RECENT FINDINGS
Arterial Oxygen Fluctuation and Retinopathy of Prematurity in Very Low-Birth-Weight Infants

How Often Are Glasses Prescribed to Preschoolers Who Don’t Need Them?

INSIDE VANDERBILT EYE INSTITUTE
Staff Profile: Sandy Owings

PIONEERING IOL PLACEMENT IN CHILDREN:
Intraocular Lens (IOL) Placement After Lensectomy IOL Placement versus Aphakia in the Treatment of Unilateral, Congenital Cataracts
Dear Friends,

I hope you enjoyed our first issue of Vanderbilt Vision, which outlined the Vision Research Program at the Vanderbilt Eye Institute and featured our pioneering work in age-related macular degeneration.

The current issue presents a wide variety of ongoing research in pediatric ophthalmology. Care for sick children has been an important feature of the Vanderbilt University Medical Center for decades. In February 2004, Vanderbilt opened the Monroe Carell Jr. Children’s Hospital at Vanderbilt – a freestanding facility filled with state-of-the-art equipment and information systems for treating children’s special issues. Ranked as one of the 10 best children's hospitals in the nation by Child magazine, Vanderbilt Children’s Hospital works collaboratively with the Vanderbilt Eye Institute to provide pediatric eye patients with the best possible care.

Supported by a generous gift from the Lions Clubs of Tennessee, the Tennessee Lions Eye Center (TLEC) opened its doors in 1997. This busy clinical care center provides the full spectrum of children’s eye care, featuring pediatric ophthalmologists Drs. Sean Donahue, David Morrison, and Robbin Sinatra, who will be joined by Dr. Robert Estes in June 2006. In addition, TLEC eye doctors include Dr. Lori Anne Kehler, a Vanderbilt optometrist specializing in children, and a team of sub-specialists: Dr. Karen Joos (pediatric glaucoma), Drs. Anita Agarwal and Franco Recchia (pediatric retina), Dr. Louise Mawn (pediatric oculoplastics), and Dr. Uyen Tran (pediatric cornea).

In addition, a group of world-class scientists study the pathogenesis and treatment of retinopathy of prematurity. VEI Director of Research John Penn, Ph.D. leads a team of investigators that currently includes himself, three Ph.D. investigators, two M.D. clinician scientists, three graduate students, two visiting scientists from other institutions and a technical staff of five. This program is supported by the National Eye Institute, Research to Prevent Blindness, the Knights Templar Foundation, and the American Association for Pediatric Ophthalmology and Strabismus, as well as several industry contracts.

On a personal note, I am pleased to announce the opening of Phase I of the new Vanderbilt Eye Institute Vision Research laboratories. This new facility has doubled our current laboratory space, with plans for another doubling in the next few years.

I hope you enjoy this issue of Vanderbilt Vision.

Sincerely yours,

Paul Sternberg, Jr., M.D.
G. W. Hale Professor and Chair
Vanderbilt Eye Institute
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 University Medical Center is a comprehensive research center committed to excellence in patient care and physician education.

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 28, 2006
Vanderbilt University Medical Center

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Retinopathy of prematurity (ROP) affects roughly 84% of premature survivors born at 28 weeks gestation or earlier. Normally, retinal vascular development progresses from the 16th week of gestation to the 40th week in a central to peripheral wave at a rate of about 0.1 mm a day. But a premature infant’s retinas can experience arrested vessel growth. This can lead to a rapid and poorly regulated compensatory growth of capillaries that results in vitreous hemorrhage, scarring and contraction, retinal folds or detachments, and even blindness.

Many previous studies have documented the correlation of prolonged therapeutic oxygen to negative ROP outcome, although it remains unclear precisely what aspect of oxygen therapy promotes the pathology. The partial pressure of oxygen in arterial blood (PaO₂) is a product of the level of therapeutic oxygen, and it can fluctuate rapidly in sick premature infants and cause alternating episodes of severe and extended hyperoxemia and hypoxemia.

John S. Penn, Ph.D., professor and director of research at VEI, directed a retrospective study of 231 premature infants treated at Arkansas Children’s Hospital. These children weighed no more than 1500g at birth. For each baby, fluctuation was expressed as coefficient of variation (CoV).

