicians. But the years of time, resources and love the Cherneys have put into this incredible conference have firmly established it as a model of what international cooperation can accomplish.
C. Armitage Harper, III, (Armie) was born in Nashville and graduated from Vanderbilt University in 1983. He jokes, “My father went to Vanderbilt, too, and I saw his name on the wall every time I walked down the hall of one of my classroom buildings.”

Dr. Harper attended boarding school in Austin, Texas, and once he completed his medical training, he moved back to Texas to join Austin Retina Associates. His current research interests include pharmacological treatment of macular degeneration and preventive nutrition for macular degeneration.

Harper met the VEI’s Dr. Amy Chomsky at an American Academy of Ophthalmologists meeting, where she told him about the proposed Vanderbilt eye clinic in Haiti (see article, page 9). Dr. Harper was moved by the dire conditions that existed there for eye care. As an alumnus, he had been looking for ways to get involved with a Vanderbilt initiative, and was excited that the Vanderbilt Eye Institute was thinking about global outreach. “It’s the right thing to do,” he says.

Austin Retina Associates is a large practice with several offices, and Dr. Harper used this buying power to purchase the equipment necessary to set up the eye room at Gheskio Clinic in Port-au-Prince. Fortunately, none of the equipment had been shipped before the recent earthquake, since the Gheskio building sustained some damage. A friend of Dr. Harper’s in New Orleans is storing the equipment and other donated supplies until it’s safe to ship a container down.

“This eye clinic will give us the opportunity to see medicine practiced in its purest form,” he asserts. In the U.S., there are so many rules and regulations. In Haiti, they have nothing. I want to bring care to these people utilizing the best thinking and the best tools we have.”

Dr. Harper’s wife, Ruthie, is an internal medicine physician specializing in nutrition. The couple would eventually like to take their children (Holly, 17, and Beau, 15) to Haiti “to experience the rewards of helping those less fortunate.”

As for himself, he says, “I’ve been practicing retina for 16 years, but I want to look into the future and know there’s something more out there for me to do with my life.”

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National Outreach
VEI Scientists Collaborate on Genetics

Vanderbilt Eye Institute researchers have historically partnered with scientists in other departments and at other universities. Many of these national and international collaborations—such as the Glaucoma Research Foundation’s Catalyst for a Cure initiative—have led to important discoveries (see Glaucoma, back cover).

Some of today’s most exciting collaborations are in genetics. Since the mapping of the Human Genome earlier this decade, scientists have made great strides in understanding the role of genes and genetic variations in human disease. And VEI researchers are working with the Vanderbilt Center for Human Genetics Research to use this knowledge in discovering genetic pathways to some of the most devastating eye diseases.

The Center’s primary role is to take the understanding of genetics and help apply it to other disciplines. “Collaboration is part and parcel of what we do,” explains Jonathan L. Haines, Ph.D., T.H. Morgan Professor of Human Genetics and director of the Center. Haines and his colleagues have identified genes involved in common conditions and complex diseases such as multiple sclerosis, autism and Alzheimer’s disease.

“It’s really hard to do our kind of stuff in isolation, so we try to reach out,” says Haines. “The clinician-scientists and the basic scientists—we even reach across campus and talk to the physicists.”

Finding the Pathways to AMD

Haines’ longest-standing collaboration with the Vanderbilt Eye Institute involves retina specialist Anita Agarwal, M.D. “Our goal all along has been to understand the role of genetics in macular degeneration,” Haines says.

Age-related macular degeneration (AMD) is a leading cause of visual impairment and blindness in the elderly, and its cause remains largely unknown. In 2005, Haines, Agarwal and their colleagues identified a strong association between DNA sequencing of the complement factor H gene (CFH) and a significantly increased risk for AMD. This common variant likely explains approximately 43% of AMD in older adults (Science, April 15, 2005).

In 2006, Drs. Agarwal and Haines participated in a joint research effort with Duke University Eye Center to further study the effect of CFH. Dr. Agarwal served as the clinical investigator and recruited, examined and screened over 1,000 patients for the project.

Genetics technology enabled Agarwal and her colleagues to provide clinical correlation to genetic testing. Their results indicated that CFH increases the risk of developing geographic atrophy (GA) (grade 4) as well as neovascular (grade 5) and milder (grade 3) disease. Although neovascular disease proliferation is responsible for the majority of severe vision loss with AMD, GA is also a significant cause.

