our knowledge is your vision
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We are pleased to be ranked among the top hospitals in the nation for Ophthalmology in the 2007 U.S. News & World Report survey.
REACHING FOR NEW HEIGHTS

A sign of hope and advancement, the Kellogg Eye Center expansion is now under way

After years of planning, the new Kellogg Eye Center addition has risen from the ground with remarkable speed. By the time you receive this report, the eight-story steel frame will be complete. With the structural framework in place, it becomes a little easier to imagine the extent to which clinical, research, and educational programs will grow.

Realizing the dream of expanding the Eye Center has required vision and a strong commitment from individuals. “We could not have reached this point without the support of our patient community,” says Dr. Paul Lichter, Chair of the Department of Ophthalmology and Visual Sciences and Director of the Kellogg Eye Center. “Many have partnered with us as we strive to build a brighter future for people with eye disease, and we could not be more grateful.”

The Eye Center’s goal is to raise $40 million in support of the building and expanded programs, and more than half of this amount has been raised to date. To learn more about our plans for the Eye Center, please visit our web site at www.kellogg.umich.edu. You’ll find facts and photographs as well as information on how you can support the building project. And next time you come to the Eye Center, take a look at the building model just inside the lobby.

When the new building opens in 2010, it will be the culmination of years of dreaming, planning, and dedicated effort. It is a center that will set the standard in eye care and will make a difference in the lives of people in Michigan and beyond.
“In light of the preliminary work on CNTF, there are high expectations for this new therapeutic technology. This is the first non-specific therapy to emerge with promising experimental results.”

—John R. Heckenlively, M.D.
Evaluating RP therapy with hope and caution

People with retinitis pigmentosa have watched and waited for news of any treatment that might stop the progression of the disease or even allow them to recover lost vision. Now there is some reason to hope that a sustained-release implant being evaluated at the U-M Kellogg Eye Center and 13 other centers across the nation could deliver the long-awaited therapy.

Participants whose condition meets specific criteria will have surgery to receive an implant that releases a naturally occurring protein known to retard retinal degeneration.

Today patients with retinitis pigmentosa (RP) have very few treatment options. Antioxidant vitamins may help, but they do not cure. There are no known effective treatments for these degenerative eye diseases that affect 100,000 Americans and, over time, can lead to blindness.

John R. Heckenlively, M.D., an internationally known expert on inherited retinal disease, will lead the study for the U-M Kellogg Eye Center. He is cautiously optimistic about the prospects for the new treatment because earlier research has demonstrated that the protein, ciliary neurotrophic factor (CNTF), has the ability to slow the degeneration of photoreceptors, the light-sensing cells essential for sight. Dr. Heckenlively, Paul R. Lichter Professor of Ophthalmic Genetics, explains that after a promising start in the early 1990s, the research on CNTF stalled for lack of a practical method to deliver the therapeutic protein to the eye. With the development of encapsulated cell technology by Neurotech USA, Inc., the delivery problem appears to have been solved.

The symptoms and severity of RP can vary, but the disease often begins with the loss of peripheral or side vision and difficulty seeing at night. As the disease progresses, an individual will have a narrower range of vision, resulting in tunnel vision. The remaining vision may or may not be clear and sharp.

“In light of the preliminary work on CNTF, there are high expectations for this new therapeutic technology,” says Dr. Heckenlively. “This is the first non-specific therapy to emerge with promising experimental results.” He adds that RP is difficult to treat, in part, because there are so many genetic forms. “Rather than targeting a particular type of RP,” says Dr. Heckenlively, “this new therapy focuses on the endpoint of all RP types: vision loss due to degeneration of photoreceptors.”

In 2005, a Phase I Clinical Trial concluded that the CNTF implant exhibited a safe profile for humans. Currently, two Phase II/III clinical trials are evaluating two different doses of CNTF: a high dose or a low dose in one eye, as well as a sham surgery in the other eye so participants will not know which eye has been treated with CNTF.

