Imagine a disease that slowly, systematically and without symptoms causes blindness. Pressure rises in the front of the eye because fluid isn't draining properly. Without treatment, the optic nerve is destroyed. These statements describe glaucoma, a group of diseases affecting 66 million people around the world. In the United States, glaucoma is the second leading cause of blindness among African-Americans and the third leading cause among Caucasians. Treatment takes the form of eye drops, lasers and surgery. There is no cure. Vision loss is permanent.

At the Massachusetts Eye and Ear Infirmary (MEEI), a team of ophthalmologists is tackling this insidious disease from all directions in the laboratory. Janey Wiggs, M.D., Ph.D., conducts genetic research; Louis Pasquale, M.D., examines gene and environmental factors that can predispose a patient to the disease; Teresa Chen, M.D., focuses on eye imaging techniques and pediatric glaucoma; and Cynthia Grosskreutz, M.D., Ph.D., continues on page 9 >>>

It may take a village to raise a child, but in the case of one little 5-year-old Chinese girl, it took a team effort by humanitarians and physicians two continents away to save her life.

Lu Yao came to the Massachusetts Eye and Ear Infirmary (MEEI) in April 2005 suffering from a rhabdomyosarcoma, a fast-growing, highly malignant tumor which accounts for more than half of the soft tissue sarcomas in children. In the United States there are several hundred new cases of rhabdomyosarcoma a year, with tumors most often occurring in the head and neck. If caught early, the tumor is continues on page 12 >>>

“I literally felt like I was falling off the Earth,” recalls Charlene Joaquim. “I felt like my feet were not touching the ground.” A bubbly, energetic kindergarten teacher, Ms. Joaquim suddenly developed chronic attacks of vertigo in 2003 that were so intense that she needed assistance getting out of bed in the morning.

Vertigo and other balance disorders, as described by the National Institute on Deafness and Other Communication Disorders (NIDCD), are disturbances that cause an individual to feel unsteady, giddy, woozy or have a sensation of movement, spinning, or floating. The NIDCD estimates that millions of Americans have balance disorders and that more than 40 percent of them will continues on page 5 >>>
Dear Friends,

Exciting things are happening at the Massachusetts Eye and Ear Infirmary! In this issue of Contact, you will read about some of them: how researchers are attacking glaucoma from all angles to find better treatments and ultimately a cure; the latest innovations and those still in the pipeline for those suffering from balance disorders; how hospital physicians, with the help of local humanitarian Ray Tye, rallied together to save a child’s life; and the difference made by wonderful gifts by such generous friends as Norman Knight, the Mass. Lions, and the Knights Templar. Of course, you will also read about the individuals whose lives have been transformed, thanks to the skill of our exceptional Medical Staff and nurses.

You won’t read much about the physical changes underway at MEEI and the progress we are making in our Strategic Plan. Major renovations on the seventh floor of the hospital are the first in a series of steps to improve patient care and to expand our medical staff so that everyone who needs their expertise will have access to it. We are redesigning the cafeteria area and filling in the courtyard space to create new physician academic offices that will free up space elsewhere, making it possible to build new, larger pediatric outpatient ophthalmology and otolaryngology clinics. Another key component of the Strategic Plan is creating laboratories to expand and accelerate the search for cures. To this end, we have built the Neil and Louise Tillotson Laboratory for the Cell Biology of the Inner Ear and expanded the Vestibular Laboratory to accommodate equipment we will be purchasing with two NASA grants. I am excited about the progress we have made so far and hope you share my enthusiasm for all that the future holds as we build the Infirmary of the future. Stay tuned for details in future issues of Contact.

With appreciation,

F. Curtis Smith, President

MEEI dedicated its new family waiting room with a reception honoring trustee Phyllis G. Redstone. MEEI President Curt Smith, (pictured above with Mrs. Redstone and honored guests) along with otolaryngologists Drs. Roland Eavey, Steven Rauch and Chief of Ophthalmology Dr. Joan W. Miller, expressed thanks to Mrs. Redstone for her generosity. The new room will provide a comforting environment for the families of MEEI patients for years to come.
The fourth annual Massachusetts Eye and Ear Infirmary (MEEI) Founders’ Day Luncheon was held on May 25 at the Harvard Club in Boston, Mass. Founders’ Day recognizes the hospital’s most thoughtful and generous friends who have joined MEEI in its mission to preserve and restore sight, hearing, speech and balance.

The annual event was established to honor and thank members of MEEI’s 1824 Circle and the Annie Sullivan Society, who, through their generous gifts and pledges, have demonstrated their commitment to the hospital’s mission. The 1824 Circle recognizes people who give $10,000 or more annually in unrestricted gifts. The Annie Sullivan Society recognizes those who have remembered MEEI in their wills, planned gifts or estate plans.

During the luncheon, an inspiring keynote speech was made by Louise Moskowitz, who described her journey from sudden darkness back to sight. What Mrs. Moskowitz thought was a simple case of conjunctivitis turned into a painful and prolonged bout with corneal ulcers and sudden vision loss. A corneal transplant performed by Dimitri Azar, M.D., director of Cornea and Refractive Surgery, restored her vision and her normal life. Mrs. Moskowitz expressed her profound appreciation to Dr. Azar and to MEEI. For more information about the Annie Sullivan Society or the 1824 Circle, please contact Melissa Paul at 617-573-4168.