This joint research has developed two clinically applicable products for VEI and its collaborators. First, it has identified a biological pathway and solidified the theory of the role of inflammation in the disease. Second, knowing genetic markers allows researchers to bring in the concept of personalized medicine or patient-centered care.

“Having identified a majority of the
“Patient-centered care is an initiative that has received a lot of priority and support,” says Dr. Franco Recchia, head of the VEI’s retina division. And gene testing may suggest the best possible treatment options for specific patients with diseases like macular degeneration.”

We’re More like Dogs than You Think

Rachel Kutchey, M.D., Ph.D. is a VEI clinician-scientist specializing in glaucoma. The underlying current of many of her projects is collaboration with Jonathan Haines and the Vanderbilt Center for Human Genetics Research.

Studies have shown that 50% of all glaucoma patients are not diagnosed with the disease based on visual field criteria until they have suffered a significant amount of optic nerve damage. It is not uncommon to see patients with moderate to advanced disease which was undetected previously due to the asymptomatic nature of glaucoma, at least at the early stage.

“You have to deliver the bad news to them,” says Dr. Kutchey, “that what they have lost, they can’t get back. Your goal is to stop it now and save what they have left.”

Screening for glaucoma requires sensitivity and specificity. “We don’t have a very good way to screen patients for glaucoma yet,” Kutchey explains. “The imaging technology for detection and progression is amazing and fast-evolving, but there’s not a gold standard to show that this is effective.”

Kutchey faces this question on a daily basis: What can we do to detect and intervene in the early stages of glaucoma, and how can we cure it? “Our ultimate goal is to stop the disease before it affects vision permanently, but immediately we want to understand why some people get glaucoma. We absolutely need a global test to identify patients who are susceptible.”

Kutchey and Haines’ genetic study involves the common form of the disease known as adult onset primary open angle glaucoma. Their collaborator is veterinary ophthalmologist Dr. Kirk Gelatt, former dean of the College of Veterinary Medicine of the University of Florida at Gainesville.

A pioneer in his field, Gelatt made a breakthrough genetic discovery in the late 1950s: Open angle glaucoma presents in some beagles the same way that it does in humans. By breeding and meticulously tracking the dogs in (continued on page 16)
NEWS AND AWARDS
Lisa Fraine received the Honor Certificate at this year's academy in San Francisco. This certificate is awarded by the American Association of Certified Orthoptists and the American Orthoptic Council for excellence in professional contributions, experience and leadership.

Rebecca Sappington, Ph.D., has received a grant from the National Eye Institute to study the relationship between the cytokine interleukin-6 and retinal ganglion cell degeneration in glaucoma.

Louise Mawn, M.D., won a Physician-Scientist Award from Research to Prevent Blindness.

Brandi McRedmond and Jeffrey Sonsino, O.D., were appointed to the advisory board for the Vanderbilt Peabody Program in Visual Disability.

Stephen Kim, M.D., has been awarded a grant from the Knights Templar Foundation for his work “The Safety and Efficacy of Intraocular Nonsteroidal Anti-inflammatory Drugs for Juvenile Idiopathic Arthritis, Associated Uveitis and Macular Edema”.

Franco Recchia, M.D., and Paul Sternberg, Jr., M.D., participated as invited speakers in the Retina Subspecialty Day at the recent annual meeting of the American Academy of Ophthalmology. The two-day meeting drew an audience of over 3,000 ophthalmologists to hear of new advances in treatment of retinal disease.

Dr. Recchia has also been named associate editor (retina section) of the clinical journal *Ophthalmology*. In this position, he plays a key role in the review and selection of the newest clinical research in retinal disease and treatment.

David Calkins, Ph.D., VEI Director of Research, was featured on the Discovery Channel news for his laboratory’s recent work on glaucoma, published in the March 16 issue of the Proceedings of the National Academy of Sciences.

Dr. Calkins has also been named an ARVO Silver Fellow in recognition of his service, accomplishments and leadership.

FACULTY APPOINTMENTS
Milam Brantley, M.D., Ph.D. joins the faculty in June 2010 as the inaugural director of the new VEI Center for Ocular Pharmocogenomics. Dr. Brantley was most recently at Washington University where he has been assistant professor of ophthalmology since 2003. He is a retinal specialist with a research program in the genetics of macular degeneration.

UPCOMING EVENTS
November 9–10: 2010 – Vanderbilt Eye Institute Symposium “Biomarkers in Ocular Disease”
The symposium will be held at the Vanderbilt Marriott. Please mark your calendar.

