



# FOR SIGHT

*Annual Report 2012*

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UC San Diego  
SHILEY EYE CENTER

# SIMPLY WORLD CLASS

The UC San Diego Department of Ophthalmology at the Shiley Eye Center is the only academic eye center in the region offering the most advanced treatments across all areas of eye care. Our world class clinicians, surgeons, scientists and staff are dedicated to excellence and providing the best possible patient care to prevent, treat and cure eye diseases. Our research is at the forefront of developing new methods for diagnosis and treatment of eye diseases and disorders. In addition to educating the leaders of tomorrow, we are committed to serving the San Diego and global community.

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# A LETTER FROM OUR CHAIRMAN

## ROBERT N. WEINREB, M.D.

Chairman and Distinguished Professor of Ophthalmology  
Director, Shiley Eye Center  
Director, Hamilton Glaucoma Center  
Morris Gleich, M.D. Chair of Glaucoma

Colleagues, friends, alumni, and supporters,

As we celebrate the 21st anniversary of the UC San Diego Shiley Eye Center and the Department of Ophthalmology, I am proud to share with you our first Annual Report. While it provides a comprehensive overview of our clinical, scientific and educational activities, more importantly, it highlights the exceptional individuals and teams who oversee and participate in our world class programs that preserve sight and prevent blindness.

#### Patient Care

Outstanding quality of patient care is at the center of our endeavors. This year, we recruited two eminent clinician-scientists to our faculty, Natalie Afshari, M.D. and Jeffrey Goldberg, M.D., Ph.D. Our cadre of clinicians are globally recognized for their contributions to the diagnosis, medical treatment and surgery of all forms of eye disease and disorders in adults and children. Challenging clinical disorders are addressed by teams of specialists who provide unique care. In this Report, for example, you will learn about our multi-disciplinary Thyroid Eye Clinic that brings together oculoplastic, strabismus and neuro-ophthalmic specialists to treat patients with debilitating thyroid eye disease. Across the entire spectrum of eye care, we seek to provide both hope and treatment to all who suffer from vision loss.

#### Research

In research, our emphasis is directed at advancing science through translational breakthroughs.

We seek to accelerate the introduction of laboratory discovery into clinical practice across all ophthalmic subspecialties. The Hamilton Glaucoma Center and the Jacobs Retina Center are at the forefront of these investigational efforts, and both are renowned for their pioneering clinical and laboratory research. Our research programs are cross-disciplinary and build bridges across areas that have the most promise for improved diagnostic and innovative therapies. In the Report, you will learn about how our scientists:

- in collaboration with Bioengineering, are designing and planning to implement an artificial retina for individuals with degenerative retinal diseases, such as macular degeneration.
- with the Institute for Genomic Medicine, are identifying through genetic research new therapeutic targets to treat vision-destroying eye disease of children, diabetic retinopathy and other blinding eye conditions.
- in collaboration with stem cell biologists, are pioneering innovative therapies to prevent and rescue vision loss, and also restore vision to those with blinding eye diseases such as glaucoma and retinal degenerations.

#### Education

Brilliant trainees seek to enhance their clinical and scientific skills each year in the Department

of Ophthalmology, and we take special pride in our tradition of training the next generation of academic and clinical leaders in ophthalmology. With the introduction of new and robust didactic activities during the past year and the refinement of existing ones, we not only have reshaped the educational activities for our clinicians and scientists, but have also taken a major step to bring the latest information to community physicians as well.

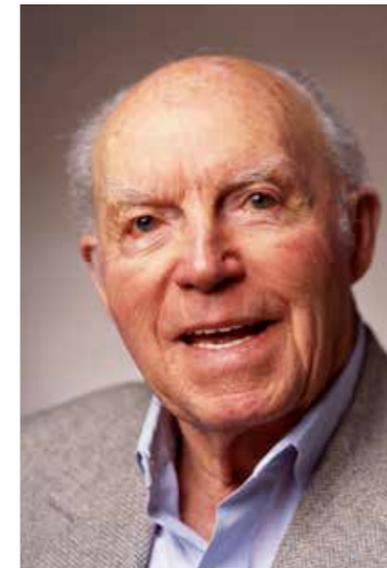
#### The Vision

Years ago, when Donald Shiley conversed about the future of the Shiley Eye Center, he always spoke of patients and his desire for the Center to be a home for the best eye care, vision research and education. Today, our entire team of outstanding clinicians, renowned scientists, committed educators and dedicated staff strive daily to realize his vision.

To our donors and friends, I thank you for your generous and remarkable support.

Sincerely,

# DONALD PEARCE SHILEY



Donald P. Shiley – In Memoriam  
January 19, 1920 – July 31, 2010

*“Donald Shiley was an extraordinary individual and we are honored to have the Shiley name on our Center,”*

*– Robert N. Weinreb, M.D.*

On July 31, 2010, the UC San Diego Shiley Eye Center sadly lost its compassionate and generous benefactor, Donald P. Shiley. Donald Shiley, engineer, medical device inventor and entrepreneur, recognized the need for a world class eye center in San Diego. In 1990, he and his wife Darlene donated the funds to create a comprehensive eye care facility where top ophthalmologists would treat patients, conduct research and train the next generation of leaders in eye care and vision research. “The Shiley Eye Center at UC San Diego will always be a priority for us,” said Mr. Shiley.

The Shileys’ personal experience with vision impairment subsequently led them to support even more programs at the Shiley Eye Center. Whether providing gifts for research, innovative community outreach programs for children and seniors, additional space for patient care and research as the Center grew or simply to offer wise counsel and represent us at community functions, Donald Shiley was the Shiley Eye Center.

Mr. Shiley passed away in San Diego after several years of failing health. To honor him, Darlene Shiley completed the funding for the Stuart I. Brown, M.D. Chair in Ophthalmology in Memory of Donald P. Shiley. According to Robert N. Weinreb, M.D., Director of the Shiley Eye Center and Chairman of the Department of Ophthalmology, “The generosity of Darlene Shiley perpetuates Donald’s legacy and his wish to house a world class eye center in San Diego.

The impact of the Shileys on the Department of Ophthalmology at UC San Diego and in Southern California, as well as nationally and globally is far reaching. “Donald Shiley will long be remembered for giving hope to countless visually challenged individuals and helping to improve their quality of life,” added Dr. Weinreb.



*“My much loved husband was a gentle man with a soaring spirit, deep work ethic, and enormous talent. I will do everything I can to keep that spirit alive in all that we have done and all that I will do in the future in his memory.”*

*– Darlene V. Shiley*

*Photo by Eduardo Contreras/San Diego Union-Tribune. Copyright 2012 San Diego Union-Tribune*



# AN ARTIST'S VISION

From the moment he first learned to hold a pencil, Jerome Walker began drawing on everything and with everything he could find, including on walls with his sister's lipstick. Despite being visually impaired, he built a career as a painter, showing in galleries in Chicago, London and Paris.

In 2011, one of his paintings was recognized by the Regional Juried Show at the San Diego Art Institute. Displayed next to the painting was the artist's dedication: *"This painting is gratefully dedicated to Donald and Darlene Shiley and Dr. Weinreb of the Shiley Eye Center in La Jolla, without whose help this painting (and possibly the artist himself) might never have seen the light of day."*

Walker was nearly blind from glaucoma when he first came to UC San Diego's Shiley Eye Center, where he has been a patient for more than 10 years. In a letter addressed to Mr. and Mrs. Shiley, Walker expressed his gratitude for their visionary support which has enabled him to continue his passion for art.

Due to a childhood illness, Walker was blind by the age of nine and underwent extensive treatment that left him with scar tissue over both corneas, severely limiting his vision for the next 37 years. "All the years I was growing up, I never saw a blackboard in school," recalls Walker, who grew up in a small town in Illinois. Upon graduating from high school, Walker found himself bored with small town life and tried to join the Navy. He managed to fake his way through the required eye exam and was sent to training. "But when I got to the Great Lakes Naval Training Center," said Walker, "they were horrified at how bad my sight was, declared me 4F and sent me home with an Honorable Discharge."

Shortly after that experience, Walker's mother learned of a Rehabilitation Scholarship for the Visually Impaired, and with

help from the scholarship Walker applied and was accepted to the Art Institute of Chicago. As Walker himself put it, "This was akin to a nearly deaf person going to music school!"

Although Walker had always drawn and painted, it was at this point that he began to flourish as an artist and develop his unique abstract style. His work was shown in galleries both in the U.S. and Europe, winning several awards. Throughout the years, Walker worked as a freelance illustrator, an art teacher and later as a senior art director at the Leo Burnett Advertising Agency, where he created television commercials for the Keebler Elves, Tony the Tiger and Ronald McDonald, among others.

Up until this point, Walker had lived his life with significantly impaired vision. Then in 1982, he had his first cornea transplant at the University of Chicago. For the first time in his life—at the age of 45—Walker was able to drive a car.

In 2000, Walker and his wife Julie moved to San Diego. Unfortunately, shortly after arriving everything went wrong with his eyes: glaucoma, cataracts and the failure of the cornea that had been replaced in Chicago. Walker's doctor in Chicago referred him to the Shiley Eye Center and he has been a patient there ever since. After undergoing surgery for glaucoma, cataracts and cornea transplants, Walker was able to paint again and began showing his work in local competitions. One of his paintings was chosen for inclusion in the international book "Art Buzz, 2010."