Vicki Parker, whose mother and grandmother both had RP, hopes to participate in the trial. “With my family history, I’m lucky. My mother and grandmother both had some vision in their final years,” she says. “Naturally, I’m always interested in the latest research. I’m hoping that if this study is successful, the treatment will become routine for people with RP and other types of eye diseases.”
Long-term study on glaucoma treatment yields new answers

IN 1989, RESEARCHERS AT THE U-M KELLOGG EYE CENTER SET OUT TO DETERMINE THE BEST TREATMENT for patients who were newly diagnosed with glaucoma: eye drops or surgery. They led a national study, the Collaborative Initial Glaucoma Treatment Study (CIGTS), that would ultimately follow the care of 607 patients at 14 clinical centers around the U.S. Now, after following these patients for many years, researchers have found that the data continue to reveal unexpected findings.

Paul R. Lichter, M.D., Principal Investigator on the original CIGTS grant and Director of the Kellogg Eye Center, was hoping to put the controversy to rest once and for all. “For years, practitioners have wondered which initial treatment was better for our patients. Some were sure it was medicine, others were sure it was surgery. But there were no data that could prove either side.”

Now we have data. With funding from the National Eye Institute for the original grant and a subsequent grant for data analysis, Dr. Lichter and colleagues have had the opportunity to follow patients for over a decade. “While early reports indicated that initial surgery and medications yielded similar outcomes, analyses of longer term follow-up data have revealed an important result,” says Dr. Lichter. “It appears that patients who had more visual field loss at the time of diagnosis ultimately do better if they are treated initially with surgery rather than with medication.”

— Paul R. Lichter, M.D.

visual field data, Dr. Musch has some pertinent take-home messages. “For starters, both groups did well. Intraocular pressure reduction from treatment was substantial in both groups, but significantly more so in the surgery group. Visual field loss was less than expected, likely due to the superb treatment and follow-up care these patients received throughout the trial.” He surmises that the regular clinic visits and frequent calls from interviewers might have encouraged the patients to comply better with instructions and treatment.

There was, quite unexpectedly, an intriguing finding within the surgery arm of the trial. According to Dr. Musch, the data show that smokers had substantially higher intraocular pressures than non-smokers. A smoker who underwent surgery for glaucoma was worse off than a patient in the surgery arm who did not smoke. Whether this has any effect on long-term visual field loss remains to be determined.

Although Dr. Musch and his colleagues will continue to analyze the data, one finding appears to be indisputable. Intraocular pressure fluctuation is a strong independent predictor of visual field loss. Thus, consistent control of pressure remains vital. The better and more reliable the pressure control, the less loss of visual field. Pressures that fluctuate increase the risk that the patient will lose visual function.
TRAINING TECHNICIANS

On-the-job clinical experience sets program apart

OPTHALMIC TECHNICIANS ARE AN INTEGRAL COMPONENT of the clinical team at Kellogg, working closely with physicians in the evaluation and management of patients with a variety of ocular problems. Because of the critical role they play, only the most competent and highly skilled technicians are asked to join the staff of the Eye Center. Finding this kind of talent has been an increasingly difficult challenge for Jennifer Ziehm-Scott, Clinic Operations Manager at Kellogg. A one-time practicing technician herself, she has witnessed the demise of many ophthalmic technician training programs across the country over the past decade.

Because the need is great and the pool of qualified candidates small, Ms. Ziehm-Scott teamed with Amy Steele, Lead Technician in Kellogg’s Comprehensive Ophthalmology Clinic, to develop an in-house training program for ophthalmic technicians. The program was established on a trial basis four years ago and became official in 2006.

Training for this six-month program begins with Ms. Steele in the Comprehensive Clinic, which tends to be the first stop for many new Kellogg patients. It offers trainees the opportunity to see a wide variety of ocular conditions. The trainees also work with physicians who understand that they and their patients will benefit directly from the assistance of a highly competent technician. Ms. Steele observes that this kind of physician involvement makes for a great learning environment.