(from page 15)
a colony for many generations, Gelatt and his researchers have come close to mapping a disease locus. The dog genome, it turns out, is much closer to the human genome than other species. This was the first application of using the dog genome to map the glaucoma disease locus to a small region of a specific dog chromosome.

“This alone is important,” explains Kuchtey, “We know where the gene is located. Now we are trying to narrow down that region to determine which gene causes glaucoma in the beagle colony so we can track the cause of glaucoma in humans.”
Paul Sternberg, Jr., M.D.
Chair, Vanderbilt Eye Institute

**RETINA/VITREOUS**
Special interests: age-related macular degeneration and complex retinal detachments.

Anita Agarwal, M.D.

**RETINA/VITREOUS**
Special interests: inflammatory diseases of the retina and diabetic retinopathy.

**PEDIATRIC OPHTHALMOLOGY/ADULT STRABISMUS**
Nancy M. Benegas, M.D.
Special interests: amblyopia, strabismus, complicated strabismus including reoperations in children and adults.

Ronald J. Biernacki, C.O., C.O.M.T.

**ORTHOPHTALMISTS**
Special interests: pediatric orthoptics.

John B. Bond, III, M.D.

**NEURO-OPHTHALMOLOGY**
Jiyang Cai, M.D., Ph.D.
VISION RESEARCH
Special interests: mitochondrial oxidative damage and protection in aging and age-related degenerative diseases.

David J. Calkins, Ph.D.
VISION RESEARCH
Special interests: degenerative disorders of the visual system and the genetic mechanisms of retinal disease.

Min S. Chang, M.D.
VISION RESEARCH
Special interests: growth and maintenance of corneal epithelial cells.

Edward D. Cherney, M.D.

**RETINA/VITREOUS**
Special interests: macular degeneration, diabetic retinopathy, rural eye health care, telemedicine and international eye care.

Amy S. Chomsky, M.D.

**COMPREHENSIVE OPHTHALMOLOGY**
Special interests: Veterans Administration Hospital Chief Attending.

Sean P. Donahue, M.D. Ph.D.

**NEURO-OPHTHALMOLOGY/PEDIATRIC OPHTHALMOLOGY**
Special interests: amblyopia, surgical management of complicated strabismus, pediatric neuro-ophthalmology, and visual field testing.

Robert Estes, M.D.

**PEDIATRIC OPHTHALMOLOGY/ADULT STRABISMUS**
Special interests: childhood and adult strabismus, ophthalmic genetics.

Mark D. Ewald, M.D.

**CORNEA AND EXTERNAL DISEASE**
Special interests: endothelial dystrophies, ocular infections.

James W. Feich, M.D., Ph.D., F.A.C.S.

**COMPREHENSIVE OPHTHALMOLOGY**
Special interests: cataract surgery.

Jin Hui-Shen, Ph.D.
VISION RESEARCH
Special interests: laser surgery and the invention of surgical devices.

Karen M. Joos, M.D., Ph.D.

**GLAUCOMA**
Special interests: low-pressure glaucoma and pediatric glaucomas.

Jeffrey A. Kammer, M.D.

**GLAUCOMA**
Special interests: neovascular glaucoma and complicated glaucoma cases.

Brad Kehler, O.D., F.A.A.O.

**OPTOMETRY**
Special interests: low vision rehabilitation, specialty optics, contact lenses.

Lori Ann F. Kehler, O.D., F.A.A.O.

**OPTOMETRY**
Special interests: amblyopia, pediatric eye care.

Stephen J. Kim, M.D.

**RETINA/VITREOUS**
Special interests: uveitis.

Mark A. Kroll, M.D., J.D.

**COMPREHENSIVE OPHTHALMOLOGY**
Special interests: cataracts, refractive surgery, secondary IOL implantation, corneal transplantation.

John Kuchtey, Ph.D.
VISION RESEARCH
Special interests: immunological aspects of anterior chamber pathology in glaucoma.

Rachel W. Kuchtey, M.D., Ph.D.

**GLAUCOMA**
Special interests: cellular and molecular mechanisms of aqueous outflow in glaucoma.

Patrick Lavin, M.D.

**NEURO-OPHTHALMOLOGY**
Special interests: eye movement disorders, nystagmus, neuro-otology, headache and metabolic disorders affecting the visual system.

Janice Law, M.D.

