FROM A SHAKY BEGINNING TO A CLEAR AND STEADY FUTURE

Gavin Herbert Eye Institute doctors are partnering with ophthalmology innovator Robert Sinskey, MD, on a procedure to treat rapid, uncontrolled eye movements that offers new hope to thousands of nystagmus sufferers worldwide.

Nystagmus is a condition characterized by an uncontrollable shaking of the eyes. This can result in functional blindness because the movements may impair focus. It affects both children and adults and can be inherited or a result of trauma, injury or surgery.

Standard therapies for nystagmus, including drugs and surgical procedures, are not often associated with satisfactory results. With the support of institute Chairman Roger Steinert, MD, a successful procedure pioneered by Dr. Robert Sinskey for nystagmus is now available at the Gavin Herbert Eye Institute.

After consulting with orthopedic surgeons with experience in treating spastic muscles, Dr. Sinskey introduced a procedure to remove the muscles responsible for side-to-side movement of the eye to treat nystagmus. Although he presented and published successful results, critics called the surgery difficult and risky and were skeptical of the positive outcomes. At the time, there was no convincing way to measure the improvement in eye stability. Recently, Dr. Sinskey brought the procedure to the institute to reintroduce and refine the procedure through collaboration and by incorporating new technology to record eye movements.

Dr. Sinskey has been partnering with Jeremiah Tao, MD, and Robert Lingua, MD, over the last year on the procedure. Dr. Tao provides his oculofacial plastic and orbital surgery expertise during the surgeries. “Prior failures were likely due to incomplete treatment since those without orbital training and experience did not completely remove the targeted muscle,” explains Dr. Tao. “Our collaborative approach and expertise has led to promising results.”

“It’s quite an honor to work with Dr. Sinskey. To see someone who has already given so much to ophthalmology be still so motivated to improve the lives of eye patients through wisdom, science and even generous charitable contributions is inspiring. Dr. Sinskey’s donation of an infrared videonystagmography unit, a new device that objectively measures eye movement, provides the previously missing objective evidence that the procedure works.”

Dr. Lingua has seen results in his pediatric patients with nystagmus. “A 17-year-old patient of mine had previously received two treatments for nystagmus that were unsuccessful. He was very self-conscious and couldn’t look people in the eye. He was the first to receive Dr. Sinskey’s procedure at the institute. Six months after surgery, his eyes were almost completely still. His confidence has increased, and he can now pass the DMV vision test. This procedure will offer hope to thousands of nystagmus sufferers in Orange County and around the world.”

Dr. Lingua, Dr. Sinskey, and Dr. Tao with an infrared videonystagmography unit and Dr. Lingua’s patient after undergoing the procedure.

SHINE THE LIGHT

Thank you for supporting the Shine The Light Campaign

Gifts of $25,000 and above received since January 1, 2012, to support construction of the Gavin Herbert Eye Institute:
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For more information about the Gavin Herbert Eye Institute, please call (949) 824-0091.

www.eye.uci.edu/summer

Summer 2013
A new view of DNA

While most people think of DNA as the nuclear chromosomes inherited from a mother and father, special DNA inherited only from the mother can also be found in mitochondria. Located in the cytoplasm of a cell, mitochondria produce the energy needed to power cellular functions. Dr. Kenney is investigating the effect of mitochondrial DNA on AMD and is aiming to unlock the mystery of what causes the cells of the retina to degenerate during the aging process.

“By studying DNA patterns, you can divide people into different mitochondrial genetic groups called haplogroups,” Dr. Kenney explains. “This is important for AMD because while AMD occurs most frequently in Caucasians, it is also more common in people with certain mitochondrial DNA backgrounds.”

“Using haplogroups, we can trace our patients’ ancestry and better determine if they are at risk for AMD. We have found that families of Ashkenazi Jewish descent have a particularly high risk of getting AMD. Our studies show being part of this haplogroup can also affect expression of cholesterol, inflammation and nuclear genes known to be associated with AMD.”