During the first few months of the program, the trainee reviews written material and learns basic skills like vision testing and taking patient histories. In the next few months, technicians in one of Kellogg’s subspecialty clinics will introduce the trainee to procedures and diagnostic tests typically administered for patients with more complex diseases. By the end of the program, the trainee will be shadowing a physician and tracking patient visits from beginning to end.

“The program we’ve created at Kellogg has the benefit of on-the-job, clinical training, which many formal programs lack,” says Ms. Steele. “I’ve heard from trainees and established technicians that this is one of the most valuable parts of our program.” She also observes that both staff and physicians have the opportunity to spend one-on-one time with the trainees, getting to know them and finding out if they will be a good fit for Kellogg.

To qualify for training, a candidate must have completed two years of college and have a health care or science background. After completing the program, the technician joins the Kellogg staff and makes a two-year commitment. After one year (or 1,000 hours), he or she has the opportunity to become a Certified Ophthalmic Assistant (COA) by taking the national examination. To date, seven trainees have completed the program and four of them have gone on to pass the COA exam. The remaining three trainees will take the exam this year.

Typical of the intense one-on-one training, Amy Steele, C.O.T., demonstrates the proper use of the hand-held keratometer to Karen Schneider.
“Genetic counselors are trained to explain these complex, scientific issues to people in a way that will help them understand more about their disease.”

—Kari E. Branham, M.S.
Genetic Counselors Are Advocates for Patients and Their Families

Kellogg’s Counselors Give Patients a Short Course in Genetics

There are only 10 ophthalmic genetic counselors in the United States and two of them reside at Kellogg. According to Kari Branham, M.S., Kellogg’s lead genetic counselor, genetic counseling is an integral part of caring for patients who have inherited retinal diseases. “Genetic counselors are trained to explain these complex, scientific issues to people in a way that will help them understand more about their disease,” says Ms. Branham.

Most of the patients Ms. Branham sees are referred by Kellogg retina specialist John R. Heckenlively, M.D. They see Ms. Branham as part of their comprehensive first visit. During a typical appointment, Ms. Branham talks with patients about their diagnosis and reviews information about their disease. She also explains how the disease is inherited and informs them of available genetic testing, describing its benefits and limitations. Lastly, she spends time talking about how to understand the genetic test results.

Ms. Branham explains that some patients will decide to have testing even though treatment is not yet available for many inherited eye diseases. They may figure that the results will help them make career or lifestyle decisions and that a genetic diagnosis will provide the information needed when treatments begin to emerge.

If patients proceed with genetic testing, the analysis takes place in Kellogg’s state-of-the-art Ophthalmic Molecular Diagnostic Laboratory. The services include Ms. Branham’s on-site genetic counseling, both before and after the testing.

“I like to think of myself as an advocate for my patients,” says Ms. Branham. “I am their resource when it comes to sharing the most up-to-date information on their disease, and I’m there to help them find the support they need.”

Kellogg’s genetic counselors see about 400 patients per year. They also work with clinicians and genetic counselors throughout the country to help patients get the information they need. In addition, they are involved heavily in research and clinical trials.

Donald Moore, 64, has been diagnosed with Stargardt disease—a disease characterized by progressive loss of central vision. He is one of many patients who find Kellogg’s genetic counseling valuable. “I am so surprised that other eye centers don’t have counselors to help patients with their diseases,” says Mr. Moore. “Having genetic counselors really increases a person’s confidence in an eye center.”

Currently, Mr. Moore’s vision is stable and he visits Kellogg once a year for a routine eye examination. He hopes to see a cure for his disease in his lifetime and says, if that happens, he believes that Kellogg will have played a key role in the discovery. “I’ve never heard of an eye center more on top of these diseases,” says Mr. Moore. “I have a feeling they’re going to solve the next big thing.”

Donald Moore has a greater understanding of his disease after speaking with genetic counselor Kari Branham.
TOURING THE EYE CENTER

An appreciation for high standards in education and research

ON A RECENT TOUR OF THE KELLOGG EYE CENTER, Mary June Wilkinson listened to a scientist describe a study on retinal cell transplantation. She wondered if the findings might relate to a friend whose daughter has retinitis pigmentosa. Mrs. Wilkinson was right on the mark. The ability to transplant retinal cells could one day make a difference in the lives of people with eye diseases such as RP.