Members of the Annie Sullivan Society pose for a group photograph after the luncheon.
The Massachusetts Eye and Ear Infirmary (MEEI) is one of the world’s leading institutions for vestibular research. Researchers are working collaboratively to understand how the vestibular system works and to discover solutions to the problems caused when this system malfunctions. The following are descriptions of the various projects underway at MEEI.

Understanding the Basics
Richard Lewis, M.D., and Lionel Zupan, Ph.D., are working to understand more clearly the function of normal and compromised vestibular systems. One key component of the vestibular system is the area that regulates the sense of balance. The discoveries from their basic scientific research will lead to the development of better diagnoses of and treatments for balance disorders. Through his experiments, Dr. Zupan investigates how the central nervous system combines information from the senses to estimate head motion and the body’s orientation in its environment. His experiments help him to create models that will allow for a more accurate prediction of how the vestibular system works.

In addition to treating patients with vestibular disorders, Dr. Lewis also studies the eye movement and vestibular function of subjects with cerebellar disease (the cerebellum is partially responsible for the maintenance of posture and balance) and how the vestibular system differentiates between the forces of gravity and inertia.

Both Drs. Zupan and Lewis are currently funded by NASA and NIH RO1 grants, respectively.

Vestibular Prostheses
Director of MEEI’s Jenks Vestibular Diagnostic Laboratory Conrad Wall, Ph.D., in collaboration with Geneva surgeons Drs. Jean Phillippe Guyot and Izabel Kos, recently became the first in the world to selectively stimulate the posterior ampullary nerve (a section of the human vestibular system), providing more evidence of the possible effectiveness of a vestibular prosthesis. The ampullary nerve is known to be directly related to certain balance and dizziness disorders.

In parallel, researchers from the Jenks Vestibular Physiology Laboratory, directed by Daniel Merfeld, Ph.D., are developing a surgically implantable prosthesis to treat those with balance disorders. This vestibular prosthesis will work like a cochlear implant and will utilize electrical stimulation to replace the cues from a missing or damaged vestibular system, thereby providing treatment for those with balance disorders. Drs. Merfeld, Lewis and their colleagues are the only people in the world who have stimulated the vestibular nerve continuously for long periods of time. “Researchers have stimulated the vestibular nerve for very short periods of time since the 1800s, but keeping these experiments working for a year is extremely difficult. A dedicated staff allowed us to achieve this challenging and very important goal,” says Dr. Merfeld.

Balance Vest
Dr. Wall and his colleagues have developed the prototype of a wearable balance vest. Using technology similar to a device used by the U.S. Navy to orient its pilots during flight, this surgically noninvasive vest senses body motion with Vibrotactile Tilt Feedback — vibrating elements that surround the upper body to provide information to the wearer and help control body motion. Published results have shown that this device reduces the tilts and falls of subjects while standing, walking on uneven surfaces, or after abruptly agitating the balance of subjects while in test conditions.

“The development of these new methods of correcting balance will provide another tool to doctors for treatment as well as potential, beyond diagnosis, to help people in a new way,” says Dr. Wall.

Meniere’s Disease Research
With his investigation into structural changes in the ears of those with this disease, Dr. Rauch is well on his way to identifying the predictors and specific causes of Meniere’s disease. The majority of hearing and balance disorders result in disturbance of either hearing or balance. For more than 20 years, Steven Rauch, M.D., has been studying the few disorders that have a combined effect on hearing and balance. Of the diseases that affect both hearing and balance, Meniere’s disease is the most common. The specific cause of Meniere’s disease is currently unknown; many different causes can lead to the same clinical picture: fluctuating and progressive deafness in the affected ear, tinnitus (ringing in the ear), and episodes of vertigo that last from a few minutes to an entire day. Currently there is no cure for Meniere’s disease. Physicians can treat only the symptoms, usually with a combination of medication and rehabilitation. Unfortunately, 5 to 10% of people experience unremitting episodes of vertigo and must be treated with drug injections into the ear or with surgical treatments.
experience dizziness severe enough to go to a doctor. Ms. Joaquim was one of them.

For Ms. Joaquim, the smell of rubber, the sound of a violin, or even a glimpse of sunlight could trigger an episode of vertigo. “I remember lying down at home and looking up at a skylight one day and just the movement of the clouds caused me to have an attack,” she said. Her symptoms were a result of vestibular neuritis — inflammation of the vestibular nerve.

The vestibular system, which is located inside the ear, is largely responsible for the sense of balance. The function of the vestibular system declines with age, as do the senses of vision and hearing, which also play smaller roles in contributing to balance. With the aging of the Baby Boomer generation in the United States and the rest of the world, the need for better ways to diagnose and treat these conditions — as well as the need for more research that will lead to cures — is certain to increase.

Because more than one system is responsible for the sense of balance, and because these disorders can have a number of different causes, they are often difficult to diagnose and treat. Charlene Joaquim visited two other doctors before a friend referred her to MEEI neurotologist Steven Rauch, M.D. Dr. Rauch treated Ms. Joaquim with a combination of medication and weekly rehabilitation therapy.