“Our biggest and most exciting discovery is how much mitochondrial DNA affects us,” shares Dr. Kenney. “While there are codes for over 20,000 genes in nuclear DNA, mitochondria have just 37. For years, mitochondria were only thought to be important for energy production in cells, but we have shown that they influence a surprising number of important nuclear genes and can influence many aspects of cell behavior in groups of people of a particular background. “

“The controlling mechanisms of mitochondrial DNA over cell behavior haven’t really been recognized, so this is a brand new area of research. Along with nuclear genetics, diet and environment, mitochondrial DNA is a vital piece of the puzzle when it comes to understanding diseases including AMD. It could also pave the way for the development of new treatments to improve vision and quality of life for our patients in Orange County and people of different genetic backgrounds all around the world.”

— M. Cristina Kenney, MD, PhD

From Vision to Reality

We hope that you were able to join us for the September 11th ribbon cutting for the grand opening of our new building! Together, we have achieved our goal of creating a first-class facility that is dedicated to advancing eye care for our patients in Orange County and beyond. This is truly a landmark achievement for our community.

The building campaign has raised a remarkable $37.5M, but we still need 81.5M to pay down our building loan. Every bit helps! For more information on how you can support GHEI, please contact Janice Briggs, Executive Director of Development, at (949) 824-0091.

Sincerely,

Roger Steinert, MD
Chair, Department of Ophthalmology

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Neuro-ophthalmology is the study of how the nervous system, and the brain in particular, affects vision. It seeks to explain how the brain sorts information when we look at something. "Over half of the brain uses vision in its processing," explains R. Wade Crow, MD, the Gavin Herbert Eye Institute's neuro-ophthalmologist. "The amount of control that we need over our eyes—and the amount of visual information that we take in and process—is amazing.

"The eye, as intricate and wonderful as it is, is a camera. The brain analyzes and comprehends the images from the eye. When I look at a dog, I know it's a dog because my brain recognizes it. If a person has a central nervous system issue, the effect on vision can be very serious."

While Dr. Crow sees patients for vision issues related to stroke, multiple sclerosis, brain tumors, optic nerve injuries and other neurological issues, his research at the institute focuses on normal eyes. "Any time you develop a new technology, you need to know what the normal physical response to it is. Without normal, you can't define abnormal," declares Dr. Crow.

What is eye strain?
Eye strain is a condition that affects both normal and abnormal eyes. Visually intensive activities such as reading, using the computer or any other fine or up-close work can cause eye strain. While not usually serious, eye strain symptoms include headaches and aching or burning sensations in the eye.

"To prevent or reduce strain, we must understand what mediums such as books, computer screens and e-readers cause it, why that medium does so, and then strive to find solutions," advises Dr. Crow. "There isn't a way to avoid or minimize eye strain unless you avoid the activities that are causing it."

Straining for Answers
As tablet computers and e-readers have become increasingly popular for work and personal use, some concerns have been raised on whether such devices cause eye strain and how they could affect long-term eyesight. "It isn't currently known if, or how, looking at a tablet screen affects vision," Dr. Crow acknowledges.

"During the 1980s, when computers started to be used in the workplace, there was an explosion of studies based on what computers were doing to our eyes. As a result, computer monitors are very different today. They have settings and filters because certain people don't like certain wavelengths of light. There can be many factors that contribute to eye strain such as ergonomics, how far away the screen is and the length of time you are looking at the screen. My research seeks to find out if there is a higher incidence of eye strain with tablets and e-readers and why that is so."

R. Wade Crow, MD, is studying the effects of tablets and e-readers on eye strain.

About four years ago, the UC Irvine School of Medicine integrated the use of tablet computers into its education process. First-year medical students were given an iPad to use for presentations and learning. When the students asked if heavy use of the devices would affect their eyesight, the School of Medicine turned to Dr. Crow for answers.

"I looked at the research that was available, and the answer was that I didn't know," recalls Dr. Crow. "There haven't been any published studies on this. I, therefore, started a pilot study to try and assess the amount of eye strain in this population of medical students. They are already at risk for eye strain because they do a lot of reading."

Focusing in on Medical Students
For the study, Dr. Crow had medical students read a book about neuro-ophthalmology either in e-reader format or from a hardcover book. Measurements such as reading distances and the brightness of the tablet screen were taken. After the reading session, students were given a questionnaire about what they think eye strain is and how they felt after reading. They also received eye exams to determine ocular history and prescription, as well as if they had any eye conditions like dry eye.