This study investigated the relationship between CoV or blood oxygen fluctuation at three intervals of therapy and the risk of developing threshold or more severe stages of ROP. It involved infants who lived at least six weeks and had their highest active stage of ROP documented. Both eyes were initially examined between 4-6 weeks after birth by a board-certified specialist in pediatric or vitreoretinal diseases, using indirect ophthalmoscopy. Researchers obtained the lab results of all arterial blood gases from routine intermittent sampling throughout the first month of life.

The results showed that, while average PaO₂ had no relationship to ROP progression, the frequency and extent of PaO₂ fluctuation was strongly and directly correlated to negative ROP outcome. ROP has long been associated with the use of high-concentration supplemental oxygen therapy and with extended duration of oxygen use in the lowest birth weight infants. The results of this study indicate that one reason for this may be that longer and higher concentration oxygen supplementation may provide greater opportunity for frequent and large PaO₂ fluctuation.

Another interesting implication of the data: What happens in the first few days of a baby’s life appears more important than events that occur later and closer to the time of critical pathological retinal changes associated with threshold disease. Generally, threshold ROP does not arise until about 38 weeks postconception, regardless of gestational age at birth. PaO₂

Measuring the relationship between PaO₂ and retinopathy progression in a premature infant
fluctuation, however, is most harmful in the first five days of life. This study found that infants with very low birth weights who experience fluctuating PaO₂ are at higher risk of threshold ROP. Controlling infant PaO₂ fluctuations can lower this risk and give more premature infants a better chance of healthy retinal development. VEI investigators, in collaboration with scientists in the Vanderbilt School of Engineering, are working on technological advances in oxygen delivery systems designed to lessen the likelihood of PaO₂ fluctuation.

**Sean Donahue, M.D., Ph.D.**

**How Often Are Glasses Prescribed to Preschoolers Who Don’t Need Them?**

Several states may soon require all children to have formal eye examinations before entering school. But while optical trade organizations support this legislation, many pediatric ophthalmologists suggest that some young patients receive spectacles unnecessarily. Up to now, there has been little data to support this. The Tennessee Lions Eye Center at the Monroe Carell Jr. Children’s Hospital at Vanderbilt has uncovered evidence that could significantly impact routine preschool vision screening.

The investigator, Sean Donahue, M.D., Ph.D., reviewed results from children referred to local eye doctors after a statewide preschool photoscreening program (see article this issue: *Tennessee Lions Eye Center*). Since this program began in 1997, detailed exam and follow-up records have been recorded in a specially designed database. This provides a unique opportunity to observe how children are managed following vision screening.

Dr. Donahue discovered that nearly 20% of normal children receive a glasses prescription after visiting an eye professional, even if they do not have an amblyogenic factor or other pathology. Glasses are often prescribed for children who have less than 1D of refractive error. The study found that spectacle-prescribing behavior did not change for doctors who see a high volume of children. It also showed that pediatric ophthalmologists were much less likely to prescribe glasses than optometrists or comprehensive ophthalmologists.

To see if doctors who were more familiar with examining children had different prescribing requirements, Dr. Donahue evaluated the prescribing behavior of the “experienced” doctors. These 39 represented only 14.2% of the 275 doctors involved. They performed 55.6% of the examinations, but prescribed only 38% of the spectacles for a prescribing rate of 13%. The less-experienced doctors’ prescribing rate was 27.3%. When level of training was included as a variable, there was no difference between the doctors.

A single mandatory eye examination prior to school entry could cost over $200 million yearly for unnecessary spectacles. Vision screening programs with high referral rates, and health policy proposals supporting comprehensive preschool eye exams, must consider these unnecessary costs to society.
Correcting a child’s vision after a lensectomy is a topic of debate among pediatric eye professionals. When an adult has a lens removed (typically during cataract surgery), a new intraocular lens (IOL) prosthesis is normally implanted into the eye to correct vision. But many ophthalmologists prefer not to implant a permanent IOL in a child who is having a lensectomy. They recommend leaving the young patient aphakic, or without a lens, because the eye is still rapidly growing. In this case, the child is fitted with glasses or contact lenses. Other doctors advocate IOL implantation because they feel that the constancy of visual correction will give the child better vision in the long run.

Recently, Vanderbilt Eye Institute became one of only twelve centers in the United States selected to participate in a national study on the treatment of cataracts in infants. Vanderbilt was invited to this trial due to its high surgical volume and the clinical expertise of its pediatric ophthalmologists: Sean Donahue, M.D., Ph.D., and David Morrison, M.D.