Mrs. Wilkinson, along with her late husband, William C. Wilkinson, M.D., has been a longtime friend of the Kellogg Eye Center. In addition to supporting research for many years, the Wilkinsons made the very first gift to the Eye Center building project, well before architects were commissioned to draw up building plans. The Wilkinsons’ gift grew out of their deep appreciation for the high standards in education and research that they recognized in the Department of Ophthalmology and Visual Sciences.

Dr. William Wilkinson completed his ophthalmology residency at Michigan, and, some 28 years later, the couple’s son, W. Scott Wilkinson, M.D., followed in his father’s footsteps. “My husband was so pleased that Scott could experience the same excellent training,” she says. Today she notes that her son, whose practice has rapidly expanded, seeks partners who share the training standards and philosophy he found at Michigan. Mrs. Wilkinson explains, “My son and I have continued the legacy of supporting the Eye Center.”

During another stop on the Kellogg tour, Mrs. Wilkinson met with Howard Petty, Ph.D., a biophysicist whose research involves high-speed imaging of cellular activities. She was impressed by his clear-cut presentation of a complicated field of research. “This is someone who loves his work and has the ability to make a difference,” she says. “Not every person with a Ph.D. has the combination of inventiveness and technological knowledge that can make research turn into reality.”

“It is not a surprise that Mrs. Wilkinson would appreciate enthusiasm and creativity. She is an energetic woman with wide-ranging interests. Several years ago, she enrolled in an art class for the first time. Each year since she has added another course or two, and now painting has become a passion. She also travels with her family and talks with pride and enthusiasm of her grandchildren’s accomplishments.

Mrs. Wilkinson is quick to return to the role the Department has played in her life. “I am so proud of the training and research that goes on here,” she says. “And I am fortunate to have had a unique view of the development of this wonderful place.”
A grandmother’s concern and a physician’s expertise help save a baby’s vision

WHEN PEOPLE COMMENTED ON HER BABY GRANDSON’S BIG BLUE EYES, AUDREY SMITH FELT UNEASY. From the time Jackson was born, she had worried that the eyes everyone noticed looked different than other children’s eyes. In addition to being big, they were cloudy and had a film over them, she says. She finally suggested that her daughter-in-law ask Jackson’s doctor about it.

“I kept watching his eyes, because I had never seen anything like that before,” she says. “I wanted them to be checked.”

Mrs. Smith, who has glaucoma, never dreamed Jackson might have a congenital form of the disease. The child’s parents took him to see his pediatrician, who then referred him to the Kellogg Eye Center, where the condition was diagnosed.

In pediatric glaucoma, pressure builds up in the eye and can damage the eye and lead to vision loss. The key symptoms include pain, abnormal sensitivity to light, tearing, enlarged corneas, and redness of the eyes. Jackson’s tests revealed high intraocular pressure, corneal swelling, and signs of optic nerve damage, says Maya Eibschitz, M.D., a pediatric glaucoma specialist in Kellogg’s Skillman Children’s Eye Care Clinic.

Primary congenital glaucoma is relatively rare, appearing in only one in 10,000 births. “But when that one patient walks into your office, prompt diagnosis and treatment are crucial to preserving vision,” Dr. Eibschitz says. Jackson had surgery at the age of five months, the day after he was seen in the clinic.

While adults with glaucoma usually try medication to lower intraocular pressure first, the primary course of treatment for infants is typically surgery to improve drainage in the eyes. The success rates for such surgeries in infants are as high as 75 percent to 95 percent. But children have to be followed closely by their physicians after an operation, says Dr. Eibschitz, who is one of just a few dozen pediatric glaucoma specialists in the country.

Jackson was in that successful majority, Dr. Eibschitz reports. “He is doing very well. His vision is normal, his intraocular pressures are normal, his corneal edema has resolved, and his optic nerve cupping has returned to normal.”