People such as Ms. Joaquim are the reason MEEI is establishing a Balance Center that will offer a multidisciplinary approach to treating balance disorders. With the addition of psychiatry, physical therapy and rehabilitation services, a Balance Center will eventually complement MEEI’s current treatment and testing capabilities. The Center will offer coordinated, focused, full-service care, thus reducing the number of visits patients make to the hospital. Not only will the Balance Center provide immediate clinical benefits to patients, it will also train future specialists and serve as a resource for research in balance disorders, Dr. Rauch says.

“Right now, the state-of-the art is to treat the symptoms,” adds Dr. Rauch, whose research efforts seek to discover the causes of Meniere’s disease, a common disorder that affects hearing and balance, often causing hearing loss and vertigo. Yet, he emphasizes, the ultimate goal is to stop these disorders before they start.

The constant quest to find cures for balance disorders makes the research of Dr. Rauch, MEEI Jenks Vestibular Diagnostic Laboratory Director Conrad Wall, Ph.D., Director of the Jenks Vestibular Physiology Lab Daniel Merfeld, Ph.D., Jenks Vestibular Laboratory researchers Lionel Zupan, Ph.D., and Otoneurologist Rick Lewis, M.D., vitally important. Recent additions of laboratory space and equipment are bringing MEEI one big step closer to new treatments and cures.

“I think everyone who works here enjoys amusement park rides,” Dr. Merfeld says, as he discusses MEEI’s research team and stands facing what resembles a gargantuan baby swing. He is looking at one of the MEEI’s newest, high-tech pieces of balance research equipment called the Tilt Device, with unique capabilities that allow researchers at the Jenks Vestibular Laboratory to study the function of the vestibular system by testing volunteers with various degrees of dizzying motion. continues on page 6 >>>
When Dr. Merfeld joined MEEI in 1999, the Jenks Vestibular Physiology Laboratory was founded and was composed of 1,100 square feet of space that held three pieces of research equipment. Since then, the Jenks Vestibular Physiology Laboratories have expanded to more than 3,000 square feet of lab space, including a recently constructed 1,200-square-foot space, which will soon become the home to three new pieces of balance research equipment. This newly constructed space is one among five separate locations in which research on the vestibular system is conducted throughout the hospital. Drs. Merfeld, Lewis and Zupan use this new space for research that will eventually help to unravel the origins of vestibular conditions and provide the foundation to create treatments for them.

Dr. Merfeld and his colleagues have studied space shuttle astronauts’ adaptation to lack of gravity during spaceflight and have developed an interest in understanding how the balance system works so they can apply this knowledge to the goal of helping humans here on Earth.

With this goal in mind, Dr. Lewis carries out research into how the brain uses information from the vestibular system to maintain balance. In addition to his duties as the medical director of the Jenks Vestibular Diagnostic Lab, he and his team perform clinical diagnostic tests on patients with suspected vestibular conditions.

Dr. Zupan’s research focuses on producing scientific models of the eye movements created by normal and damaged vestibular systems to allow for accurate prediction of how this system works.

The goal of developing a vestibular prosthesis — a device that would use electrical stimulation to replace cues from a damaged or missing vestibular system — is on the horizon, and is being pursued by several MEEI investigators, including Drs. Lewis, Merfeld, Rauch, and Wall.

The more immediate future of treatment may be reflected in the research of Dr. Wall, who is the team leader for the development of a balance prosthesis. He has invented a prize-winning, wearable vest that will ultimately help people with balance disorders to lead more normal lives. With more development, this device could help millions who are not as lucky as Ms. Joaquim to continue living independent lives.

Ms. Joaquim was fortunate to receive a prompt and accurate diagnosis. “I can see how someone could give in to this disease,” she says, as her voice cracks and she struggles to hold back tears. “Thanks to treatment at MEEI, I am living a normal life,” she says.
The Lions and the Massachusetts Eye and Ear Infirmary (MEEI) have enjoyed a five-decade-long partnership in their efforts to fight vision loss. Recently, two Lions organizations—the Lions Clubs International Foundation and the Massachusetts Lions Eye Research Fund—teamed up to support pediatric ophthalmology at MEEI. These two organizations generously granted $75,000 each to help equip the hospital’s new Pediatric Ophthalmology and Strabismus Service, which will help diagnose and treat more than 3,000 children and 1,500 adults each year.

“Our gratitude and appreciation for the work of the Lions is immense,” said Joan W. Miller, M.D., MEEI Chief of Ophthalmology. “We are grateful for the relationship we enjoy with the Lions and hope and expect it will grow in the years ahead. We all share the same goal: to save sight.”

The MEEI’s Pediatric Ophthalmology Service is the front door for diagnosing many of the vision problems that threaten children’s eyesight including strabismus (crossed eye) or amblyopia (lazy eye), juvenile glaucoma, eye cancer, uveitis, pediatric cataracts and retinopathy of prematurity.

“The Lions Clubs have a long standing commitment to the fight to eradicate blindness. We also have a special interest in children, and this project enables us to address both needs. What could be more rewarding than helping children see as they begin their lives?” said Sharon Brooks, 2004-2005 President of the Massachusetts Lions Eye Research Foundation.

Nathalie Azar, M.D., director of Pediatric Ophthalmology and Strabismus, shares Ms. Brook’s enthusiasm. “Since the Service was last renovated in 1997, there has been tremendous growth in the number of children coming to us for care. Our new unit will enable us to see these children and their families in a child-friendly space separated from MEEI’s adult patients. We’ll be able to see more children and make the experience nicer for them as well.”