The Infant Aphakia Treatment Study (IATS) evaluates the efficacy of IOL placement versus aphakia in the treatment of unilateral, congenital cataracts. Children under seven months of age, with a cataract in only one eye, are randomized in either an IOL group or a contact lens group. Each group is followed after the surgery for potential complications, refractive changes, and amblyopia therapy. Both groups will be evaluated at the end of a year. While complete follow-up data will not be available until then, there has been promising vision improvement in the babies involved in this trial.

In another recent Vanderbilt study involving older children, Drs. Donahue, Morrison and Sternberg have begun placing anterior chamber intraocular lenses (ACIOLs) in all children given lensectomies for complications of Marfan syndrome – a connective tissue disorder caused by a defect in the fibrillin gene. Many of its sufferers need a lensectomy to correct significant image distortion or aniseikonia from lens displacement.

For this study, the investigators used a retrospective chart review design. Eight eyes of five patients, who ranged in age from 5 to 17, were treated with pars plana vitrectomy, pars plana lensectomy, and primary ACIOL placement. Their follow-up periods ranged from 9 to 16 months, with a mean of 12.7 months. Three eyes were functionally aphakic at the time of surgery. Of the five eyes with a portion of the lens remaining in the visual axis, none maintained accommodative function by near visual acuity testing.

Before surgery, the children’s best-corrected distance visual acuity ranged from 20/50 to 20/400, averaging at 20/80. Afterwards, their vision averaged 20/32. The doctors followed up with these patients one day, one week, four weeks, and then every four to six months after surgery to monitor complications, intraocular pressure, and best-corrected visual acuity. During that time, no child experienced corneal decompensation, increased intraocular pressure, persistent inflammation, IOL displacement, or explanation.

The findings from both of these studies suggest that IOL placement is a promising option for children who need lensectomies. This information will clearly guide the decisions of surgeons nationally. It will give more children the best possible vision for life.
IOL Placement versus Aphakia in the Treatment of Unilateral, Congenital Cataracts
by David Morrison, M.D.

Children must be less than seven months of age and have a cataract in just one eye to qualify for the IATS study. Those that participate in the study are randomized either into an IOL group or a contact lens group. Each group is followed after the surgery for potential complications, refractive changes, and amblyopia therapy. The main outcome is vision measured one year after the surgery to compare the two treatment modalities.

Vanderbilt Eye Institute is one of only twelve study centers in the United States selected to participate in the IATS trial due to the high surgical volume and clinical expertise of the pediatric ophthalmologists at this institution (see article in this issue: Intraocular Lens (IOL) Placement After Lensectomy in Children). The following two cases were enrolled in the IATS study through the Vanderbilt Eye Institute.

**CASE 1**
A 10-week-old, healthy baby boy was seen by his pediatrician for a well-child visit when it was noticed that the red reflex in the left eye was not present. He was referred to a local ophthalmologist that determined the cause to be a unilateral cataract. The child was referred to Vanderbilt for definitive care. After extensive counseling, the family decided to participate in the IATS study. The child was randomized to the aphakia group. Her mother was initially very concerned about placing a contact lens in her infant son’s eye to correct the vision. With the support of the staff at the Tennessee Lions Eye Center and IATS contact lens fitter, Mom is now a pro with contact lens care.

**CASE 2**
A 2-week-old baby girl was noted to have a cataract by her pediatrician and referred to Vanderbilt. After weighing all of the information about cataracts in infants, the family decided to participate in the IATS study. The child was randomized to receive an IOL and her mother reported an immediate improvement in her visual behavior postoperatively. Four months later, her mother called to say that she was concerned the vision was changing. Examination at that time revealed reproliferation of lens material behind the IOL, a common occurrence in infants receiving this therapy. A second surgery was done to clear the visual axis.

At this point, both children are doing great and are awaiting the final visual acuity measurement at one year of age. The information they contribute through their participation in this study will clearly guide the decisions of surgeons across the country and give more children with cataracts the opportunity to have the best vision possible in the future.
The mission of the Tennessee Lions Eye Center is “to give every child good vision to help them meet their dreams.” With a full spectrum of optometric and ophthalmology services, it is the place Tennessee families go for subspecialty eye issues. Vanderbilt and the Lions work together to improve the quality of pediatric eye care...one child at a time.

As a medical student, Sean Donahue had no idea he’d practice one day in a clinic painted with colorful jungle scenes. But while studying at Emory University, he began to gravitate toward neuro-ophthalmology – and saw the impact an eye specialist could have on the lives of children.