His parents, Sharen and Almount Smith, are grateful to Dr. Eibschitz and Jackson’s grandmother. “We thought his eyes were beautiful,” Sharen Smith says. “We just didn’t know.”
During a trip that was “not only gratifying but enlightening,” Dr. Del Monte performed multiple surgeries, including a complex procedure for a mother and son suffering from a rare genetic syndrome.

—Monte A. Del Monte, M.D.
Among the many surprising moments for Monte Del Monte, M.D., on a recent trip to Guatemala was his encounter with a family who had a rare hereditary syndrome. Dr. Del Monte, the Skillman Professor of Pediatric Ophthalmology at the U-M Kellogg Eye Center, traveled under the auspices of the World Eye Mission for a week of teaching, examining patients, and performing strabismus surgery to correct vision problems related to abnormal eye alignment. He visited two hospitals in Guatemala City and one in the Petén, a remote jungle region of northern Guatemala.

The family had a hereditary syndrome known as congenital fibrosis of the extraocular muscles type 1. The mother and son had severely limited visual function due to restrictive strabismus, in which the already misaligned eyes have such limited movement that affected individuals must assume abnormal and uncomfortable head positions in order to see. Because corrective surgery is complex and not available in Central America, the family accompanied Dr. Del Monte to the Petén, where he performed the complicated procedure. The surgery was successful in establishing eye alignment and in improving the range of eye movement—and thus vision—in both patients.

In a fortuitous coincidence, Dr. Del Monte has been involved with a research project that isolated the gene for one form of the syndrome. He sent blood samples to the laboratory of his long-time collaborator Dr. Elizabeth Engle at Harvard Medical School. If the gene affecting this family can be identified, Dr. Del Monte will have contributed useful knowledge about a region where little is known about genetic patterns of this disorder.

The entire trip was, according to Dr. Del Monte, “not only gratifying but enlightening.” At the Visualiza Clinic in Guatemala City, Dr. Del Monte examined 15–20 clinic patients, and performed or assisted in half a dozen eye muscle procedures in a surgical suite within the clinic.

At his second stop in Guatemala City, Roosevelt Hospital, Dr. Del Monte spent a great deal of time working with the local residents. They presented complicated cases at a special Grand Rounds and also assisted Dr. Del Monte in the surgical procedures performed at that hospital. In the evenings, Dr. Del Monte led teaching conferences and presented several lectures each night, which often led to lengthy question-and-answer sessions, especially concerning those procedures that were new to this part of the world.

After leaving Guatemala City, Dr. Del Monte traveled to the remote northern province of Petén to visit the state-of-the-art Vincent Pescatore Eye Clinic, a unique clinical model for developing countries. The clinic has two fee structures: the revenue from “private” patients helps fund care for “social” patients who are unable to pay. The care, of course, is the same. This model is being duplicated in other countries in Central America, including Nicaragua and El Salvador.

At the Pescatore Clinic, Dr. Del Monte examined strabismus patients, children and adults, and performed surgeries assisted by one of his hosts, Dr. Edwin Arias. Despite being the only eye clinic in this poor jungle area, the rural Pescatore Eye Clinic was observed by Dr. Del Monte to be “well equipped with most modern instruments and supplies so I needed to bring only a few specialized instruments and sutures.” He added, “This clinic really did have almost anything you would need.”
BLIND MICE CAN SEE – OR AT LEAST
REgain VISUAL FUNCTION

What’s the next step in making
retinal cell transplantation
a reality?

TRANSPLANTING RETINA CELLS TO RESTORE VISION has been an aspiration of vision scientists for years. In November 2006, scientists at the University of Michigan Kellogg Eye Center attracted international attention when they demonstrated that transplantation can be successful if the cells are introduced to the mouse retina at a very particular point in their development.