The new Pediatric Ophthalmology Service will be a self-contained unit located on MEEI’s first floor. It will consist of seven exam rooms and will have a two-part waiting area including a children’s play area and an adjacent seating area for their parents. We expect the new clinic to open in 2006.

The hospital extends its sincere appreciation to the many Lions of Massachusetts and the Lions Clubs International for their tireless efforts to raise awareness and funding to fight eye disease. In addition to the grants noted above, the Mass Lions awarded MEEI an annual eye research grant of $179,000 that will provide seed funding to enable MEEI physician-scientists to pursue new research strategies and approaches to understanding and treating blinding eye disease. If you would like to learn more about Pediatrics or Eye Research at MEEI, please contact Melissa Paul at 617-573-4168.
The 2006 Guys for Eyes Calendar, the proceeds of which will benefit retina research at the Massachusetts Eye and Ear Infirmary (MEEI), is on sale now for $15. Inspired by the outstanding care her mother received at MEEI, Suzi Reynolds created this calendar to support a cure for macular degeneration and other retinal diseases. This year’s calendar features MEEI’s Ramon Franco, M.D., a laryngologist who treats patients with throat cancer and voice disorders. Order your 2006 calendar by contacting Suzi Reynolds at 617-899-1998 or by email at suzi@guys4eyes.org. Visit www.guys4eyes.org to place an online order or to learn about upcoming events to help fight diseases of the retina.

The Sixth Annual Thomas L. Mulligan Sr. Memorial Golf Tournament was held on Aug. 8 at the Hillview Country Club in North Reading, Mass. The Massachusetts Eye and Ear Infirmary (MEEI) sponsored a hole as a platinum sponsor. Pictured, left to right, at the MEEI hole are M. Camaro, Grant Yasunaga, Jim Bagley and Billy Panzini. The Thomas L. Mulligan Sr. Foundation donated all proceeds raised at the tournament to the Boston Cured Cancer Club for Laryngectomees, which meets at MEEI and is affiliated with the American Cancer Society. Bob Mehrman, president of the International Association for Laryngectomees, and Karen Burns, president of the Boston Cured Cancer Club for Laryngectomees, accepted this year’s donation in the amount of $11,000.

Massachusetts Eye and Ear Infirmary (MEEI) Pediatric Otolaryngologist Roland Eavey, M.D., participates in “Building Healthy Communities,” as he educates middle school students on the dangers of noise-induced hearing loss. Dr. Eavey and his colleagues developed a Web-based survey on adolescent hearing loss, which was posted on MTV.com. The results were published in the journal, Pediatrics. MEEI was one of several invited exhibitors at this Harvard Medical School-sponsored community health fair.
explores the cause of retinal ganglion cell death in the optic nerve and how to prevent this process. Douglas Rhee, M.D., recently joined the team to focus on the eye's drainage system. All of these physicians see patients every week in the Glaucoma Service in addition to their work in the laboratory.

“Glaucoma is a disease of the optic nerve. Most people with glaucoma also have high intraocular pressure that results from abnormalities in the front part of the eye. In glaucoma, structures in the front of the eye don’t drain fluid properly and the resulting high pressure increases the chance of damage to the retinal ganglion cells that make up the optic nerve,” explained Dr. Wiggs. “Physicians tend to focus on the pressure component because we can monitor and treat the pressure. Currently, we can’t treat the optic nerve.”

There are four classifications of glaucoma: primary, secondary, developmental and angle closure. “We don’t understand why primary glaucomas develop,” said Dr. Grosskreutz, who codirects the Glaucoma Service with Dr. Pasquale. “Secondary glaucomas come from trauma; for instance, a blunt-force injury to the eye. Developmental glaucomas appear in children at birth or at an early age. In angle-closure glaucomas, the eye’s drainage system is mechanically blocked due to the configuration of the pupil and iris inside the eye. Primary open and angle-closure glaucomas are the most common types of the disease here in Boston.”

To cure glaucoma, one must understand the different factors that contribute to the disease. The heart of Dr. Wiggs’ research is finding the genes associated with glaucoma. She and her team have three specific goals. “The first is to understand the disease on a molecular level. We study all types of inherited glaucoma and use a variety of genetic approaches to identify the genes and the protein products of those genes that contribute to the disease process. The second step is to use the molecular information to design new therapies. The third step is diagnostics. Using molecular DNA-based tests, physicians can screen a population at risk, such as African-Americans, for factors that contribute to the disease. Those individuals who are identified as at risk for glaucoma can then be followed medically and treated aggressively before vision loss develops, while the other individuals can avoid unnecessary testing. People at risk get information that’s important and needs to be acted upon; those who aren’t can breathe a sigh of relief,” she said.

Dr. Wiggs gave an example. “We recently screened a family with congenital glaucoma for one mutation in one gene responsible for glaucoma and identified the family members who were carriers of a mutation,” she said. “Some of the gene carriers were too young to be affected yet, but they know now that they will have to be watched carefully for signs of the disease. In the future, we want to be able to take a blood or mouth-wash sample, purify it, and compare it to a panel of glaucoma mutations that are associated with particular traits—age of onset, very high pressure, or severe optic-nerve disease. We could paint a picture of each individual’s disease and risk. Ultimately, this is what we want to do. At this point we still need to find the common genes; currently we have only identified the rare ones. Our current research programs are directed toward finding the common genes.”