In 1994, when Dr. Donahue was finishing a fellowship in pediatric ophthalmology at the University of Iowa, Dr. Denis O’Day came recruiting. Lions Clubs International had already approached Dr. O’Day, then chair of the Vanderbilt Ophthalmology and Visual Sciences Department, about starting a pediatric eye care facility in Nashville. In 1997, the Tennessee Lions Eye Center (TLEC) opened its doors as part of Vanderbilt Children’s Hospital.

The Lions wanted to give all Tennessee children the opportunity for good vision, by setting up a statewide screening program for pre-literate children. That’s where Vanderbilt came in. Two medical students were assigned to establish a screening process and create evaluation criteria. From their work, a process was developed.

Next came funding for an MTI PhotoScreener™. This hand-held analog Polaroid camera detects amblyopia and amblyogenic factors — including strabismus, anisometropia, hyperopia, myopia, astigmatism and media opacity. New technology at the time, the MTI allows for the screenings to be accomplished by Lions Club members across Tennessee who have been trained by the TLEC Outreach Program.

Results go to the Vanderbilt
Ophthalmic Imaging Center, where they are interpreted, entered into Vanderbilt’s “First Glimpse” access database, and returned to the screening site. At this point, parents of children with imperfect vision receive a list of area optometrists and ophthalmologists who have agreed to see referrals from the screening program.

REACHING OUT.
Today, the Tennessee Lions Eye Center screens 30,000 children annually and refers 4.5% of these to local eye professionals. A grant from the International Lions enables Vanderbilt staff to follow up on these referrals, which has bumped follow-up from 35% to 75%. This follow-up rate is higher than the national average for immunization follow-up at 71%.

And Tennessee children aren’t the only ones who have benefited: Screening programs in China and Brazil have been modeled on the Vanderbilt program, with over 400,000 children screened worldwide.

FINDING ANSWERS.
Since TLEC opened, its physicians have participated in several national investigative studies. Dr. Donahue was joined in 2005 by David Morrison, himself a former Lions Center Fellow. Both doctors work with the NEI-funded Pediatric Eye Disease Investigators Group, which is coordinated by the Jaeb Center for Health Research. They are currently working on projects related to amblyopia, infant tears (nasolacrimal duct obstruction), eye crossing measures and the best time for surgery, as well as the Infant Aphakia Treatment Study of the implantation of lenses in children born with cataracts. While managing these programs, both physicians are also clinicians, seeing 10,000 patients a year and performing 1,000 surgeries.

A PLACE FOR KIDS.
“We have been unique in this situation with the Lions Eye Center,” Donahue says. “It’s so important to have a one-stop shop for children. Our rooms are designed to be child-friendly, and we schedule patients so that the sub-specialists can come to the Lions Center to see the child, rather than sending the child somewhere else.”

Children requiring eye surgery are treated at the Monroe Carell Jr. Children’s Hospital at Vanderbilt. Fully equipped state-of-the-art ophthalmic operating rooms are accessible 24 hours a day. These rooms are staffed by pediatric anesthesiologists and nurses trained in ophthalmology.
Building Clinical Trials at Vanderbilt Eye Institute:
Sandy Owings, Administrative Manager, Clinical Trials

Sandy Owings loves her job. As she talks about her role in building the clinical trials program at Vanderbilt Eye Institute, her eyes sparkle. When Sandy came to Vanderbilt 3 years ago, researchers here were participating in a dozen or so clinical trials. Now, there are 40 in process (including partnerships with other Vanderbilt departments).

Managing all these trials takes a mix of super saleswoman, patient advocate and organizational genius. Sandy’s department handles every detail, including confidentiality agreements, protocols, submissions to IRB, and contract/budget negotiations. She personally schedules patient appointments and conducts the exams.

“Our clinical trials patients are VIPs and we try to treat them as such,” said Sandy. “They’re donating their time and their vision to research. We escort them and expedite their exams. We also give them our personal contact numbers to further the personal one-on-one treatment!”

How did Sandy get to Vanderbilt? After her initial training in Houston at Texas Medical Center and several years in private practice, she went
to the Cullen Eye Institute at Baylor College of Medicine to manage its glaucoma section. It was there she got involved with her first clinical trial and was bitten by the bug. When she and her husband, Bill, decided to move to Nashville, she came to Vanderbilt first.