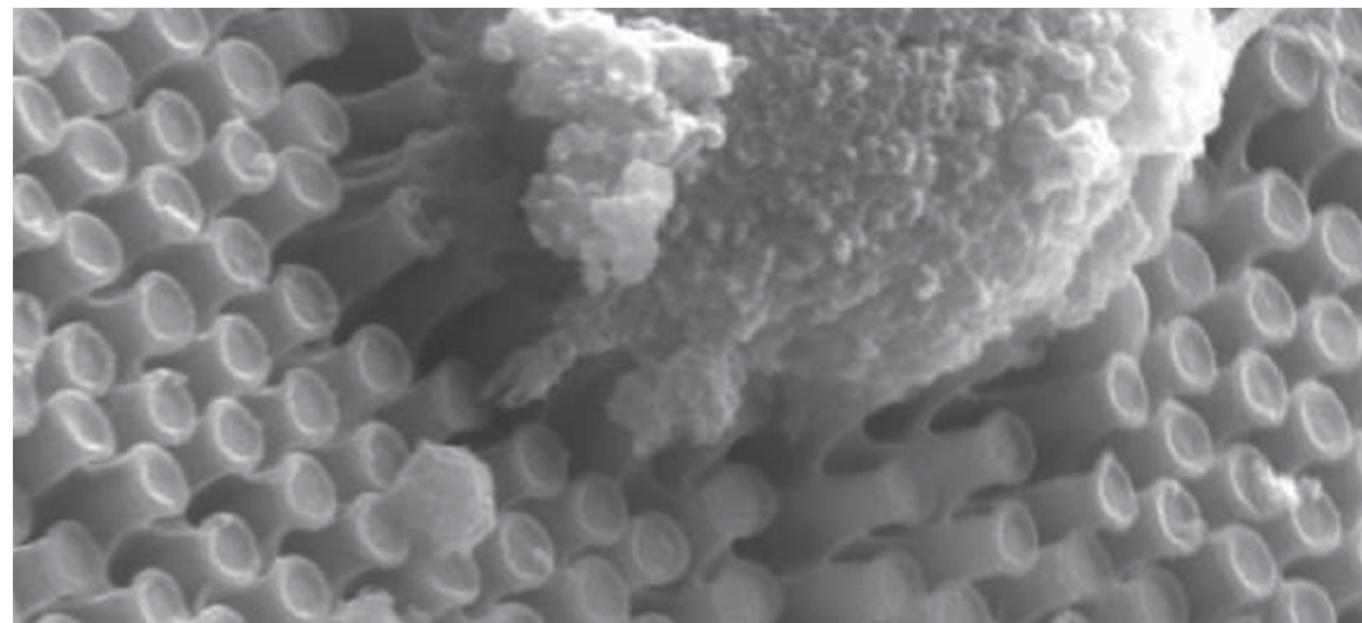
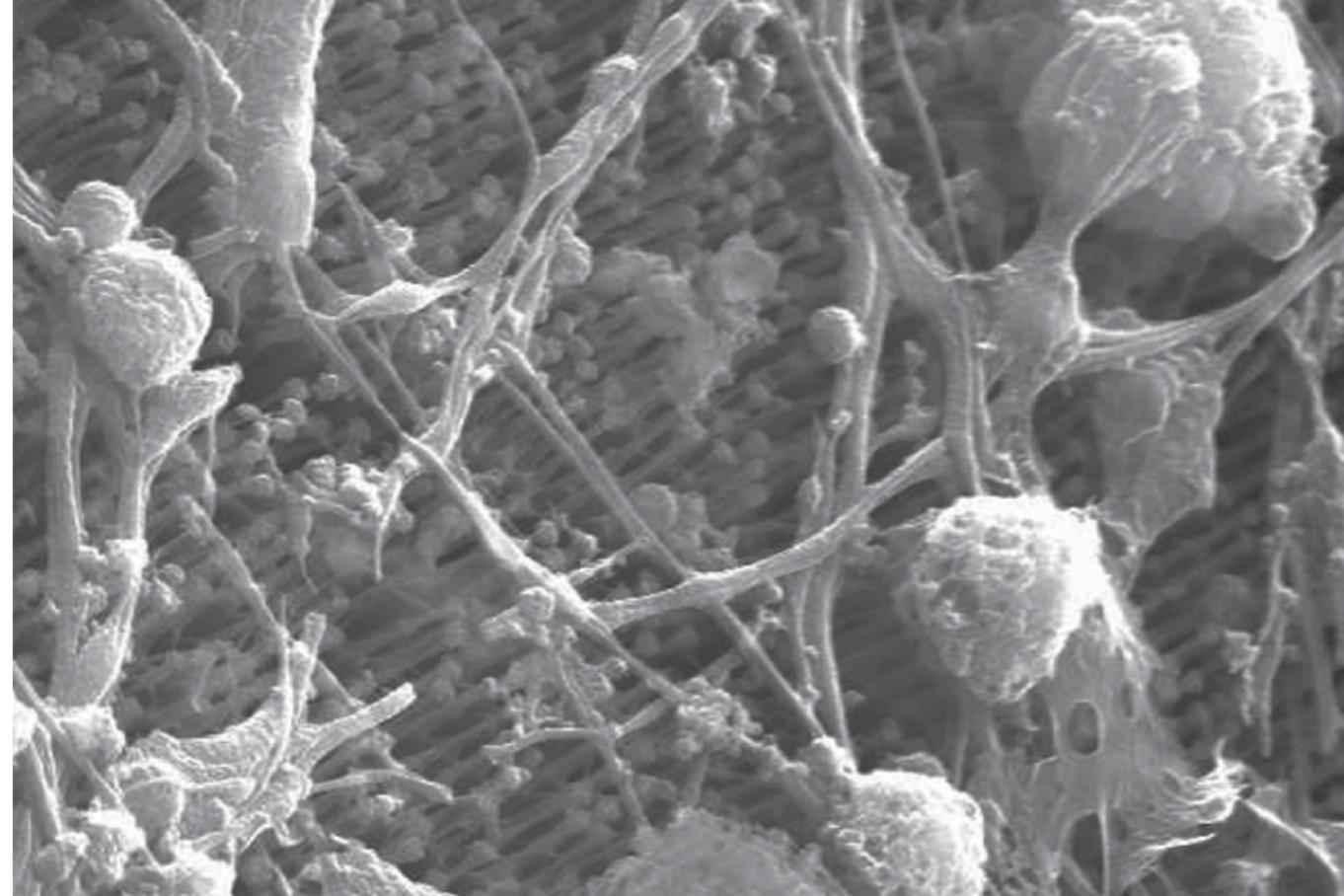


"Julie's Garden #5" by Jerome Walker

*"If it weren't for the kindness and generosity of the Shileys and the care of the doctors at the Shiley Eye Center, my life might have turned out quite differently," said Walker.*

# ENGINEERING A NANOSCALE RETINA PROSTHESIS

TO RESTORE VISION FOLLOWING DEGENERATIVE RETINAL DISORDERS



Scanning electron micrographs showing the photonic nanowires (which can be 0.2-5  $\mu\text{m}$  in diameter and 1-50  $\mu\text{m}$  in length) with primary cortical neurons cultured on top of them. Nanowire arrays are being developed into an ultra-high density retinal prosthesis that exceeds the normal neurobiological resolution of photoreceptor neurons in the retina. The top image (lower magnification) shows extensive neurite outgrowth. The bottom image shows a close up of a cell body on the nanowires. Note how the cell body of the neuron seems to be "pulling" on the nanowires. (Images taken by Massoud Khraiche, Ph.D., UC San Diego)

**A**ttempts to treat retinal diseases such as macular degeneration, retinitis pigmentosa and other degenerative retinal conditions have come from several directions. While many of these strategies offers great promise, each faces numerous clinical challenges. A breakthrough strategy to salvage vision is to use an artificial retina or a retinal prosthesis intended to work with the remaining retina following the degeneration of photoreceptors. Such degeneration of photoreceptors is the cause of vision loss in macular degeneration and retinitis pigmentosa and contributes to vision loss in other conditions. To date no device has successfully restored meaningful functional vision in patients. In a collaboration among laboratories in the Jacobs Retina Center, the UC San Diego Departments of Bioengineering and Electrical Engineering, and the Salk Institute for Biological Science, our team is developing a completely novel device. It is an ultra-high resolution nanoengineered wireless retinal prosthesis device, made up of arrays of ultra-high light sensitive nanowires. This device is being engineered to restore functional vision following degenerative retinal disorders to a resolution that actually exceeds that of the healthy retina.

Retinal prostheses are engineered devices that can be surgically implanted in the eye to assume the job of taking incoming light and transducing it into an electrical signal in the retina, in effect replacing lost photoreceptors. Such a prosthesis can also be programmed to perform the signal processing normally done by the healthy retina. Retinal prostheses have the advantage over biological approaches in that one generally has more control over the engineering

of a device compared to manipulating biology or developing a drug. Furthermore, they do not have the potentially irreversible and unintended consequences such as formation of tumors in gene therapy trials. So while molecular and biological approaches are an important approach to retinal diseases, a retinal prosthesis may be the shortest path towards reaching the clinic first. Our team has shown that prototype devices can stimulate rodent retinas which have damage to the rods and cones and are now proceeding to conduct tests of the compatibility and functionality of the implant in living eyes. Our goal is to begin implanting a next generation device in our patients within a short few years.

This project brings together five world class labs at UC San Diego and one lab from the Salk Institute. Gabriel A. Silva, M.Sc., Ph.D. in bioengineering and ophthalmology, is coordinating the project and brings expertise in neural engineering, translational neuroscience, nanotechnology, calcium optical imaging, and computational neuroscience. William R. Freeman, M.D., director of the Jacobs Retina Center brings his expertise on animal models of degenerative retinal disorders and human clinical trials. Together, Dr. Freeman and Dr. Silva formed and co-direct the Retinal Engineering Center within the Institute for Engineering. Yuhwa Lo, Ph.D. and Deli Wang, Ph.D. from electrical engineering originated the core technology and are experts on conductive nanowires and nanophotonics. Gert Cauwenberghs, Ph.D., co-director of the Institute for Computational Neuroscience is an expert on the design and fabrication of wireless neural circuits. Finally EJ Chichilnisky, Ph.D. rounds out the team at the Salk Institute, where he specializes in ganglion cells and the ganglion cell neural code.



## FROM A PATIENT'S PERSPECTIVE THYROID EYE DISEASE

“I love life and how I look now, thanks to all the wonderful doctors and staff at the Shiley Eye Center who put me back together.”

— Geri Beckord

(left) During active phase of thyroid eye disease (right) After orbital decompression, eye muscle surgery and eyelid retraction repair.



One day Geri Beckord awoke and looked in the mirror. She did not look like herself. Her eyes were bulging and painful. Not only was her vision becoming affected, but she noted that others were beginning to notice as well. She needed help and did not know where to go. Thankfully, her physician referred her to the Thyroid Eye Clinic at Shiley.

Geri was diagnosed with Graves' Disease, an autoimmune disorder that attacks the thyroid gland, the orbital tissues around the eyes, and occasionally the skin of the lower leg. The swelling of soft tissues around Geri's eyes caused them to bulge and her eyelids to retract. She also developed double vision, which can happen when the muscles enlarge and the eyes

become misaligned. The affected thyroid gland usually secretes abnormally high levels of thyroid hormones, causing weight loss, rapid heart rate and nervousness, but does not actually cause the eyes to become affected. The common denominator is an immune system attack. Since not all patients with the typical eye findings have Graves' disease, the broader term Thyroid Eye Disease or TED is the more accepted term.

Shiley's Thyroid Eye Clinic, established in 1997 as the first of its kind in the nation, has been a model for other academic medical centers. This unique clinic makes it possible for patients with TED to be seen by an entire team of specialists in one visit: an adult strabismus specialist, an oculoplastic surgeon, and a neuro-ophthalmologist. Many of the latest diagnostic and treatment options

were developed at Shiley. The team includes: David B. Granet, M.D., (Eye Alignment Disorders), Don O. Kikkawa, M.D. and Bobby S. Korn, M.D., Ph.D. (Orbital and Eyelid Surgery) and Leah Levi, M.B.B.S. (Neuro-ophthalmology).

The decision to treat TED relies on the severity and the activity of the disease. Depending on the degree of involvement, treatments can range from medical therapy or surgical treatment including orbital decompression, muscle or eyelid surgery. Many disillusioned patients have travelled from all over the world to Shiley's Thyroid Eye Clinic after having been told by other doctors that nothing can be done and to “just live with the condition.”

Geri had a severe case of TED and the Shiley team recommended orbital decompression, an operation designed to bring her eyes back in the socket, followed by eye alignment surgery and finally eyelid surgery. She could not be happier with the results.

The Shiley Thyroid Eye Clinic has been an exceptional resource to frustrated patients and physicians and was a godsend to Geri Beckord: “I love life and how I look now, thanks to all the wonderful doctors and staff at the Shiley Eye Center who put me back together.”