**RETINA/VITREOUS**
Special interests: diabetic retinopathy and age-related macular degeneration.

Jennifer Lindsey, M.D.

**COMPREHENSIVE OPHTHALMOLOGY**
Special interests: cataracts, eyelid disorders, ocular trauma, diabetic eye disease, and glaucoma.

Louise A. Mawn, M.D.

**NEURO-OPHTHALMOLOGY/OCULOPLASTICS**
Special interests: ophthalmic plastic surgery with a particular interest in orbital disease.

Mark R. Melson, M.D.

**OCULOPLASTICS**
Special interests: ophthalmic plastic surgery.

Lawrence M. Merin, RBP, F.I.M.I
OPHTHALMIC IMAGING CENTER
Special interests: retinal imaging, epidemiology and diabetic eye disease.

David Morrison, M.D.

**PEDIATRIC OPHTHALMOLOGY**
Special interests: strabismus, pediatric cataracts, and retinopathy of prematurity.

Denis, M. O’Day, M.D., F.A.C.S.

**CORNEA and EXTERNAL DISEASE**
Special interests: ocular fungal infections.

John S. Penn, Ph.D.
VISION RESEARCH
Special interests: molecular basis of ocular angiogenesis.

Franco Recchia, M.D.

**RETINA/VITREOUS**
Special interests: pediatric retinal disorders and retinal vascular disorders.

Rebecca M. Sappington, Ph.D.
VISION RESEARCH
Special interests: neurodegenerative disorders of the visual system and neuroinflammatory processes in retinal disease.

Chasidy D. Singleton, M.D.

**COMPREHENSIVE OPHTHALMOLOGY**
Special interests: refractive errors, cornea disorders, cataracts, glaucoma, diabetic eye disease, ocular trauma, and strabismus.

Jeffrey Sosinino, O.D., F.A.A.O.

**OPTOMETRY**
Special interests: complicated and difficult-to-fit contact lenses, and low vision rehabilitation of adults and children.

Uyen L. Tran, M.D.

**CORNEA and EXTERNAL DISEASE/LASER SIGHT**
Special interests: corneal transplantation, cataract surgery, and refractive surgery.

Laura L. Wayman, M.D.

**COMPREHENSIVE OPHTHALMOLOGY**
Special interests: Director of Resident Training and cataracts.

Daniel S. Weikert, M.D.

**COMPREHENSIVE OPHTHALMOLOGY**
Special interests: cataracts, refractive surgery, secondary IOL implantation, sports ophthalmology - team physician for Tennessee Titans and Nashville Predators.
First Signs of Glaucoma Found in the Brain

Researchers at the Vanderbilt Eye Institute are now a step closer to deciphering a leading cause of blindness in the United States — glaucoma. In a recent study, David Calkins, Ph.D., Director of Research at VEI, discovered that the first sign of nerve degeneration in glaucoma actually occurs in the brain. Glaucoma is generally considered a disease of the eye in which sensitivity to ocular pressure causes damage to the retina and optic nerve, which are components of the central nervous system and do not regenerate. The damage may begin away from the central field of vision, gradually progressing and resulting in complete blindness unless detected early. For this reason, degeneration in glaucoma is often hard to detect.

The study, published in the Proceedings of the National Academy of Sciences, describes recent experiments in which Calkins' laboratory discovered that glaucoma is very much like other central nervous system diseases. "This is a paradigm shift on how we think about this disease," said Calkins, associate professor of Ophthalmology and a member of the neuroscience program. "This information may open up an entirely new domain of nerve-derived therapeutics."

According to National Eye Institute projections, by the year 2020, 80 million people worldwide will have glaucoma. The risk of vision loss due to glaucoma increases sevenfold after the age of 55. Combining this new understanding of where the first neuronal injury for glaucoma occurs with the fact that the incidence of injury increases with age, researchers now have insight into how the loss of sensory function occurs in normal aging. "People really thought we were crazy when we suggested that the first signs of nerve injury for glaucoma were in the brain," says Calkins. "This discovery allows us to view the disease through the same lens that we view other age-related, neurodegenerative disorders."

The study, which also introduces the possibility of using MRI scans as an early diagnostic tool, was funded by the Glaucoma Research Foundation's Catalyst for a Cure initiative, the National Eye Institute and Research to Prevent Blindness. Sam Crish, Ph.D., a staff scientist in the Calkins laboratory, is the paper's first author.