After 25+ years working with clinical trials, she felt she had found in Paul Sternberg and John Penn two people as committed to research as she was. “Someone in the clinic has to have the heart for it,” she said. “The goal at the Vanderbilt Eye Institute is to be one of the top 10 ophthalmology research centers in the country, and we’re well on our way.”

Getting involved with clinical trials means keeping your ear to the ground, and Sandy’s good at it. In addition to cultivating relationships with sponsoring pharmaceutical companies, she is active in several industry associations, including JCAHPO, SoCRA, AAO, and ATPO. She serves on the Advisory Board of major pharmaceutical companies, as well as a steering committee for another company. This commitment has paid off:

Sandy was recently named Coordinator of the Year by the Pediatric Ophthalmic Society and the Vanderbilt Eye Institute was named Outstanding Clinic. Not bad for 3 years – maybe next year she’ll be able to leave long enough to indulge her passion for foreign travel.

THE VANDERBILT EYE INSTITUTE CLINICAL TRIALS

Anecortave Acetate Risk-Reduction Trial (AART)
Principal Investigator: Paul Sternberg, Jr., M.D.

The Standard Care versus Corticosteroids for Retinal Vein Occlusion (SCORE)
Principal Investigator: Paul Sternberg, Jr., M.D.

A Phase III B, Multicenter to Evaluate the Safety and Efficacy of Ranibizumab (Lucentis)
Principal Investigator: Paul Sternberg, Jr., M.D.

A 3 Year, Phase 3, Multicenter, Randomized Study to Assess the Safety and Efficacy of Dexamethasone Posterior Drug Delivery System
Principal Investigator: Franco Recchia, M.D.

Triamcinolone Acetonide and Laser Photocoagulation for Diabetic Macular Edema
Principal Investigator: Franco Recchia, M.D.

Evaluation of Vitrectomy for Diabetic Macular Edema Study
Principal Investigator: Franco Recchia, M.D.

Evaluation of Vitrectomy for Diabetic Macular Edema Study
Principal Investigator: Franco Recchia, M.D.

Retrospective Study of Patients With Acute Zonal Occult Outer Retinopathy (AZOOR)
Principal Investigator: Anita Agarwal, M.D.

The Implantable Miniature Telescope In Patients With Central Vision Impairment Associated With Age-Related Macular Degeneration
Principal Investigator: Paul Sternberg, Jr., M.D.

PEDIATRIC CLINICAL TRIALS

Amblyopia Treatment Study 1 (AST1)
Principal Investigator: Sean Donahue, M.D., Ph.D.

Esotropia Treatment Study 1 (ETS1)
Principal Investigator: Sean Donahue, M.D., Ph.D.

Nasolacrimal Duct Obstruction Study (NLD1)
Principal Investigator: Sean Donahue, M.D., Ph.D.

Nasolacrimal Duct Obstruction Study 2 (NLD 2)
Principal Investigator: David Morrison, M.D.

Infant Aphakia Treatment Study IATS
Principal Investigator: David Morrison, M.D.

Amblyopia Treatment Study 8
Principal Investigator: Sean Donahue, M.D., Ph.D.

Baerveldt Implant vs. Ahmed Glaucoma Valve
Principal Investigator: Jeffrey Kammer, M.D.

PAVE - Providing Access to the Visual Environment
Principal Investigator: Jeffrey Sonsino, O.D., F.A.A.O.
Min S. Chang, Ph.D., has been awarded an Outstanding Achievement Award from EVER (European Association for Vision and Eye Research). The emphasis of Dr. Chang’s research is in understanding the molecular regulatory pathways in the formation and maintenance of corneal epithelial cell-cell contact through adhesion junctions. Adhesion junctions – multi-protein adhesion units – not only provide a means for cells to adhere to each other, but they also play a role in cellular communication vital for adherent cells to function as tissue. In collaboration with David Bader, Ph.D., a developmental cardiac biologist in Division of Cardiovascular medicine, Dr. Chang established that Bves, a novel adhesion molecule, is a component of epithelial tight junctions. Also using a cell culture model of corneal wound healing, they demonstrated that Bves is involved in the regulation of cellular migration, proliferation, and differentiation. Identification of new molecular pathways in cell-cell contact may lead to new pharmacological strategies to promote wound healing and maintenance of uniform corneal epithelium.