## NEW METRICS OF VISION

**G**laucoma is a leading cause of blindness in the world. Although the disease can remain asymptomatic until late, irreversible loss of visual function and decrease in quality of life can rapidly ensue once symptoms appear. Although many advances have been achieved in diagnosis and treatment, glaucoma remains a major cause of disability which can severely impact the way patients perform even the most common daily activities. “It is essential to understand and quantify the impact of the disease on the ability of our patients to perform everyday tasks such as drive a car, read a book, use a computer, or recognize a face,” says Felipe A. Medeiros, M.D., Ph.D., Professor of Ophthalmology at the University of California, San Diego. Dr. Medeiros is the Principal Investigator on a 2.5-million dollar research grant from the National Institutes of Health designed to evaluate functional impairment in glaucoma. “Although the ability to perform daily activities is essential in order to maintain satisfactory quality of life, we still have an incomplete understanding of the impact of glaucoma on task performance,” he continues. One of the most important tasks that can be affected by glaucoma is driving, according to Dr. Medeiros. “Driving is the primary mode of transportation in the United States and the ability to drive is intimately associated with quality of life. We know that glaucoma patients have a higher risk of being involved in motor vehicle crashes, however, we know very little about the factors related to driving

*“The use of a driving simulator allows us to investigate driving and overall cognitive performance in glaucoma patients and to understand the factors related to driving safety in the disease. It will also enable us to predict which patients are at high risk for functional impairment.”*

*- Dr. Medeiros*

researcher with extensive experience in studying driving performance in other conditions such as stroke and Alzheimer’s. Dr. Boer is an engineer and a former Nissan scientist whose expertise involves designing and testing the most advanced software for the automobile industry. “The use of a driving simulator allows us to investigate driving and overall cognitive performance in glaucoma patients and to understand the factors related to driving safety in the disease. It will also enable us to predict which patients are at high risk for functional impairment,” says Dr. Medeiros. The driving simulator has been implemented to the large patient cohort who undergoes research testing at the Hamilton Glaucoma Center, as part of the Diagnostic Innovations in Glaucoma Study (DIGS). Dr. Medeiros has also partnered with Linda Zangwill, Ph.D., Professor of Ophthalmology. “Our approach involves the comprehensive assessment of the glaucoma patient by integrating tests commonly performed in clinical practice with innovative approaches to study disability from the disease,” Dr. Medeiros says. “Our ultimate goal is to be able to develop predictive models that could inform us which patients are at higher risk of developing disability from glaucoma, such as impaired driving. These are the patients that need to be more aggressively treated,” he concludes.

impairment in glaucoma,” he adds. “Although it is clear that vision is essential for driving, it is not evident what vision skills and tests are actually more closely related to the ability of driving safely,” he continues. In order to assess driving performance in glaucoma patients, Dr. Medeiros has partnered with Robert N. Weinreb, M.D., Distinguished Professor and Chair of the Department of Ophthalmology at UCSD, Peter Rosen, M.D., Associate Clinical Professor, and Erwin Boer, Ph.D., to implement a driving simulator at the Hamilton Glaucoma Center at UCSD. Dr. Weinreb is a clinician-scientist with longstanding experience in glaucoma research, whereas Dr. Rosen is a psychophysics

# TRANSFORMING RESEARCH

**A** research team led by principal investigator Kang Zhang, M.D., Ph.D., Professor of Ophthalmology at the Shiley Eye Center has been awarded a five-year, NIH Transformative Award. The goal of Zhang and his team is to restore visual function lost through diseases such as macular degeneration and retinitis pigmentosa.

“The success of this work could mean a paradigm shift in how retinal disease is treated, and could have broad and profound impact on human disease therapies by utilizing the regenerative power of our own stem cells,” said Zhang.

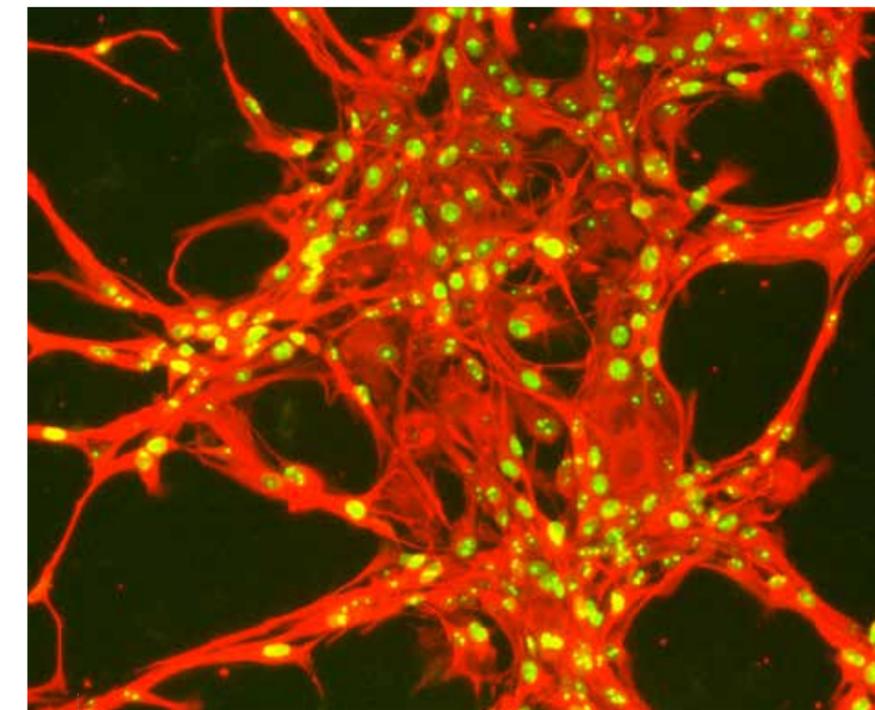
Some vertebrates, such as goldfish and newts, have a remarkable ability to regenerate a lost limb or eye – something it was thought no mammal can do. However, they recently showed proof of principle at a small scale level in mice by turning Muller cells into a type of retinal neuron. “The human genome is quite similar to that of a newt, but we humans seem to have lost the potential to regenerate our own cells, possibly due to some inhibitory mechanism,” Zhang said. “We are seeking small molecule chemicals that can block these inhibitions and consequently unlock humans’ regenerative potential.”

The Transformative Award program, funded

through the Office of the NIH Director and the Common Fund, is intended “to support research that has the potential to transform the way we think about and conduct science, so the recipients represent an elite few with truly bold ideas,” according to Francis S. Collins, M.D., Ph.D., Director of the National Institutes of Health.

The researchers are looking at particular kinds of cells called Muller cells, which are abundant and have the ability to regenerate nerve cells after retinal injury in fish, they usually play a supporting role in the central nervous system neurons of humans, such as those present in the eye or brain. This study proposes to use chemicals to turn Muller cells into photoreceptors in the eye – cells that are lost in two diseases that are leading causes of blindness, macular degeneration and retinitis pigmentosa.

“Our ultimate goal is to use a chemical approach to turn on the regenerative potential of hibernating stem cells such as Muller cells by introducing a small molecule directly into the eye, perhaps even by eye drop or pill,” said Zhang. He added that, since there is no need to transplant cells, the body’s own cells would be used instead, and the therapy wouldn’t have the risk of rejection or tumors.



Immunofluorescence showing human Muller glial cells as adult retinal stem cells. In red, staining for Nestin, a neural stem cell marker and in green, Ki67, a proliferation marker.



# A BRIGHT DAY FOR BENNY

As a UC San Diego alumnus, Kevin Churchill, '96, already knew that the university had a reputation for cutting-edge research and advanced medical care. However, it wasn't until his son Benny was born visually impaired that Churchill discovered the remarkable breadth of leading research taking place at his alma mater.

Benny has Optic Nerve Hypoplasia (ONH), a cause of visual impairment in newborns that can also be associated with hormone deficiencies, developmental delay, sleep dysfunction and seizures. ONH is an underdevelopment of the optic nerve (the nerve that carries visual information from the eye to the brain) in one or both eyes. The degree of vision impairment with ONH varies, from near-normal vision to no light perception at all.

Benny's first ophthalmologist told Churchill and his wife Ziki that nothing could be done for their son. Frustrated by this answer, the Churchills turned to the UC San Diego Department of Ophthalmology at the Shiley Eye Center. There they met Dr. David Granet, director of the Anne F. and Abraham Ratner Children's Eye Center. Granet provided patient care above and beyond the Churchills' expectations, and also talked to them about the potential for scientific research and discoveries to one day help their son, and children like him around the world.

"At UC San Diego, we first ensure that each child gets the best possible personalized care and treatment while each family gets the most up-to-date information," said Granet. "Then we think about new paradigms and how to do better."

Churchill recalls, "We were so relieved to meet Dr. Granet. We have found him to be nothing short of brilliant with the utmost care and love for children with eye related conditions, all packaged with a great personality."

Granet introduced the Churchills to UC San Diego's Dr. Kang Zhang, Professor of Ophthalmology and Genetics at UC San Diego. Zhang is internationally renowned for his work in genetic and stem cell research.

Inspired by the doctors at the Shiley Eye Center and their progressive work, the Churchills decided to help seed a new research fund—The Optic Nerve Regeneration Fund—with the ultimate goal of helping ONH patients to regain their sight. With sufficient funding, the Optic Nerve Regeneration Fund will

enable Zhang and his team to put together an aggressive and ground-breaking research project to develop biotechnology that may one day partially or completely restore vision in ONH patients by using genetic science and stem cells to generate new, usable optic nerve tissue.

"It is an ambitious goal, but one we feel is attainable if we can spread the word and through fundraising get enough support for the research," said Churchill. While donations have been received from friends and family, additional funding is needed in order for the research to take off.

"My wife and I are just ordinary people who give because we know that research leads to practical, every-day applications that advance our health and way of living," said Churchill. "In our case, genetic and stem cell research at UC San Diego has the potential to transform our son's life, and the lives of children like him all over the world. As an alumnus, having UC San Diego lead the way toward that goal is tremendously rewarding."

Granet added, "The donations and support from families like the Churchills make change possible. They literally can impact the treatment for their own child and others like him. We think of that as another way of empowering families."

In their spare time, Churchill and his wife also do outreach in the local community to educate people about Optic Nerve Hypoplasia and the exciting new research at the Shiley Eye Center. Their three-year-old son, Benny, is still under the care of Granet and the family looks forward to seeing what science, research and UC San Diego will accomplish in the future to improve treatments for visual impairment.

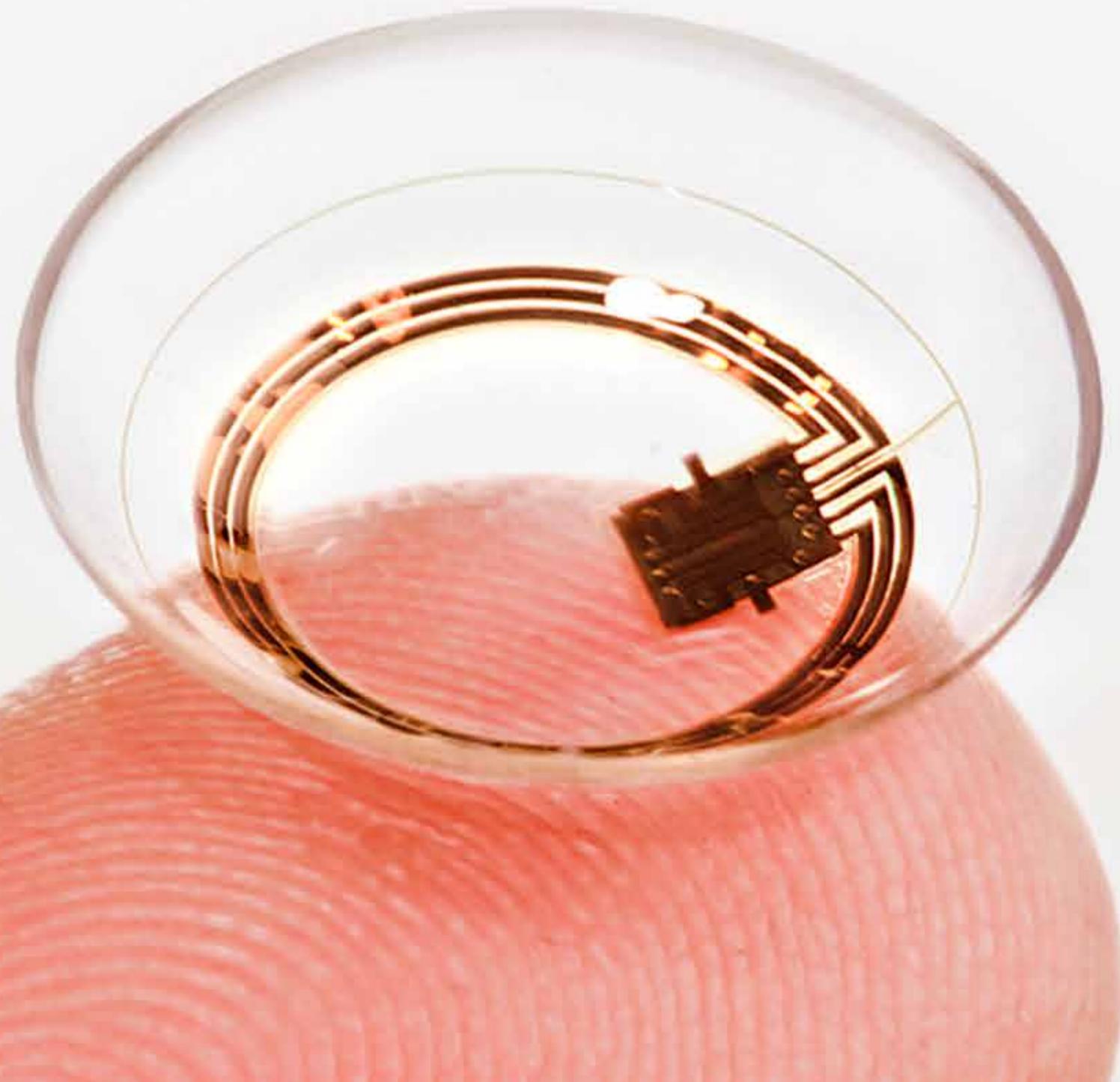
*"The donations and support from families like the Churchills make change possible. They literally can impact the treatment for their own child and others like him. We think of that as another way of empowering families."*