Since 1992, Dr. Grosskreutz has been conducting translational research, learning from models that can eventually be applied to humans. “I am investigating primary and secondary open-angle glaucoma. We’re trying to learn what causes the optic nerve to die and how we can intervene to either slow down the loss of retinal ganglion cells or prevent the loss of those cells entirely. We look at cell biology and molecular biological events in the cells to get a little peek inside to see what’s going on. Different models enable us to put a cell in its own environment and see how it reacts.”

Dr. Grosskreutz has several projects in progress. One involves looking at a specific enzyme called calcineurin and trying to understand how it may be involved in cell death. Another looks at heat-shocked proteins that are often important in stress responses. She is also performing gene transfer experiments to try to boost or diminish the production of these heat-shocked proteins to see how they affect the optic nerve.

But her most exciting project involves ocular neuro-protection, an effort to protect retinal ganglion cells before they die from high pressure. Dr. Grosskreutz believes that the enzyme calcineurin may play a role in cell death. If it can be inhibited, cell death can be prevented. Experiments with the drug K-506 have shown protection for the optic nerve and cells.

“We’re not ready for patients, but this gives us hope to learn more. My research tells me that although this probably isn’t a pressure-independent mechanism, by doing something other than lowering the pressure, we can do something to beneficially affect the optic nerve,” she said. “We can lower the pressure in certain individuals, but they still lose vision. Nobody completely understands it. Calcineurin may provide a key to the answer.”

Earlier detection of glaucoma, as well as better monitoring of the structural changes that occur as a result of the disease, will enable physicians to care for patients better and to prevent further vision loss. “Current clinical techniques only allow ophthalmologists to diagnose glaucoma when almost half of the nerve tissue is permanently damaged,” said Dr. Chen. Her research interests are imaging the optic nerve, which connects the eye to the brain, and measuring the nerve fiber layer of the retina. She is working with a group of investigators at the Massachusetts General Hospital.
Hospital who are the first to develop a revolutionary new type of optical coherence tomography (OCT) called spectral domain OCT. This new technique allows for unprecedented simultaneous, ultra-high speed, high-resolution ophthalmic structural and blood flow imaging. “Improvements in this spectral OCT technology would improve care of our glaucoma patients since accurate imaging of the eye is a fundamental part of eye care,” she said.

The other focus area of Dr. Chen’s research is pediatric glaucoma. “Since infants and children who develop glaucoma have to live the rest of their lives with this incurable disease, glaucoma has more time to rob these children of their vision. Further research into understanding how the mechanisms of these pediatric glaucomas differ from adult glaucomas will enable us to find better treatment for this devastating disease,” she said.

Dr. Pasquale is focusing on environmental factors related to primary open-angle glaucoma (POAG). His goal, he said, “is to achieve optic neuroprevention, the prevention of functional visual loss for POAG. This can be done in two ways — finding better strategies to detect the disease and understanding how it develops.”

As part of the latter, Dr. Pasquale is working primarily with the Nurses Health Study and Health Professional Follow-Up Study to identify new environmental risk factors for POAG that are amenable to lifestyle modification. “We’ve found some environmental things, but haven’t hit any home runs in terms of really understanding the pathogenesis of the disease. In our studies, smoking was not associated with an increased risk of developing POAG and a diet high in antioxidants was not associated with a reduced risk of POAG,” he said. Currently Dr. Pasquale is evaluating gene-environment interaction terms as new risk factors for POAG. Dr. Wiggs is performing the genetic analysis for Dr. Pasquale’s research. “I am hopeful that the research we’re doing will help us make specific recommendations based on genetic results that will translate to a reduced risk of developing glaucoma,” he said.

Dr. Pasquale is also researching the role of eNOS, an enzyme that is present in every blood vessel and makes a gas called nitric oxide. “Through genetic research, we know what chromosome the enzyme is on and its structure,” said Dr. Pasquale. “We think that patients with normal pressures, but with visual field loss that is close to fixation, may have deficiencies of this enzyme.”

Finally, Dr. Pasquale is testing something called the blue arc, an entopic phenomenon in which persons with normal vision see blue horns appear under special circumstances. “It’s very Harry Potterish,” noted Dr. Pasquale. The phenomenon may be absent in persons with glaucoma. He has developed a PowerPoint program for detecting the blue arc that may be available on the Internet in several years. “This is a way to aid in self-screening. In persons ages 40 to 60, this test might be a good way to detect structural damage to the optic nerve and get people to come in for examinations,” explained Dr. Pasquale.

As part of his research in disease detection, he is also working with the Boston Veterans Administration on telemedicine as a way to detect eye disease earlier. Funded by the Department of Defense, the project involves the use of sophisticated cameras and computers to take images of the eye and transmit those images to experts at reading centers. Dr. Pasquale serves as the Administration’s research director of the Ocular Tele-Health Center.

The researchers are enthusiastic and have strong hope for the future. “I don’t think we’re that far away from protecting the nerve. Dr. Grosskreutz’s work points toward key steps in the degenerative pathways,” said Dr. Wiggs. “Using this information we hope to be able to predict who will have optic nerve disease and then prevent the optic nerve from degenerating.”