Tony Song, M.D., Ph.D., has received an award from the Knights Templar Eye Foundation for research into the causes of retinal neovascularization. Dr. Song joined the Vanderbilt Eye Institute as a senior postdoctoral fellow in November 2004. Prior to this appointment, he trained as a fellow in the Division of Oncology at Vanderbilt. Dr. Song studies the role of peroxisome proliferator-activated receptors (PPARs) in retinal angiogenesis, like that occurring in retinopathy of prematurity (ROP). His preliminary experiments, conducted in human retinal microvascular endothelial cells, suggest a novel role for PPAR-b. Very little is known about this receptor, but Dr. Song has generated compelling evidence that it has a modulating or controlling influence on retinal angiogenesis. Enabled by the KTEF funding, he will explore the mechanism of the angiogenic influence of PPAR-b, including further examination of its expression in cultured cells treated with relevant stimuli and classic loss of function studies in both relevant cell cultures and ROP models. When viewed collectively, neovascular ocular disorders constitute the leading cause of irreversible vision loss in developed countries. Thus, well-designed experiments aimed at elucidating the underlying pathogenic mechanisms represent valuable contributions. Dr. Song’s research into PPARs may well yield a new therapeutic strategy to address ocular angiogenesis.

Louise A. Mawn, M.D., was selected as the recipient of the 2005 ASOPRS Research Award for her paper entitled Development of an Orbital Endoscope for Use with the Free Electron Laser. This paper was selected because of its innovative approach to orbital disease. Surgery in the closed space behind the eye often requires removal of the facial bone lateral to the eye or a risky neurosurgical approach retracing the brain in order to gain access to the optic nerve. Dr. Mawn’s award-winning paper describes the development of a method for orbital endoscopy to treat disease behind the eye. Ophthalmic diseases that might one
day be approached using this endoscope include optic nerve conditions such as glaucoma and tumors of the eye socket. The award was presented during the October 14-15, 2005 annual meeting of the American Society of Ophthalmic Plastic and Reconstructive Surgery immediately preceding the American Academy of Ophthalmology meeting in Chicago, IL. The article was published in Ophthalmic Plastic and Reconstructive Surgery 20(2):150-7, 2004.

Nguyen Khoi Ha, a Vanderbilt University School of Medicine student, is the recipient of a $25,000 grant from Research to Prevent Blindness, Inc. (RPB), the world’s leading voluntary organization supporting eye research. The RPB Medical Student Eye Research Fellowship will enable him to take a year off from medical school to concentrate on research in the Department of Ophthalmology and Visual Sciences. He has been studying causes of vision loss in elderly Americans since spring 2005 while working in the Vanderbilt Eye Institute laboratory of Paul Sternberg, Jr., M.D. and Jiyang Cai, Ph.D., Assistant Professor of Medicine.

Sandy Owings, C.O.A., C.C.R.P., has been named Coordinator of the Year by the Pediatric Ophthalmic Society. Owings administers all clinical trials for the Vanderbilt Eye Institute, which was named Outstanding Clinic by the Society.

Srilakshmi Maguluri, a second year retina fellow at the Vanderbilt Eye Institute, has been selected for the Paul Kayser International Scholar Program for 2006. Maguluri, who finished her Ophthalmology residency at LSU/Ochsner in New Orleans, LA, is interested in international ophthalmology – especially in outreach programs and public education regarding eye exams, and preventable causes of eye disease. The Paul Kayser International award is an award given annually to a deserving candidate who is currently a fellow or a senior resident in an U.S.-based ophthalmology program. The awardee has the opportunity to spend two weeks in any country in Latin America and pursue a topic of interest in the setting of an ophthalmology program. The program encourages exchange of ideas and fosters better understanding of ophthalmic care as it is delivered in the host country. This is a wonderful opportunity to make lasting connections internationally between Vanderbilt Eye Institute and the host program by encouraging similar exchanges in the future.