*- Dr. David Granet*



# THE SMART CONTACT LENS

Doctors and researchers at the Hamilton Glaucoma Center at the Shiley Eye Center have launched the first clinical trials in the United States of a futuristic “smart contact lens” that estimates eye pressure – a key risk factor for glaucoma, the second leading cause of preventable blindness in the world.



**T**hough the causes of glaucoma remain murky, high intraocular pressure (IOP) or excessive pressure within the eye appears to be causal in many individuals, promoting deterioration of the optic nerve and progressive loss of vision eventually leading to blindness.

Doctors can slow or prevent the progression of glaucoma by reducing IOP with drugs, but their working knowledge of their patients' conditions traditionally has been limited to an occasional pressure reading obtained during an office visit. "It's a snapshot in time," said Robert N. Weinreb, M.D., Chairman of the Department of Ophthalmology at the Shiley Eye Center. "Current treatments are based on these one-time readings even though they provide limited information."

But recent research, much of it produced by Weinreb, John H.K. Liu, Ph.D., and colleagues at the Hamilton Glaucoma Center's sleep laboratory, show that intraocular pressure rises and falls throughout the day and night. It is often lowest during waking hours when doctors typically see patients, and highest at night when patients are usually asleep.

The new smart contact lens is being tested in collaboration with Felipe Medeiros, M.D., Ph.D, Professor of Ophthalmology and Kaweh Mansouri, M.D., an international fellow, who worked with Sensimed, the Swiss-based maker of the lens, while he was at the University of Geneva in Switzerland.

The lens is designed to provide ophthalmologists with a much more accurate, longer-term assessment of the IOP. Called the "Triggerfish," it consists of a clear, silicone contact lens ringed by a strain gauge and a microprocessor and antenna that transmits data to an external receiver. The gauge continuously monitors the shape of the cornea, indicating greater or lesser intraocular pressure. Information

about IOP fluctuations is immediately transmitted via radio frequencies from the lens' microprocessor to a recording receiver. The microprocessor is powered by an induction loop which uses a magnetic field around the eye to generate the tiny amounts of required electricity. (Induction loops are also used to power hearing-aid implants.)

The Triggerfish is intended to be worn for just 24 hours, then discarded. Glaucoma patients would wear the device once every six or so months. From these brief periods of monitoring, Weinreb said doctors would likely obtain a detailed description of the patient's IOP and eye health.

"It's the difference between seeing a single movie frame and watching a full-length motion picture," Weinreb said. "With more information, we better understand what is happening to the eye. We can provide earlier and more accurate diagnoses. We can detect changing conditions more quickly. We can adjust or alter treatments more effectively. The benefits are transformative. This is personalized medicine for the eye."

The clinical trials for the Triggerfish are the first in this country. Shiley is the only center in the U.S. to have already treated glaucoma patients with the smart contact lens. A similar device was recently approved for use in Europe. Sensimed officials hope for U.S. approval by the Food and Drug Administration soon.

Weinreb said he and colleagues are also pursuing a second IOP-monitoring device to complement the contact lens approach. This one would be implantable and permanent. It would provide continuous measurements over the lifetime of the patient.

# A NEW VISION

We are excited to announce the redesign and launch of the new Shiley Eye Center website. The website was created to better serve our patients and represent our world class facility, faculty and staff.

The comprehensive website allows patients, faculty, residents, fellows, donors and other site visitors the ability to find everything they need on one, easy-to-navigate website.

The redesigned site distinguishes the Shiley Eye Center as the leading medical facility of its kind. The site appeals to audiences from around the globe, showcases our portfolio of services for patients, and articulates what distinguishes the Shiley Eye Center as the best of its kind while maintaining a consistent and user-friendly experience for visitors.

Upon visiting the site, patients will be able to find the exact information they need through the dynamic symptom search tool. By searching for symptoms or conditions, patients will be directed to condition information, treatment instructions, physician names and contact information.

In addition to the symptom search, out of town and international patients will find a plethora of resources to help plan their visit to San Diego. Beautiful photography, engaging video and easy to find resources set the Shiley Eye Center website apart from all others of its kind.

Physicians will find extensive information on continuing education, residency, and fellowship programs. The research of our talented physicians, faculty and staff is housed in one location for easy access. Our generous donors will be featured on the site and prospective donors can easily find meaningful ways to give to Shiley Eye Center.

We hope you enjoy the new website and will visit often!

[www.shileyeye.org](http://www.shileyeye.org)



# SHILEY

# YEAR IN REVIEW

**PATIENT VISITS**  
**120,000**

**SURGERIES PERFORMED**  
**5,459**

**FACULTY**  
**33**

**STAFF**  
**152**

**GRANTS**  
**\$8.3 MILLION**

**PUBLICATIONS**  
**228**

**CLINICAL TRIALS**  
**31**

**SHILEY EYE**  
**91,000 SQ FT**

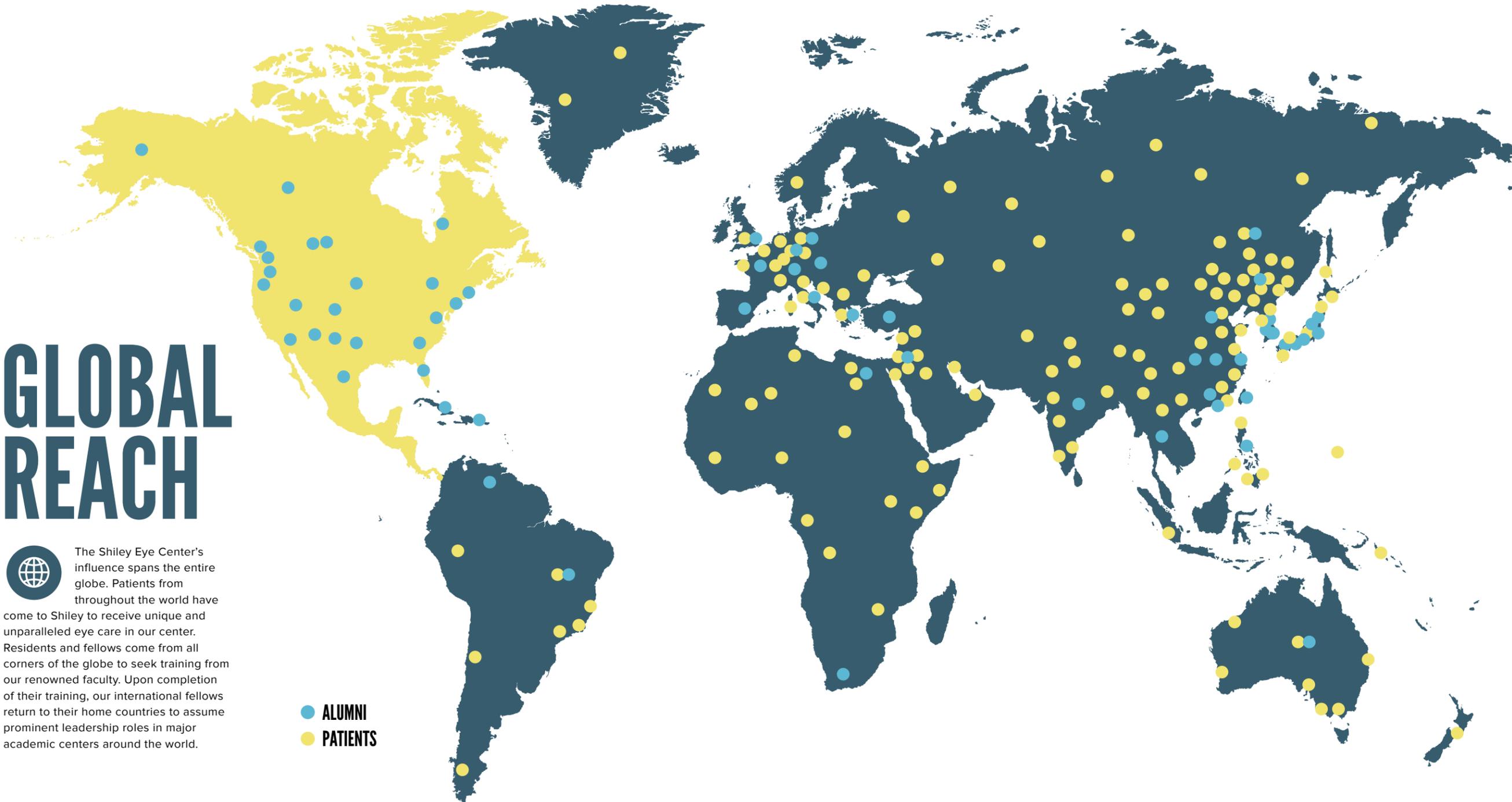
# GLOBAL REACH



The Shiley Eye Center's influence spans the entire globe. Patients from throughout the world have

come to Shiley to receive unique and unparalleled eye care in our center. Residents and fellows come from all corners of the globe to seek training from our renowned faculty. Upon completion of their training, our international fellows return to their home countries to assume prominent leadership roles in major academic centers around the world.