Clearly the team at the MEEI is making important strides in glaucoma research. “One of the things that we really offer in terms of glaucoma is such a multi-faceted approach. In other institutions, there might be one or two people interested in glaucoma. Our group covers the waterfront from the gene to the patient, and that’s a really powerful approach,” noted Dr. Grosskreutz.
Stanley Richards received an “unnerving” diagnosis from his ophthalmologist in 1994 during a routine eye examination at the Massachusetts Eye and Ear Infirmary (MEEI): The intraocular pressure (IOP) in his eyes had reached an undesirable level which led to the development of exfoliation glaucoma, a condition characterized by dandruff-like material that accumulates in the front of the eye and raises the IOP. Treatments are available, but there is no cure.

Glaucoma will ultimately lead to blindness in 2 percent of adults over age 40 in the United States. But Mr. Richards is lucky; he is winning the war against the disease. The New Hampshire resident gardens in the summer, makes furniture in the winter, and enjoys his children and grandchildren. He also drives to the MEEI, weather permitting, where he has been a patient of Louis Pasquale, M.D., since 1996.

“We don’t understand what causes the exfoliation to develop in the first place,” explained Dr. Pasquale, who is codirector of the Glaucoma Service. “In Mr. Richards’ case, we detected the disease before any overt structural damage occurred. His prognosis is excellent.”

Since being diagnosed, Mr. Richards has made the 200-mile round trip from his home in New London, N.H., at least 50 times. His routine at MEEI is always the same: a vision test and examinations to check the pressure. “I can say with certainty that I’d be blind or close to it without treatment,” said Mr. Richards, a retired vice president of Cabot Corporation. “The most important thing is having checkups. The sooner the disease is caught, the better off you’ll be.”

Traveling to Boston for eye care is nothing new for Mr. Richards. He and his wife began coming to MEEI for routine checkups back in the 1950s and his family continues the tradition. “It never occurred to us to go anywhere else for eye care,” he said. “Distance wasn’t a factor.”

Mr. Richards is currently using two kinds of eye drops to keep his pressure in check. “Dr. Pasquale has tried six or eight medications over time. When the drops stopped working, he prescribed laser treatment or surgery to reduce the pressure,” he added.

Laser treatment takes a fraction of a second and is applied to the eye while the patient is sitting up. Mr. Richards has had several successful laser treatments and undergone three successful surgeries, all to manage what he calls “his plumbing problem. It’s like leaves in a catch basin that have no place to go. My eyes don’t shunt fluid out on their own.”

Managing the disease isn’t an easy task. “Someone who accepts the fact that they have the disease and is willing to educate themselves about its nuances will survive it. Glaucoma doesn’t take a vacation. You had better always bring your drops with you. It takes a lot of motivation on the patient’s part to keep up with the disease on a day-to-day basis,” said Dr. Pasquale. “The physician has an important role. Each patient comes to the plate with individual needs, concerns and lifestyle factors that have to be addressed. The patient and the physician are partners in this process.”

Mr. Richards is clearly delighted with his partner. He described Dr. Pasquale as “a brilliant man with a work ethic unlike anything you’ve ever seen. He’s very pleasant; he takes time to explain what he’s doing. He’s totally devoted to his work and is an exemplary physician.”

Mr. Richards believes wholeheartedly in the importance of funding glaucoma research. “It’s enormously critical. If we can’t find a cause, we can’t put the disease to bed,” he said. “The doctors here are devoting their lives to their patients and their research. I can’t imagine a more deserving project.”
readily curable through chemotherapy and radiation without the need for surgery. However, Lu Yao’s tumor was quite advanced, covering half of her face.

“This tumor has a high rate of metastasis and would almost certainly have been fatal,” said Aaron Fay, M.D., the MEEI oculoplastics surgeon who led the team consisting of members from the Massachusetts General Hospital and MEEI, which included Tessa Hadlock, M.D., director of the MEEI Facial Nerve Center.

MEEI physicians learned about Lu Yao from Ellen McDaniel-Loftus, who runs a small organization called Children’s Medical Mission. Mrs. McDaniel-Loftus raised funds to bring the child to the United States for medical treatment. Some of the physicians donated their services, and a generous grant from Ray Tye of the Ray Tye Medical Aid Foundation helped to cover hospital costs. “You don’t have to be some public hero to do good today, just an average person,” said Mrs. McDaniel-Loftus.

Yet, these average people did an extraordinary thing. After a delicate seven-hour surgery, Lu Yao’s beautiful face was uncovered and her eye, which had been consumed by the growth, could be seen. A year of chemotherapy and a course of proton beam irradiation will complete her cancer treatment. Physicians hope to reconstruct the eyelid of her affected eye in the future. The eyeball itself, said Dr. Fay, looks fine.

“Delivering care to a child with this magnitude of disease was tremendously satisfying because it represents such a high impact case — life and death,” said Dr. Hadlock.

Dr. Fay agrees. “It is so rare to be involved in something like this and so overwhelming in a positive sense,” he said. “It is such a wonderful feeling of being needed. It helps to explain why we become doctors. It was an unforgettable experience.”