John S. Penn, Ph.D., has been awarded the William J. Darby Award for translational research. The award is given to a researcher whose work has changed the practice of medicine worldwide. Comments cited his groundbreaking work in ocular angiogenesis, the cellular and molecular events contributing to normal and abnormal blood vessel growth, and his role in developing models to study this phenomenon and treatments to control it.
The Vanderbilt Eye Institute
Academic Seminar Series

June 9 - 10, 2006
Comprehensive Ophthalmology: Pearls IX
James P. Gills, M.D., Founder and Director, St. Luke's Cataract and Laser Institute, Tarpon Springs, FL
Peter J. McDonnell, M.D., Director, Wilmer Eye Institute, Johns Hopkins School of Medicine, Baltimore
Travis A. Meredith, M.D., Department of Ophthalmology University of N.C., Chapel Hill
Peter A. Netland, M.D., Ph.D., Hamilton Eye Institute, University of Tennessee Health Sciences Center, Memphis
William L. Rich III, M.D., F.A.C.S.
American Academy of Ophthalmology, Washington, D.C.
Peter J. Savino, M.D., Wills Eye Hospital, Philadelphia
Loews Vanderbilt

July 19, 2006
Cancer Stem Cells in Retinoblastoma
Dr. Gail Seigel, Department of Ophthalmology
Ross Eye Institute, University at Buffalo, SUNY
Elliot Conference Room

August 24, 2006
Contemporary Concepts in Cataract Surgery
Robert Osher, M.D.
Cincinnati Eye Institute, Cincinnati
Elliot Conference Room

September 25-26, 2006
Targeting Choroidal Neovascularization for Age-Related Macular Degeneration
Neil Bressler, M.D., Wilmer Eye Institute, Johns Hopkins Hospital, Baltimore
University Club (9/25/06)
Elliot Conference Room (9/26/06)

October 3-5, 2006
Neuroprotective Strategies in Degenerative Eye Disease
Vanderbilt Eye Institute Symposium
Nashville Marriott at Vanderbilt
http://www.vanderbilteyecenter.com/Symposium2006/

November 2, 2006
Innovations in the Surgical Treatment of Retinal Disease
Third Annual Paul Sternberg, Sr. Lecture
Hilel Lewis, M.D., Chairman
Cole Eye Institute, Cleveland Clinic
Light Hall 208

February 16-17, 2007
Update on Ophthalmic Pathology
Curtis Margo, M.D., Clinical Professor and Director of Ophthalmic Pathology
University of South Florida, Tampa
Elliot Conference Room
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.

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.

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.

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.
OPTOMETRY
Special interests: treatment and management of ocular disease.

Lori Ann F. Kehler, O.D.
OPTOMETRY
Special interests: specialty contact lens fitting, both for adults and for children.

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.

Louise A. Mawn, M.D.
NEURO-OPHTHALMOLOGY/OCTUOPLASTICS
Special interests: ophthalmic plastic surgery with a particular interest in orbital disease.

Lawrence M. Merin, RBP, FIMI
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.

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

Qilin “Tony” Song, M.D., Ph.D.
VISION RESEARCH
Special interests: retinal angiogenesis.

Jeffrey Sonsino, 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.
On October 19, 2005, a group of Vanderbilt Eye Institute research scientists moved into a brand new research laboratory space on the 11th floor of the Light Hall component of Medical Research Building IV (MRB IV) in the heart of the Medical Center campus. This state-of-the-art 4,900 square foot facility houses the laboratories for Drs. Jiyang Cai, David Calkins, Min Chang, John Kuchtey, Rachel Kuchtey, Jin Hui Shen, and Paul Sternberg.

The finished research space is the product of months of programming and design meetings. It features a large, open shared room with banks of research benches, as well as customized smaller rooms designed for cell and tissue culture, animal surgical procedures, microscopy and imaging, patch clamping and electrophysiology, engineering shop, laser procedures and radioactive materials use. Extensive core equipment is available to the investigators, including a spectrophotometer, a quantitative real-time PCR system, a flow cytometer, a scintillation counter, a Coulter counter, a multipurpose liquid chromatography apparatus, a multi-user cryo-preservation device and an ERG recording system.

Several collaborative research teams are housed in the new space. Drs. Calkins, Kuchtey, and Kuchtey are studying glaucoma, with investigations focusing on ganglion cell biology, neuroprotection, molecular genetics, and animal models. Drs. Cai and Sternberg are interested in oxidative stress and protection in aging and age-related degenerative diseases, including age-related macular degeneration and neurodegeneration. Dr. Chang's lab is investigating cell adhesion proteins in the cornea, trabecular meshwork, and retinal pigment epithelium, while Dr. Shen is working on the development of an accommodative intraocular lens, as well as designing and testing an orbital endoscope and exploring ocular applications for Vanderbilt's free electron laser.

These new laboratories represent Phase I of growth for the VEI vision research program. In January 2007, the Langford Hall component of MRB IV will be completed. At that time, most of the VEI vision research group will move into 8,400 square feet in that new building.