● ALUMNI  
● PATIENTS



## SOME DISTINGUISHED ALUMNI

**Alfonso Anton, M.D.**

Professor of Ophthalmology, Universidad de Cataluna, Barcelona

**Eytan Blumenthal, M.D.**

Chairman and Professor, Department of Ophthalmology, Rambam Hospital, Technion Rappaport Faculty of Medicine, Israel

**Jonathan Crowston, M.D., Ph.D.**

Chairman and Ringland Professor, Department of Ophthalmology, University of Melbourne, Australia

**Robert Fechtner, M.D.**

Professor of Ophthalmology, UMDNJ – New Jersey Medical School

**Robert Feldman, M.D.**

Chairman and Professor, Ruiz Department of Ophthalmology, University of Texas Medical Center at Houston

**Christopher Girkin, M.D.**

Chairman and Professor, University of Alabama, Birmingham

**Neeru Gupta, M.D., Ph.D.**

Professor of Ophthalmology, University of Toronto, Canada

**Dong Myung Kim, M.D.**

Professor of Ophthalmology, National University, Seoul, Korea

**Tae-Woo Kim, M.D.**

Director, Department of Ophthalmology, Seoul National University Bundang Hospital, Seoul, Korea

**Baruch D. Kuppermann, M.D., Ph.D.**

Professor of Ophthalmology, Chief of Retina Service, University of California, Irvine

**Jeong Kyu Lee, M.D., Ph.D.**

Professor of Ophthalmology, Department of Ophthalmology, Chung-Ang University College of Medicine, Seoul, Korea

**Chris Leung, M.D.**

Professor of Ophthalmology, Chinese University of Hong Kong, China

**Steven Mansberger, M.D.**

Vice Chairman, Department of Ophthalmology, Portland, Oregon

**Arthur Mueller, M.D., Ph.D.**

Professor and Head, Department of Ophthalmology, Klinikum Augsburg, Germany

**Pamela Sample, Ph.D.**

Emeritus Professor in Residence, University of California, San Diego

**Seong Wook Seo, M.D., Ph.D.**

Professor and Chief, Department of Ophthalmology, Gyeongsang National University School of Medicine, Jinju, Korea

**Ningli Wang, M.D., Ph.D.**

Chairman and Professor of Ophthalmology, Tongren Eye Center and Capital University, University of Medical Sciences Beijing, China

**Suk-Woo Yang, M.D.**

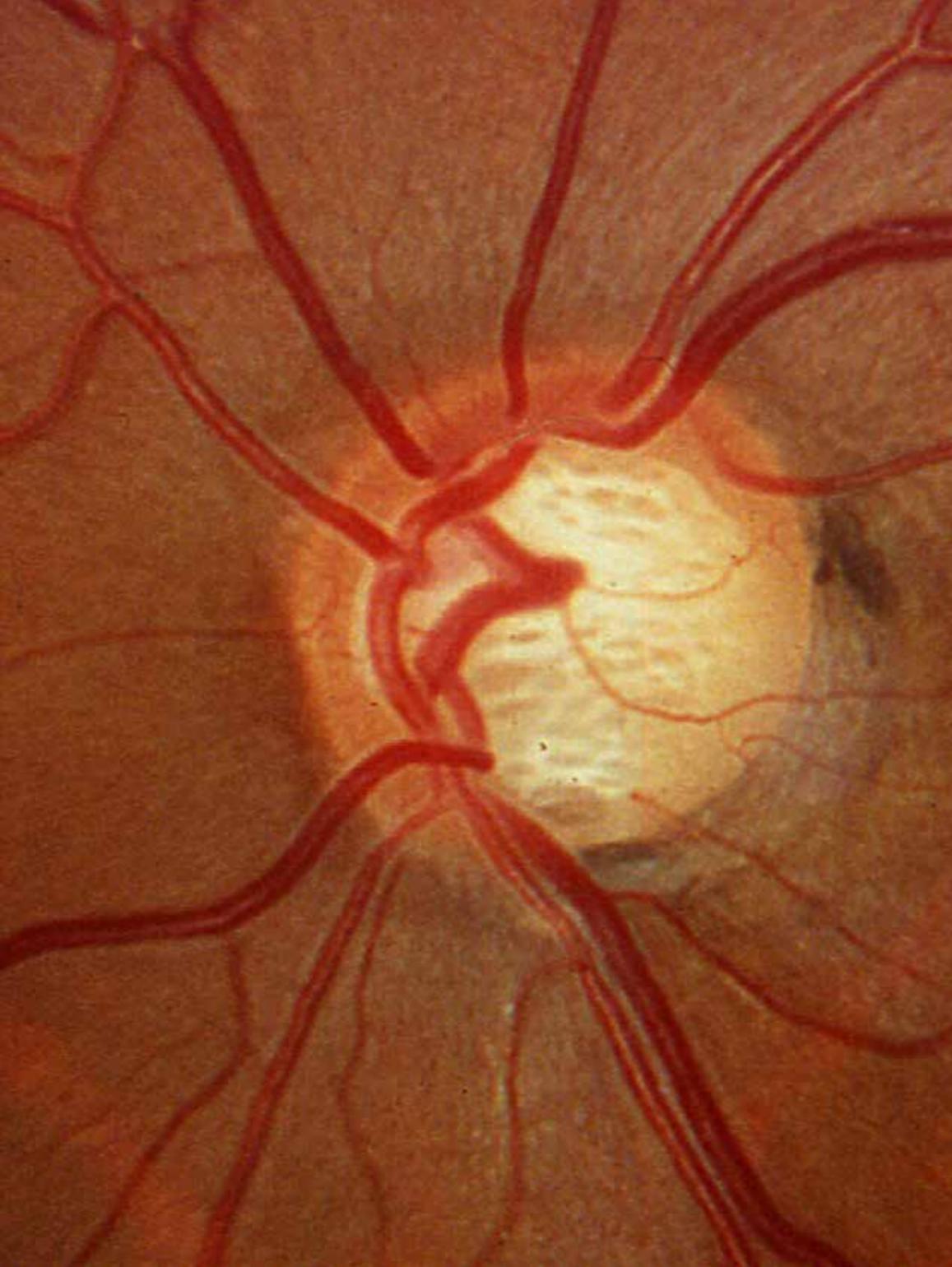
Professor and Division Chief of Oculoplastics, Department of Ophthalmology and Visual Science, College of Medicine, The Catholic University of Korea, Seoul, Korea

**Yeni Yücel, M.D., Ph.D.**

Professor of Pathology and Chief, Ophthalmic Pathology, University of Toronto, Canada



# DEPARTMENT OF OPHTHALMOLOGY



# GLAUCOMA

Glaucoma can cause blindness if untreated and is the second leading cause of blindness in the United States. As many as 3 million Americans have glaucoma, and at least one half do not know it. Although there is no cure yet, loss of vision can be slowed or halted with medical and/or surgical treatment. The best way to protect your sight from glaucoma is to get tested. Early diagnosis and appropriate treatment are the keys to preserving vision.

The UCSD Hamilton Glaucoma Center offers the most comprehensive glaucoma diagnostic services in the world with unique instrumentation that is not yet available anywhere else. In addition to standard optic nerve imaging and functional testing, specialized programs are available including continuous measurement of 24 hour intraocular pressure, a dedicated sleep unit for glaucoma testing, anterior segment imaging, objective perimetry with pupillometry, swept source OCT for imaging of the lamina cribrosa and choroid, and a driving simulator.

Our glaucoma specialists are world-renowned for their clinical and research excellence and offer unparalleled management programs for glaucoma through clinical trials and innovative medical and surgical therapies.



## Robert N. Weinreb, M.D.

Chairman & Distinguished Professor of Ophthalmology  
Director, Shiley Eye Center  
Director, Hamilton Glaucoma Center  
Morris Gleich, M.D. Chair of Glaucoma

### Medical School

Harvard Medical School

### Residency

University of California, San Francisco

### Fellowship

University of California, San Francisco

### Certification

Board Certification in Ophthalmology

### Special Interests

Glaucoma surgery; Optic neuropathy and the aging eye; Uveoscleral outflow; Imaging of optic disc and nerve fiber layer; Mechanisms of optic nerve damage; Neuroprotection in glaucoma; Drug delivery; Cataract surgery

### Notables

Heed Ophthalmic Foundation Award; Past-President, Association for Research in Vision and Ophthalmology; Past-President, World Glaucoma Association; Ridley Medal; Past-President, American Glaucoma Society; Adjunct Professor, Chinese University of Hong Kong; Moecyr E. Alvaro Medal; Ronald Lowe Medal; World Glaucoma Association Founders Award; Leydhecker-Harms Medal; Lifetime Achievement Award American Academy of Ophthalmology; Watson Medal of Cambridge University; President, American Glaucoma Society Foundation; Best Doctors in America; President-Elect, Pan American Glaucoma Society; Top Physician, US News and World Report



## Jeffrey L. Goldberg, M.D., Ph.D.

Professor of Ophthalmology  
Director of Research, Shiley Eye Center

### Medical School

Stanford Medical School

### Residency

Bascom Palmer Eye Institute

### Fellowship

Bascom Palmer Eye Institute

### Certification

Board Certification in Ophthalmology

### Special Interests

Glaucoma surgery; Cataract surgery; Neuroprotection and regenerative ophthalmology; Stem cell and tissue engineering; Nanotechnology

### Notables

Hope for Vision Scientist of the Year; Association for Research in Vision and Ophthalmology David G. Cogan Award; American Society for Clinical Investigators; Research to Prevent Blindness Walt and Lilly Disney Award; Heed Ophthalmic Foundation Fellowship Award; Association of University Professors of Ophthalmology Research Forum Winner; Thermo Fisher Cellome Award; Best Housestaff Teaching Award.



## Felipe A. Medeiros, M.D., Ph.D.

Professor of Clinical Ophthalmology  
Medical Director, Hamilton Glaucoma Center

### Medical School

University of Sao Paulo

### Residency

University of Sao Paulo

### Fellowship

University of California, San Diego

### Certification

Board Certification in Ophthalmology

### Special Interests

Challenging glaucoma cases and new surgical procedures; Cataract surgery; Advanced imaging analysis for diagnosis and detection of glaucoma progression; New techniques for intraocular pressure measurement; Functional impairment in glaucoma; Prediction models and risk assessment in glaucoma

### Notables

World Glaucoma Association Research Award; Ronald Lowe Medal; American Glaucoma Society Mid-Career and Clinician Scientist Awards; Achievement Award American Academy of Ophthalmology; World Health Organization (WHO) Committee for Prevention of Glaucoma Blindness; Member, Glaucoma Research Society



## Linda Zangwill, Ph.D.

Professor of Ophthalmology In Residence

### Graduate School

Harvard School of Public Health (M.S.)  
Ben-Gurion University of the Negev (Ph.D.)