Mr. Tye, the friend whose generosity enabled the MEEI to help Lu Yao, recently met her for the first time. “She is a wonderful little girl. Seeing her makes me realize how important a team effort is to assist those in need. And it was not too bad being called ‘uncle’ by a child I just met, either,” he said with a chuckle. <<<

Christopher Andreoli, M.D., Massachusetts Eye and Ear Infirmary’s Chief Resident and Director of Eye Trauma, was one of the featured speakers at a press conference sponsored by State Fire Marshal Stephen D. Coan. Dr. Andreoli discussed the danger fireworks pose to eyes, described what one can do to avoid these injuries, and what one should do if injured by fireworks. Each year, there are approximately 2,000 fireworks-related eye injuries in the United States. Approximately 40 percent of those injured by fireworks are children age 14 or younger. MEEI and the Fire Marshal’s Office hope to reduce the number of these types of injuries through public education.

Physicians, Humanitarians Rally continues from page 1 >>>
The recent stories of the devastation caused by Hurricane Katrina are poignant reminders that all of us are members of the human family; helping people when they need it most helps the whole family grow stronger.

The paragon of helping people when they need help is surely Massachusetts Eye and Ear Infirmary (MEEI)’s great friend Norman Knight. What he has done for others, quietly, is a story that will never be fully known. Here at MEEI, though, he recently made two substantial pledges that are typical of his personal approach to philanthropy. This spring, at President Curt Smith’s request, Mr. Knight established the Norman Knight Leadership Development Awards. The most critical time in the professional life of an academic physician is at the start, when they have just joined the full-time Medical Staff and are beginning to get established as a clinician and a scientist. Often a helping hand at this juncture provides the foundation for a lifetime of expert service to patients and important new medical advances. The Norman Knight Leadership Development Fund endows two very valuable Awards – one for Ophthalmology and one for ENT – to be given each year to junior physicians selected for their exceptional promise as medical leaders of the future.

“Curt Smith envisioned an environment of opportunities for gifted young physicians to achieve leadership roles at MEEI,” said Mr. Knight. “It is rewarding for me to be part of this MEEI team effort.”

Because Mr. Knight is a philanthropist, he regularly takes the initiative to look for new ways to help people. So this summer he called Vice President for Development and Public Affairs Bruce Jordan to ask if MEEI had any resources for helping employees in crisis. The result was a generous pledge to establish the “Norman Knight Partnership Fund,” which will endow several small emergency grants to MEEI full-time or part-time employees in whose lives emergencies have arisen. Vice President of Human Resources Chris Regan leads a small committee that will respond quietly and very confidentially to any applications it receives for these emergency grants. In keeping with Mr. Knight’s wishes, respect for the dignity and privacy of the recipients will be paramount.

“MEEI’s mission of patient care is accomplished by individuals as part of the MEEI team. During my 10 or 11 years of close association with Curt and his medical and administrative leaders, it has been gratifying to see how quickly and efficiently they seize then execute a new idea or service,” said Mr. Knight. “All of us who started with nothing or very little met financial obstacles during our career paths. This fund will assist some of our team members by giving emergency grants that provide some peace of mind. Boston is now the most expensive city in which to live in all of America and this lets our colleagues know that we understand their problems and we want to help.”
Not many 9-year-olds can call themselves millionaires, but when Ian Faulkner won the opportunity to have $1 million placed into his bank account for five days, that’s exactly what he was. Although he enjoyed his brief stint as a millionaire, Ian now knows that he doesn’t have to be a millionaire to make a difference at the Massachusetts Eye and Ear Infirmary (MEEI).

MEEI Pediatric Otolaryngologist Roland Eavey, M.D., has been treating Ian, who has sensorineural hearing loss and wears hearing aids in both ears, since the child was 5-years-old. “Ian has always wanted to help Dr. Eavey,” says his mother, Edie Faulkner, as she recalls the various gifts that Ian has given to Dr. Eavey, including the Shrek soap dispenser that pumped soap out of its ear.

So, when Ian was given the opportunity to enter an essay competition about what he would do with his money if he were a millionaire for a day, Mrs. Faulkner wasn’t surprised when he revealed he would like to donate money to the hospital. “MEEI is especially important to me because I’m hearing impaired,” wrote Ian. “It is important to all children who are deaf because they could finally hear the wind blowing in the trees, a train whistle, and someone calling their name. If a cure was found they could finally hear these things and more.”

Ian’s essay won the contest, and the bank that sponsored it presented him with five days of interest from the $1 million deposit. That’s when Ian put the proverbial “money where his mouth is” and announced that he would donate the interest to Dr. Eavey for hearing research. The bank was so impressed with Ian that it decided to match his donation. Ian’s father, Brian Faulkner, was also impressed. When word reached Mr. Faulkner’s co-workers, they decided to donate as well. Even Ian’s godparents made a gift.

As a result, Ian personally presented Dr. Eavey with a check for $300. Although it is not a million dollars, Ian’s effort is certainly worth that much.