"We've gotten a great response and are collecting and analyzing the data now," reports Dr. Crow. "While medical students aren't representative of the average e-reader or tablet user, they are a readily available population to study, and eye strain incidence should be high amongst them. This is a limited pilot study to put together a methodology to study eye strain. I hope it will pave the way for a larger study, so e-reader and tablet screens can become comfortable for as many people as possible."

"My goal is not to show that tablets and e-readers are unhealthy," says Dr. Crow. "They are part of the future of education. My 5-year-old will likely do most of his elementary and high school work on one. The trick is to use the devices safely and understand how they affect eye strain, so we can guide device development to make tablets and e-readers a safe tool for everyone to use."

Make an appointment today
To learn about available state-of-the-art ophthalmic services, and for dates and times of upcoming patient education seminars, visit our website at www.eye.uci.edu/summer. To schedule an appointment, please contact the Gavin Herbert Eye Institute at (949) 824-2020. ©
A neuro-ophthalmologist

As he was growing up in West Los Angeles, R. Wade Crow, MD, consistently excelled in science and getting into medical school became his goal. After graduating Phi Beta Kappa with a bachelor of science from Emory University and a medical degree from the University of Southern California, he decided to specialize in neurology and ophthalmology to study how vision is linked to the brain. “From day one of ophthalmology training, I knew that I wanted to be a neuro-ophthalmologist,” Dr. Crow recalls.

Three years ago, Dr. Crow joined the faculty of the Gavin Herbert Eye Institute. “Back then, it was on the verge of all the changes that we are seeing now,” reflects Dr. Crow. “It has been wonderful to grow with the institute and to really make an impact on the training of future ophthalmologists.”

Dr. Crow instructs medical students and ophthalmology residents through lectures and hands-on training. He accompanies residents on clinical rotations every week when they see patients. “The main reason I came back to academics is because I love to teach and find new ways to define things for my students.”

Dr. Crow.

As the institute’s neuro-ophthalmologist, Dr. Crow sees patients with rare eye issues. “Other eye doctors send patients to me when no one else has figured out their conditions,” explains Dr. Crow. “I get the mysteries. It can be a challenging, but rewarding, puzzle. Occasionally, I have cases where the diagnosis really saves the patient’s life, such as an undiagnosed brain tumor. I also see patients whose vision has been affected by stroke, multiple sclerosis or injuries.”

Dr. Crow enjoys collaborating with local eye care companies on testing and developing new treatments and devices. “The institute’s connection to the industry is second to none. Orange County is like the Silicon Valley of ophthalmology. It’s not uncommon to see the CEO of an eye technology company waiting to talk to us at a faculty meeting or during rounds, which doesn’t happen anywhere else.”

Being a part of the Gavin Herbert Eye Institute has also given Dr. Crow the chance to accomplish something he barely dared to dream of: to head a department in Neuro-Ophthalmology. “For now,” says Dr. Crow, “it is a department of one—but the ability to plan the future of neuro-ophthalmology at the institute is an overwhelming opportunity. Dr. Roger Steinert has been very helpful with guidance and support.

“The culture of the institute is really supportive as a whole. I can walk up to any of our specialists with a clinical or academic question. I haven’t seen a spirit of collaboration to this extent anywhere else. And it makes a big difference for our patients in Orange County and beyond.”

R. Wade Crow, MD

The Mind’s Eye of a Neuro-Ophthalmologist

PARTNERSHIP RESULTS IN NEW WAY TO MEASURE PUPIL PERFORMANCE

Thanks to RAPDx®, and crucial new-device clinical research conducted at the Gavin Herbert Eye Institute, there is now a way to quantitatively and qualitatively measure how pupils respond to light.

“The traditional method was very low-tech,” explains Charles Wm. Stewart, OD, CEO of Konan Medical USA. “Doctors would shine a light into one eye, move quickly to the other and repeat to assess if pupil size remained the same, and then try to quantify any difference. This test can be very difficult to do well. In comparison, RAPDx provides an objective and substantially more detailed report on pupil response.”

Konan Medical had previously provided a specular microscope for monitoring corneas to the institute, so Dr. Stewart requested testing and feedback on RAPDx. “We have a friendly partnership. I offered to help validate the device by providing data from normal patients,” says R. Wade Crow, MD, the institute’s neuro-ophthalmologist.