### Postdoctoral Fellowship

University of California, San Francisco

### Special Interests

To improve our understanding of the complex relationship between structural and functional change over time in the aging and glaucoma eye; To develop computational and statistical techniques to improve glaucomatous change detection, reduce the number of visits and optimize the type of testing required; To identify risk factors that can predict glaucomatous progression and rapidly progressing glaucoma

### Notables

Glaucoma Societies; Achievement Award American Academy of Ophthalmology; Association for Research in Vision and Ophthalmology Silver Fellow



**Madhusudhanan Balasubramanian, Ph.D.**

Assistant Project Scientist  
of Ophthalmology

**Graduate School**  
Louisiana State University

**Postdoctoral Fellowship**  
University of California, San Diego

**Special Interests**  
Developing tools to non-invasively measure deformation of the optic nerve head from retinal imaging; Developing computational methods to reduce the amount of testing needed to detect glaucomatous progression; Developing structural biomarkers of glaucoma progression

**Notables**  
NIH / NEI K99/R00 Pathway to Independence award; Imaging and Perimetry Society-Heidelberg Engineering Young Researchers Award



**Christopher Bowd, Ph.D.**

Associate Research Scientist  
of Ophthalmology  
Director, Center-based Visual Field Assessment Center  
Center-based Imaging Data Evaluation and Analysis (IDEA) Center

**Graduate School**  
Washington State University

**Postdoctoral Fellowship**  
University of California, San Diego

**Special Interests**  
Early detection and monitoring of glaucoma; Machine learning classifier analyses of imaging and visual function measurements



**Andrew D. Huberman, Ph.D.**

Assistant Professor of Neurosciences/  
Neurobiology/Ophthalmology

**Graduate School**  
University of California, Davis

**Postdoctoral Fellowship**  
Stanford University School of Medicine

**Special Interests**  
Retinal development and retinal ganglion cells



**Won-Kyu (Daniel) Ju, Ph.D.**

Assistant Adjunct Professor  
of Ophthalmology

**Graduate School**  
The Catholic University in Korea (Masters & Ph.D.)

**Postdoctoral Fellowship**  
Washington University in St. Louis  
Sanford-Burnham Medical Research Institute

**Special Interests**  
Mechanisms for neuroprotection and neurodegeneration in glaucoma; Oxidative stress and glutamate excitotoxicity in glaucoma; Mitochondrial dynamics, bioenergetics and dysfunction in retinal ganglion cell (RGC) and optic nerve head (ONH) astrocyte in glaucoma; Mitochondria-related gene therapy for RGC and ONH astrocyte neuroprotection in glaucoma



**James D. Lindsey, Ph.D.**

Adjunct Professor of Ophthalmology

**Graduate School**  
University of California, San Diego

**Postdoctoral Fellowship**  
University of California, San Diego

**Special Interests**  
Biology of optic nerve, experimental models of glaucoma, and aqueous humor dynamics

**Notables**  
Outstanding Poster Presentation, World Glaucoma Congress, Vienna, Austria



**John H.K. Liu, Ph.D.**

Adjunct Professor of Ophthalmology  
Director, Glaucoma Molecular Pharmacology Laboratory

**Graduate School**  
National Tsing Hua University  
(M.S. Molecular Biology)  
Texas A&M University  
(Ph.D. Pharmacology)

**Postdoctoral Fellowship**  
Harvard Medical School

**Special Interests**  
Regulation of intraocular pressure and ocular blood flow; 24-hour sleep laboratory for glaucoma and other eye diseases



**Peter Rosen, M.D.**

Associate Clinical Professor  
of Ophthalmology

**Medical School**  
SUNY Downstate Medical Center

**Residency**  
Manhattan Eye, Ear & Throat Hospital,  
Cornell University

**Certification**  
Board Certification in Ophthalmology

**Special Interests**  
Connection between visual performance and task performance in all areas of eye disease; Psych-physics of visual performance; Use of driving simulator as a methodology for evaluation on the relationship of visual performance and task performance

**Notables**  
Outstanding Physician Award



**Rigby Slight, M.D.**

Associate Clinical Professor  
of Ophthalmology

**Medical School**  
University of Oklahoma; Internship at UCLA

**Residency**  
University of Southern California

**Certification**  
Board Certification in Ophthalmology

**Special Interests**  
Clinical research in glaucoma; UC San Diego Optic Disc Reading Center



## RETINA AND VITREOUS

Diseases of the retina cause severe and debilitating vision loss. Our retina physicians diagnose and treat macular degeneration, diabetic retinopathy, tumors, inherited retinal disease, retinal detachment, macular holes, and other important retinal diseases. The Joan and Irwin Jacobs Retina Center houses research projects seeking to find solutions for people of all ages who suffer from retinal conditions. The clinical research center at the Jacobs Retina Center enables patients to benefit from the latest advances in diagnostic equipment and therapies. Researchers working in the Center's laboratories apply the power of genetics and stem cell research towards the treatment of blinding diseases.



### **William R. Freeman, M.D.**

Vice Chairman and Distinguished Professor of Ophthalmology  
Director, Jacobs Retina Center  
Co-Director Retina Division

#### **Medical School**

Mount Sinai School of Medicine, New York

#### **Residency**

Lenox Hill Hospital, New York

#### **Fellowship**

University of California, San Francisco (Uveitis & Immunology)  
University of Southern California, Los Angeles (Vitreous-Retinal Surgery)

#### **Certification**

Board Certification in Ophthalmology

#### **Special Interests**

Complicated retinal detachment; Diabetic retinopathy; Macular holes & age related macular degeneration

#### **Notables**

Best Doctors in America; Research to Prevent Blindness, Physician Scientist Award; Foundation Fighting Blindness Award; City of San Diego Mayor Award; American Academy of Ophthalmology; Editor's Choice Lecture; America's Top Ophthalmologists; ARVO Silver Medal Fellow; Professor of Ophthalmology (Hon.), Wenzhou Medical College, People's Republic of China



### **Michael H. Goldbaum, M.D.**

Professor of Ophthalmology In Residence  
Co-Director Retina Division

#### **Medical School**

Tulane University School of Medicine (M.D.)  
Stanford University (M.S.)

#### **Residency**

Tulane University School of Postgraduate Medicine & U.S. Naval Hospital

#### **Fellowship**

Cornell University Medical Center and New York Hospital

#### **Certification**

Board Certification in Ophthalmology

#### **Special Interests**

Surgical & medical treatment of the retina and vitreous; Macular degeneration; Pediatric retina; Ocular tumors; Glaucoma informatics

#### **Notables**

Senior Achievement Award American Academy of Ophthalmology; Top Doctors, San Diego



### Henry A. Ferreyra, M.D.

Assistant Clinical Professor  
of Ophthalmology

#### Medical School

University of California, San Diego

#### Residency

University of California, San Diego

#### Fellowship

University of California, San Diego

#### Certification

Board Certification in Ophthalmology

#### Special Interests

Electrophysiology; Inherited disorders of the retina; Age-related macular degeneration; Diabetic retinopathy; Retinopathy of prematurity

#### Notables

Outstanding Teaching Award



### Kang Zhang, M.D., Ph.D.

Professor of Ophthalmology  
Chief, Ophthalmic Genetics

#### Medical School

Harvard Medical School/Massachusetts Institute of  
Technology (M.D./Ph.D. Program)

#### Residency

Wilmer Eye Institute at Johns Hopkins University

#### Postdoctoral Fellowship

University of Utah School of Medicine

#### Certification

Board Certification in Ophthalmology

#### Special Interests

Age related macular degeneration; Diabetic retinopathy; Inherited retinal degeneration

#### Notables

Burroughs Wellcome Fund Clinical Scientist Award; Mentored Clinician Scientist Award; Lew R. Wasserman Merit Award; Charles Schepens Award for Excellence in Retina Research; Stark Research Award in Ophthalmology; Knights Templar Eye Foundation Research Award; First Bower Award



### Radha Ayyagari, Ph.D.

Associate Professor In Residence  
of Ophthalmology

#### Graduate School

Osmania University, Hyderabad, India

#### Postdoctoral Fellowship

Molecular Genetics at the National Eye Institute,  
NIH, Bethesda

#### Special Interests

Molecular genetics of macular and retinal dystrophy; Biological mechanisms underlying retinal diseases; Age-related macular degeneration; Diabetic retinopathy

#### Notables

Sybil B. Barrington Scholar Award; Lew R. Wasserman Merit Award



### Dirk-Uwe Bartsch, Ph.D.

Associate Adjunct Professor  
of Ophthalmology  
Co-Director, Jacobs Retina Center

#### Graduate School

University of California, San Diego

#### Postdoctoral Fellowship

University of California, San Diego

#### Special Interests

Retinal Imaging; Scanning Laser Imaging - confocal/non-confocal; Optical Coherence Tomography (OCT); Indocyanine Green and Fluorescein Angiography; Tomographic Reconstruction of the Posterior Poles

#### Notables

Achievement Award American Academy of Ophthalmology



### Lingyun Cheng, M.D., Ph.D.

Associate Adjunct Professor  
of Ophthalmology  
Director, Ocular Pharmacology

#### Medical School

Shanxi Medical University, China

#### Residency

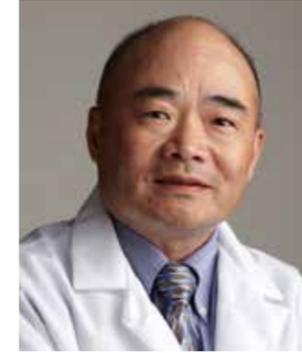
The First Teaching Hospital of Shanxi Medical University, China

#### Postdoctoral Fellowship

University of California, San Diego  
Ideta Eye Hospital, Japan

#### Special Interests

Ocular drug delivery and vitreoretinal diseases



### Peter Shaw, Ph.D.

Associate Project Scientist  
of Ophthalmology

#### Graduate School

McMaster University, Ontario, Canada

#### Postdoctoral Fellowship

University of California, San Francisco

#### Special Interests

Impact of genetics and innate immunity on eye; Gene therapy using engineered antibodies; Role of oxidative stress and its functional targets and therapies in macular degeneration; Diabetic retinopathy; Inherited retinal degenerations; Plasma biomarkers for eye diseases

#### Notables

Cheng Scholar; Van Slyke Award



### Gabriel A. Silva, M.Sc., Ph.D.

Associate Professor of Bioengineering  
Associate Adjunct Professor  
of Ophthalmology  
Jacobs Faculty Fellows Professor  
of Bioengineering

#### Graduate School

University of Illinois at Chicago (Ph.D.)  
University of Toronto (M.Sc.)

#### Postdoctoral Fellowship

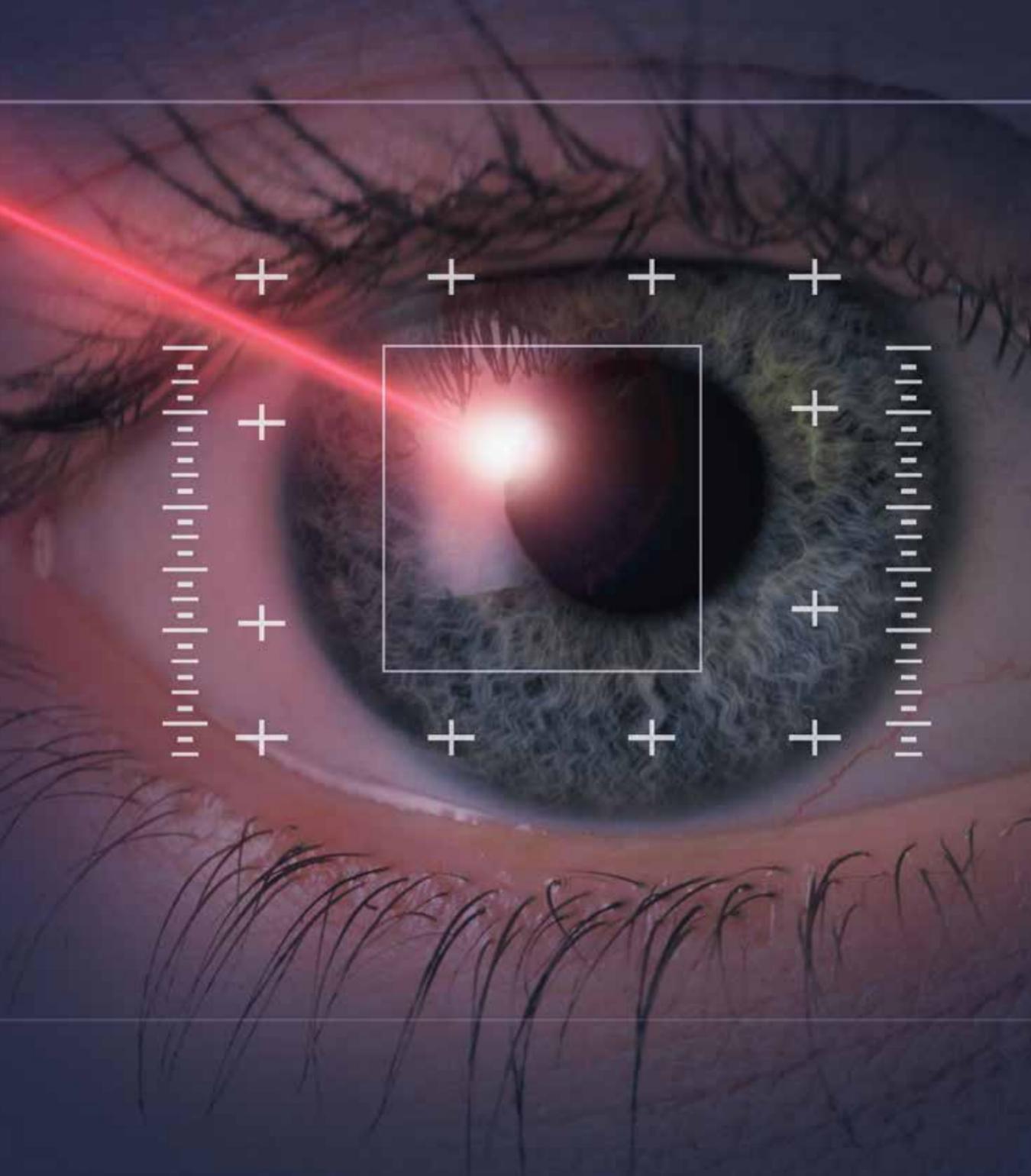
Northwestern University

#### Special Interests

Cell signaling and information processing in biological cellular neural networks; Retinal physiology; Neural engineering; Degenerative retinal disorders