Knights Templar leaders visited the Massachusetts Eye and Ear Infirmary (MEEI) in July to present four young ophthalmology researchers with grants for their work. The Knights Templar’s steadfast support over the years is important and much appreciated because it is often the first grant money researchers receive to pursue their work and develop a track record so they may win Federal grants. Pictured at the ceremony, from left to right, are Yuk Fai Leung, Ph.D., (Harvard Medical School), Nadya Piskun, Ph.D., (Children’s Hospital), Sidney Clifford, Jr., (2004/2005 Knights Templar Eye Foundation Chairman), Curt Smith (President of MEEI), C. Robert Jingozian, (Grand Commander of the Knights Templar of Mass./R.I.), Quanhua He, Ph.D., (MEEI), and Yoshihiro Omori, Ph.D., (MEEI).
Providing Hurricane Relief

Relief Jones, III, M.D., is originally from Buras, La., a small town southeast of New Orleans. But Dr. Jones was so busy with his duties as a new Glaucoma Fellow at MEEI that he didn’t realize hurricane Katrina was about to hit the Gulf Coast until his mother and father called him. His family was fortunate. They evacuated Buras two days before hurricane Katrina ravaged the region. Despite the fact that his hometown was covered in 30 feet of flood water, just one week after the storm Dr. Jones was doing everything he could to get back there.

Dr. Jones left Boston and flew to Houston, where he then joined a group of medical personnel from Fredericksburg, Texas. When they arrived and discovered that it was not the shelter in Baton Rouge, but a shelter in Lafayette, La., that needed medical personnel, the group made the journey on I-10 to a hurricane shelter in that city. With the help of a local optometrist who provided equipment, Dr. Jones set up a one-man eye clinic where he treated the survivors of hurricane Katrina.

In Lafayette, Dr. Jones provided care from a converted storeroom inside the University of Louisiana’s Cajun Dome. He completed countless fittings to replace broken or lost prescription and reading glasses, remarkably, with a 24-hour turn-around on the prescription spectacles. When he became concerned that patients wearing contact lenses would be susceptible to infection if they washed their contacts in tap water, he provided them with eyeglasses and contact lens solution, as well as educational sessions. Dr. Jones also received the opportunity to utilize his specialty, replenishing eye drops for patients diagnosed with glaucoma.

Based on his experience, Dr. Jones would like to publish a list of common conditions ophthalmologists might be required to treat in the event of a hurricane-related disaster such as Katrina.

“Being a Fellow, I was concerned that I wouldn’t have time to go down and volunteer, but my colleagues here were very supportive,” said Dr. Jones. “As a representative of the Glaucoma Department and the MEEI, I was happy to step up to the challenge.”

U.S. News & World Report magazine once again recognized the Massachusetts Eye and Ear Infirmary (MEEI) as one of the nation’s best hospitals in both of its specialties. The hospital ranked second in the country for ear, nose and throat and fourth for ophthalmology. “MEEI’s reputation as one of the nation’s best hospitals is made possible by the dedication of the physicians, researchers, nurses, employees and volunteers who live and breathe our mission to provide outstanding care for our patients every day,” said MEEI President F. Curtis Smith.

contact
is produced by the Office of Development and Public Affairs,
(617) 573-3340. www.meei.harvard.edu
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> F. Curtis Smith, President
> Bruce C. Jordan, Vice President for Development and Public Affairs

> Mary E. Leach, Director of Public Affairs, Editor
> Vanessa Carrington, Leslie Dennis, Melissa Paul,
Anne-Marie Seltzer, Helaine Silverman, Staff Writers
> Lauren Shavell, Patrick Carrica/Medical Imagery, Cover Illustration
> Eric Antoniou, Public Affairs Staff, Photography
> Marc Harpin, Rhumba, Design

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Dr. Joel A. Kraut, a devoted clinician and tireless teacher, passed away in December after a short illness, but his legacy lives on in the quest to help people make the best use of their remaining vision.

Founder of the Massachusetts Eye and Ear Infirmary’s (MEEI) Vision Rehabilitation Center, Dr. Kraut joined the medical staff in 1968 and became frustrated at the limited resources available to people with poor vision who could not be helped with surgery or other treatments. He wheeled a cart of magnifying glasses from patient to patient to see if he could help them.

“He was a very caring and compassionate physician,” said Joan W. Miller, M.D., MEEI Chief of Ophthalmology. “He helped so many people live more productive and happier lives.”

At the Vision Rehabilitation Center, which opened in 1985, Dr. Kraut took a multi-disciplinary approach, marshalling eye doctors, social workers and occupational therapists to help patients deal with the emotional and physical effects of low vision. He assembled a collection of low-vision aids, such as telescopes, high-tech reading machines and devices that help people with the practical aspects of daily life.

Most recently, he helped to establish Second Look within the Vision Rehabilitation Center. The goal of this new program is to introduce people with low vision to a wide variety of technologies available today thanks to personal computers, voice synthesisation, and close circuit camera-based enlargement. The center’s trained experts offer hands-on instruction customized to the individual needs and goals of the patient.

This program is the first of its kind to offer introduction to and training in the use of the wide variety of new technology products for low vision and legally blind patients in a hospital-based Vision Rehabilitation Center.

Dr. Kraut was a role model and mentor to many individuals in the field and a vital clinician and surgeon. He is survived by his wife, Ellie, his children and stepchildren, and his many friends and family members. If you would like to learn more about the Vision Rehabilitation Center or Dr. Kraut’s work, please contact Melissa Paul at 617-573-4168.

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Run the Boston Marathon with an MEEI number. Call 617-573-3347 for information.