RAPDx uses a high definition imaging system to simultaneously assess pupil reactions, tracking how much and how fast constriction happens. “Before the ERG, doctors detected changes in a patient’s heartbeat by listening to it. RAPDx is like the ERG for pupil function. It tracks speed, latency and degree of contraction,” details Dr. Crow. “The device can be used to diagnose diseases such as glaucoma and injuries to vision, as well as help us to provide earlier and better treatment.”

Concludes Dr. Stewart, “It’s been a terrific opportunity for us to be able to access leading experts like Dr. Steinert and Dr. Crow to validate new concepts that enhance the development of new medical devices and add features to existing products.”

FAMILY TIES

Anthony Nesburn, MD, FACS

Building on years of research conducted through his private practice, Dr. Nesburn brought his AMD focus to the institute in 2002. Today, physicians and researchers like M. Cristina Kenney, MD, PhD, Professor and Director of Ophthalmology Research at the Gavin Herbert Eye Institute, are currently engaged in studies tying genetics to AMD. Being able to identify those who may be more prone to developing AMD could prove to be critical for those who carry it in their family. In fact, some initial evidence supports the theory that people of certain ethnic heritages are more likely to develop AMD. Many of the participants in such studies are patients recruited from Dr. Nesburn’s practice.

“Other eye doctors send patients to me when no one else has figured out their conditions. I get the mysteries.”

— R. Wade Crow, MD

“A major cause of blindness among individuals over 50, AMD is a widespread disease that can have a profound effect on a person’s daily life. At the institute, Dr. Nesburn and colleagues are utilizing genetic testing, stem cell research, and other innovative programs to stay on the cutting edge of AMD research.”

“I have seen firsthand in my own family just how devastating AMD can be,” says Dr. Nesburn. “Not being able to drive, see your children’s faces, read or watch television makes you become dependent on others for so many things.”

“We have encouraged patients with a family history of AMD to have genetic testing,” says Dr. Nesburn. “It matters not only for them but potentially to their children and grandchildren. Hopefully, it will help us find preventative treatments for AMD. That’s the importance of the genetic testing.”

In terms of genetics, Dr. Nesburn believes it is important to continue searching for important indicators that will allow doctors to predict those who are at the highest risk. These patients can then be more closely monitored and be offered interventional therapies on a more timely basis.

“As Vice Chair for Research at GHEI, I have seen us put pioneering programs in place that will help prevent and treat AMD.”

“A macular degeneration research is high on everyone’s list in the ophthalmic world. Very few institutes have genetics and stem cell programs like ours. The Gavin Herbert Eye Institute will be at the forefront of AMD treatment.”
During an eye appointment for a cataract condition, Paul Arentsen, a retired financial advisor and Newport Beach resident, was advised to replace his clouded, natural eye lens with an artificial lens that would improve both his near and far vision. As he was researching current intraocular lens options, a friend recommended that he talk to Roger Steinert, MD, at the Gavin Herbert Eye Institute.

“After examining my eyes, Dr. Steinert suggested a different lens, carefully explaining why it would be a better solution,” recalls Arentsen. “My eye surgeries resulted in excellent distance vision. I now only use glasses for reading. Dr. Steinert’s care and counsel were wonderful!”

Some years later, Arentsen returned to the institute with a retinal tear. “Dr. Sam Garg diagnosed the tear. He immediately referred me to retinal specialist Dr. Barry Kuppermann, who closed the tear using a laser,” Arentsen explains. “Over the next year, I experienced six additional bleeding events near the tear. Under Dr. Kuppermann’s careful watch, the bleeding has stopped. His confident and encouraging care during this process was very important and helpful. I cannot imagine where I could have received better care than from the doctors and staff at the Gavin Herbert Eye Institute.”

After attending a “Dining in the Dark” event, where attendees are served dinner in total darkness, Arentsen and his wife, Nancy, were inspired to make a significant financial contribution to the institute’s new building. “I know how very important it is to have sight. It’s exciting to have such a wonderful facility for eye care and important research on new techniques to improve vision here in Orange County.”

Nancy and Paul Arentsen