#### Notables

Beverley and Clarence Chandran Distinguished Lecture, Duke University; Jacobs Faculty Fellows Endowed Chair in Bioengineering; American Society of Mechanical Engineers (ASME) Y.C. Fung Young Investigator Award; Wallace Coulter Foundation Early Career Award



## CORNEA AND REFRACTIVE

The Shiley Eye Center Cornea and Refractive speciality is dedicated to the health and functioning of the cornea and combines unparalleled care, expertise, and state-of-the-art equipment to ensure the best experience for patients. Shiley offers a comprehensive range of routine, complex and high-risk corneal and external diseases, as well as the most current vision correction procedures.



### Natalie Afshari, M.D.

Professor of Ophthalmology  
Chief, Division of Cornea and Refractive Surgery

#### Medical School

Stanford Medical School

#### Residency

Massachusetts Eye and Ear Infirmary

#### Fellowship

Massachusetts Eye and Ear Infirmary

#### Certification

Board Certification in Ophthalmology

#### Special Interests

Cataract surgery; Corneal transplantation; Descemets stripping endothelial keratoplasty (DSEK); Intacs for keratoconus; Laser refractive surgery, including LASIK, LASEK/Advanced Surface Ablation, PRK, PTK, Surgical and medical diseases of cornea.

#### Notables

Best Doctors in America; Top Doctors; Top 10 Women in Medicine Award; American Academy of Ophthalmology Achievement Award; American Academy of Ophthalmology Secretariat Award; Councilor Emeritus American Academy of Ophthalmology; Co-editor Principles and Practice of Cornea; Research to Prevent Blindness Award; Heed Foundation Award; Teacher of the Year Award; Mentor Examiner for American Board of Ophthalmology; Cornea Society Board of Directors; Chief Scientific Poster Judge American Society of Cataract and Refractive Surgery; Deputy Leader for American Academy of Ophthalmology Council



### Stuart I. Brown, M.D.

Professor of Ophthalmology  
Dr. Richard and Tatiana Lansche Chair of Ophthalmology

#### Medical School

University of Illinois Medical School

#### Residency

Tulane Medical School

#### Fellowship

Massachusetts Eye and Ear Infirmary

#### Certification

Board Certification in Ophthalmology

#### Special Interests

Corneal transplantation; Cataract surgery

#### Notables

Heed Ophthalmic Foundation Award; McLean Medal, Cornell/Columbia University; Outstanding Teacher Award



### Weldon W. Haw, M.D.

Clinical Professor of Ophthalmology  
Chief of Ophthalmology at Veterans Administration Medical Hospital

#### Medical School

University of California, Los Angeles School of Medicine

#### Residency

Stanford University School of Medicine (Chief Resident)

#### Fellowship

Stanford University School of Medicine

#### Certification

Board Certification in Ophthalmology

#### Special Interests

Cataract surgery; Cornea transplantation; Refractive surgery/LASIK

#### Notables

America's Top Doctors



### Chris W. Heichel, M.D.

Associate Clinical Professor  
of Ophthalmology

#### Medical School

Chicago Medical School

#### Residency

University of California, San Diego (Chief Resident)

#### Fellowship

University of California, San Diego

#### Certification

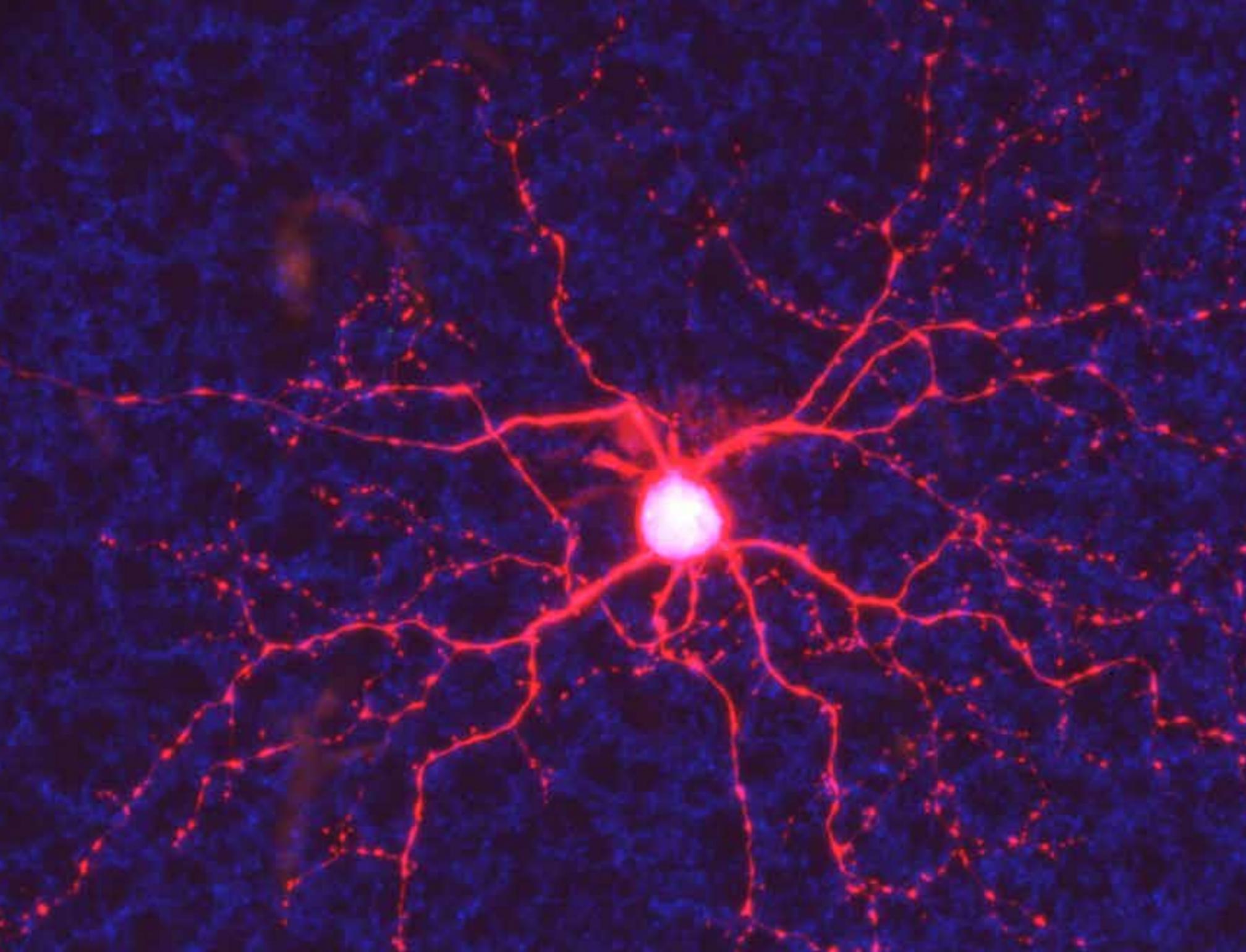
Board Certification in Ophthalmology

#### Special Interests

Corneal transplantations and keratoprotheses; challenging cataract and IOL surgeries; LASIK, Intacs, & Visian ICL; Advanced techniques in laser & refractive surgery; Keratoconus; Ocular surface tumors; Limbal stem cell transplantation

#### Notables

Outstanding Teacher Award; America's Top Ophthalmologists



# NEURO-OPHTHALMOLOGY

Neuro-ophthalmologists diagnose and treat neuro-sensory disorders including brain tumors, double vision, giant cell arteritis, ischemic optic neuropathy, optic neuritis, papilledema, pseudotumor cerebri, thyroid eye disease and visual field defects. Shiley Eye Center's skilled neuro-ophthalmologists conduct routine diagnostic tests and a thorough evaluation while working with the referring physician to manage the condition or illness.



## Leah Levi, M.B.B.S.

Clinical Professor of Ophthalmology & Neurosciences

### Medical School

University of Sydney, Australia

### Residency

Tufts - New England Medical Center

### Fellowship

Wilmer Eye Institute of the Johns Hopkins University

### Certification

Board Certification in Ophthalmology

### Special Interests

Optic nerve; Double vision; Visual fields; Thyroid eye disease

### Notables

Top Doctors San Diego; Achievement Award; American Academy of Ophthalmology; President, North American Neuro-Ophthalmology Society; Outstanding Teacher Award in Neurology



## Peter J. Savino, M.D.

Clinical Professor of Ophthalmology & Neurosciences

### Medical School

University of Bologna School of Medicine

### Residency

Georgetown University Medical Center

### Fellowship

University of Miami

### Certification

Board Certification in Ophthalmology

### Special Interests

Myasthenia gravis; Optic neuritis, atrophy and neuropathy; Brain and nervous system tumors; Visual field defects; Degenerative, metabolic inflammatory & demyelinating diseases; Vascular disorders

### Notables

Life Achievement Honor Award, American Academy of Ophthalmology; Honorary Fellowship, The Royal Australian and New Zealand College of Ophthalmologists; George L. Tabor, M.D. Award; Lifetime Member Awarded, Philadelphia Ophthalmology Club; New York State Sons of Italy Anton Banko Award; Golden Apple Award, Best Teacher of the Year Award; One of the "Best 100 Ophthalmologists in America," Ophthalmology Times; Beem Fisher Award, Chicago Ophthalmological Society



## OPHTHALMIC PLASTIC AND RECONSTRUCTIVE SURGERY

Orbits. Eyelids. Face. Lacrimal system. These are the domains of oculofacial plastic surgery. Birth defects, cancer, trauma and the aging process can all alter the periorbital region. These surgeons rebuild, reconstruct, renew and make whole again. The UCSD Division of Ophthalmic Plastic and Reconstructive Surgery is an internationally recognized leader in patient care, teaching and research. Dr. Kikkawa and Dr. Korn have pioneered innovative operations and techniques that have become the standard.