Anand Swaroop, Ph.D., had devoted many years to investigating the development and life cycle of rods, a type of photoreceptor cell that is essential for sight. Eventually he discovered that each rod starts out as an unspecified stem cell and then evolves into a “precursor,” at which point it signals its intent to become a particular type of cell. When transplanted at its precursor stage, the rod continues to develop and is successfully integrated into the mouse retina. Some reports claimed that “blind mice could see,” although it would be more accurate to say that these mice had “regained visual function,” as measured by the pupillary response to light.

The research findings immediately struck a chord among people with eye diseases like retinitis pigmentosa, in which vision loss is caused by the loss of rod photoreceptors. They emailed their congratulations and wanted to know when human testing would begin. A young man from Brisbane, Australia wrote, “Your research holds much promise and it is hoped that I could be a recipient of the technology in the not too distant future. Best wishes for your continued research success.”

A young man from Brisbane, Australia wrote, “Your research holds much promise and it is hoped that I could be a recipient of the technology in the not too distant future. Best wishes for your continued research success.”

Dr. Swaroop replied with cautious optimism. “It will take time,” he said, “to make the transition from mouse models to human eye disease. Nonetheless, this is a very exciting time for scientists who hope to see their research translated into treatments for degenerative retinal diseases.”

Kellogg scientists will continue to study rod transplantation with the goal of increasing the rate of cell integration. Meanwhile Dr. Swaroop, currently on leave from the Department, has joined the Neurobiology, Neurodegeneration and Repair Laboratory at the National Eye Institute. In the midst of the transition, Dr. Swaroop and Kellogg colleagues have initiated a study to ask the next big question: If rod precursors can be transplanted, why not cones? “The early data suggest we can rescue cone function,” says Hong Cheng, M.D., Ph.D., researcher in the Swaroop laboratory, who spoke at a recent Kellogg Research Symposium.

Cones are the light-sensing cells concentrated in the macula. If researchers replicate their success and demonstrate that cones, too, can be transplanted, Dr. Swaroop and colleagues will have good news for people suffering from another devastating eye disease: age-related macular degeneration.
LEGACIES OF LOVE, ACHIEVEMENT

Physician honors parents by establishing professorship fund

While neither of Dr. Bartley R. Frueh’s parents attended college, they both valued education and knowledge—and they imparted the importance of both to their children. Dr. Frueh, a Professor of Ophthalmology and Visual Sciences, and his wife, Cheryl, have decided to honor those values by establishing a fund to create the Lloyd and Virginia Frueh Research Professorship in Eye Plastics and Orbital Surgery at the University of Michigan. Dr. Frueh’s father, Lloyd, a business owner, passed away in 1994. His mother, Virginia, lives in Massachusetts.

“When I was growing up, I thought everyone’s parents were like mine, but I realized later that I was extremely lucky,” Dr. Frueh says. “My parents taught me values, integrity, and independence, and they always supported my decisions.”

“They wanted their children to be successful and happy,” adds Cheryl Frueh, an occupational therapist and a consultant with Vision Care, Inc.

Dr. and Mrs. Frueh will contribute to the professorship until it is fully funded. They hope it will then serve as a tool to enable the Department to recruit outstanding physicians who are interested in research, Dr. Frueh says. “One of the goals of academic medicine is to advance the field and ask, ‘How can we do what we do better?’ Only through asking questions and examining data to answer those questions can we push the boundaries forward.”

Dr. Frueh earned an undergraduate degree in chemical engineering from Cornell University before deciding to attend medical school at Columbia University. He completed his ophthalmology residency at U-M in 1970 and served as the Director of Ophthalmic Plastic and Reconstructive Surgery at the University of Missouri Medical Center from 1971 to 1979. He then returned to U-M to start the Eye Plastics and Orbital Surgery Service. Under his leadership it has grown to four ophthalmologists. His own research has sought to define the uniqueness and the properties of eye movement muscles, including the eyelid lifting muscle.

Cheryl Frueh also has a long history with the Kellogg Eye Center. Hired as an ophthalmic technician in 1984, she later became an occupational therapist and added this new skill to Kellogg’s low-vision program.

“I have been able to thrive in this environment,” Dr. Frueh says, “and I would like to see it continue as a center of excellence.”