### **Don O. Kikkawa, M.D., F.A.C.S.**

Vice Chairman and Professor of Clinical Ophthalmology  
Chief, Division of Ophthalmic Plastic and Reconstructive Surgery

#### **Medical School**

St. Louis University School of Medicine

#### **Residency**

University of California, Los Angeles

#### **Fellowship**

University of Wisconsin, Madison

#### **Certification**

Board Certification in Ophthalmology

#### **Special Interests**

Oculofacial surgery - aesthetic and reconstructive; Eyelid, lacrimal and orbital surgery; Thyroid eye disease - orbital decompression and eyelid surgery; Craniofacial disorders involving the eyelids and orbits; Orbital and eyelid tumors

#### **Notables**

President-elect American Society of Ophthalmic Plastic and Reconstructive Surgery, Best Doctors in America; Top Doctor, US News and World Report; Top Doctors San Diego; Lester T. Jones Award; Marvin H. Quickert Award; ASOPRS Research Award; American Academy of Ophthalmology Senior Achievement Award; Outstanding Teaching Award



### **Bobby S. Korn, M.D., Ph.D., F.A.C.S.**

Associate Professor of Clinical Ophthalmology

#### **Medical School**

University of Texas, Southwestern Medical School (M.D. & Ph.D.)

#### **Residency**

University of California, San Diego (Chief Resident)

#### **Fellowship**

University of California, San Diego

#### **Certification**

Board Certification in Ophthalmology

#### **Special Interests**

Aesthetic and reconstructive surgery (eyelid & face); blepharoplasty (eyelid lift surgery); Ptosis repair surgery; Asian/ethnic eyelid surgery (double eyelid surgery); Congenital birth defects; Thyroid eye disease – orbital decompression, eyelid retraction repair, ocular oncology, ocular surface disease, management of eyelid & orbital tumors & cancers; Endoscopic lacrimal (tear drainage) surgery; Cosmetic skin rejuvenation; Orbital stem cells

#### **Notables**

Top Doctor, US News and World Report; Top Doctors San Diego, American Academy of Ophthalmology Achievement Award; ASOPRS Research Award; Marvin H. Quickert Award; Outstanding teaching Award; Star Award for highest rated course, AAO; Editor, Video Atlas of Oculofacial Plastic and Reconstructive Surgery



## PEDIATRIC OPHTHALMOLOGY AND ADULT EYE REALIGNMENT SERVICES

Preventing and treating vision loss and ocular problems in children is the highest priority at the Ratner Children's Eye Center. Dr. David Granet and Dr. Shira Robbins are world-renowned specialists in helping children with eye misalignments (strabismus), nystagmus, congenital diseases like pediatric cataracts and glaucoma, acquired problems from blocked tear ducts to "lazy eye" (amblyopia) as well as trauma. From premature babies to teenagers, our team ensures that each child seen at the family-oriented Ratner Children's Eye Center is given the attention and personal medical care they deserve in a child-friendly atmosphere. Adults with strabismus suffer from an old childhood problem, trauma, or a condition causing eye misalignment and require individualized intervention. Recognized worldwide for their teaching and developments in this field, the specialized surgeons at the Ratner Eye Center can help virtually everyone – regardless of age – suffering from various ocular misalignments and their consequences.



### David B. Granet, M.D., F.A.C.S., F.A.A.P.

Professor of Ophthalmology & Pediatrics  
Anne F. Ratner Chair of Pediatric Ophthalmology  
Director, Anne F. and Abraham Ratner  
Children's Eye Center  
Director, Divisions of Pediatric Ophthalmology  
& Eye Alignment Disorders

#### Medical School

Yale University School of Medicine

#### Residency

New York University Medical Center  
(Chief Resident)

#### Fellowship

Children's Hospital of Philadelphia  
Scheie Eye Institute

#### Certification

Board Certification in Ophthalmology

#### Special Interests

Pediatric ocular issues & strabismus; Adult eye misalignments; State-of-the-art adjustable suture strabismus surgery; Nystagmus; Childhood eye alignment disorders; Learning disorders & role of vision

#### Notables

Senior Achievement Award AAO; American Association of Pediatric Ophthalmology Senior Honor Award; Chair-Elect American Academy of Pediatrics (AAP) Section of Ophthalmology; Top Physician (1%) US News and World Report; Best Doctors in America; Top Doctors in San Diego; Visiting Professor National University Singapore; Co-Founder World Congress of Paediatric Ophthalmology & Strabismus; Co-Editor AAP Case Studies in Ophthalmology; Co-Director AAO Pediatric Ophthalmology Subspecialty Day 2011; Bronze Telly Award; Gold Aurora Award; Emmy Award



### Shira L. Robbins, M.D., F.A.A.P.

Clinical Associate Professor of  
Ophthalmology  
Educational Director of the Pediatric  
Ophthalmology/Strabismus Division

#### Medical School

Medical College of Pennsylvania Hospital

#### Residency

Hahnemann University Hospital

#### Fellowship

University of California, San Diego & Naval  
Medical Center

#### Certification

Board Certification in Ophthalmology

#### Special Interests

Strabismus/eye misalignment/double vision; Amblyopia; Retinopathy of prematurity; Pediatric glaucoma & cataracts, including intraocular lens placement; Nasolacrimal duct disorders; Congenital eye syndromes; Craniofacial syndromes; Systemic diseases affecting the eyes; Nystagmus

#### Notables

Best Doctors in America



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## THYROID EYE CLINIC

The UC San Diego Thyroid Eye Clinic began in 1997 as the first of its kind in the nation. Thyroid Eye Disease is a complex autoimmune disease that affects not only vision but also causes pain and deformity. Drs. Granet, Kikkawa, Korn and Levi have helped hundreds of patients with this disfiguring disorder and have published extensively on its characteristics and treatment.



*(from left to right) David B. Granet, M.D., Leah Levi, M.B.B.S., Don O. Kikkawa, M.D., Bobby S. Korn, M.D., Ph.D.*



## COMPREHENSIVE OPHTHALMOLOGY

The UC San Diego Comprehensive Ophthalmology division provides a variety of services and ophthalmic evaluations that screen and treat a wide range of ophthalmic conditions, including cataracts, ocular surface disorders, glaucoma, diabetic retinopathy, conjunctivitis, blepharitis and macular degeneration. Primary eye care is provided for all types of conditions of the eye and surrounding structures, both routine and urgent. Treatments offered vary from medications and glasses prescriptions; to laser therapy, small in-office procedures and more invasive surgical options.



### **Jeffrey E. Lee, M.D.**

Clinical Assistant Professor of Ophthalmology  
Residency Program Director

#### **Medical School**

University of California, San Diego

#### **Residency**

University of California, San Diego

#### **Certification**

Board Certification in Ophthalmology

#### **Special Interests**

Facial burns; Orbital trauma; Ocular manifestations of HIV

#### **Notables**

Outstanding Teacher Award



### **Thao P. Nguyen, M.D.**

Assistant Clinical Professor of Ophthalmology

#### **Medical School**

University of Oklahoma, Tulsa

#### **Residency**

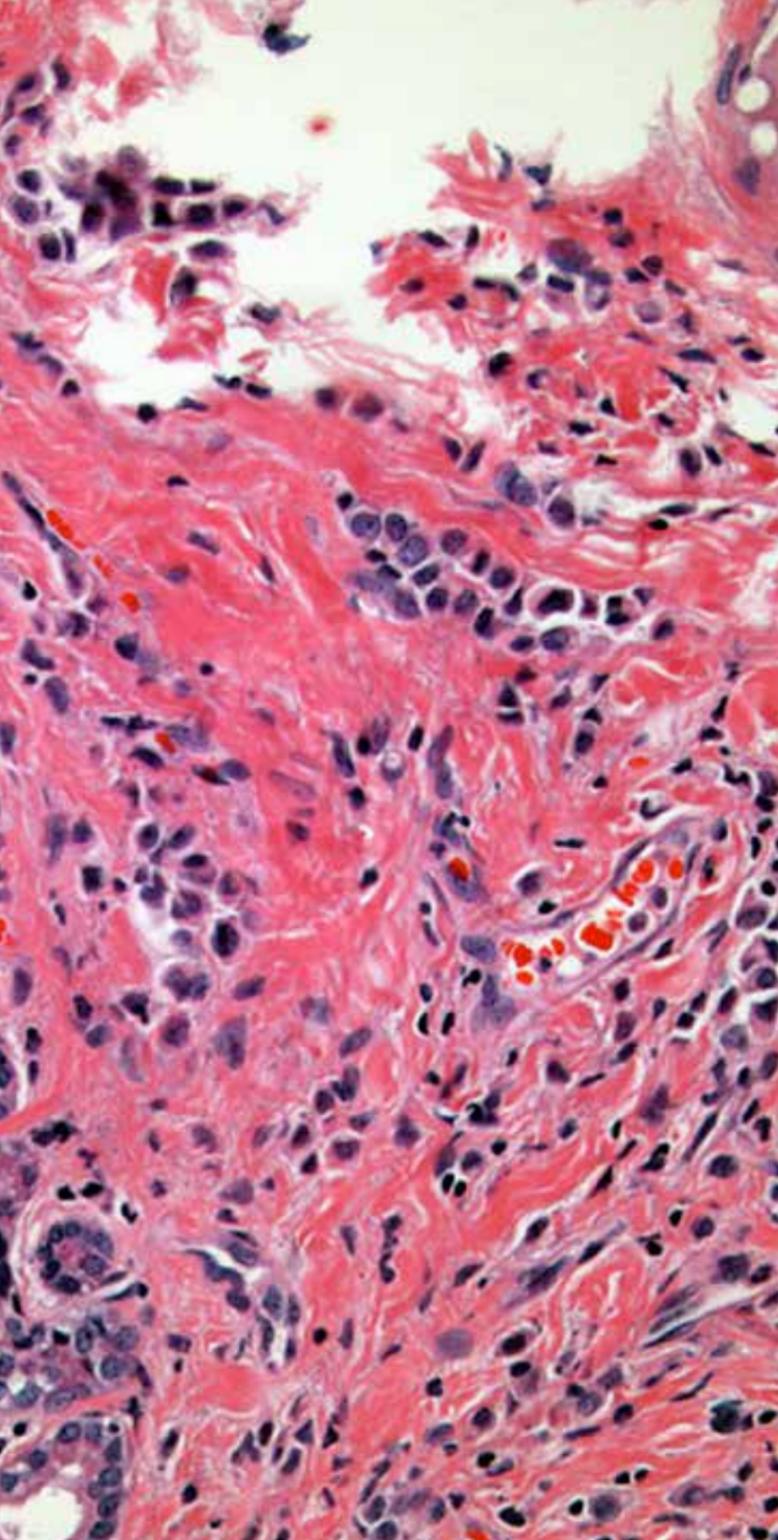
University of Rochester - New York

#### **Fellowship**

University of California, San Diego

#### **Certification**

Board Certification in Ophthalmology



## OPHTHALMIC PATHOLOGY

Ophthalmic pathology service focuses on diseases of the eye and its neighboring tissues. Precision diagnosis of diseases is provided by the ophthalmic pathology service. Diseased tissues are examined macroscopically, microscopically and on the ultrastructural level. Advanced genomic, proteomic, and cytogenetic techniques can be utilized to diagnose diseases at a molecular level. The pathologic diagnosis of the disease plays a vital role in patient care.



**Jonathan H. Lin, M.D., Ph.D., F.C.A.P.**

Assistant Professor of Ophthalmology  
Pathology, Cellular and Molecular Medicine

### Medical School

Columbia University College of Physicians & Surgeons (M.D. & Ph.D.)

### Residency

Brigham Women's Hospital (Anatomic Pathology)

### Fellowship

University of California, San Francisco  
(Ophthalmic Pathology)

### Certification

Board Certification in Anatomic Pathology

### Special Interests

Ophthalmic Pathology including pigmented ocular lesions (uveal melanoma, primary acquired melanosis), basal cell carcinoma, sebaceous gland lesions, inflammatory lesions (sclerosing orbital inflammatory pseudotumor, IgG4 disease), MALToma, corneas (PKPs, DSAEKs), conjunctival biopsies (conjunctival intraepithelial neoplasia - CIN), orbital lesions, intraocular fine needle aspirates/vitrectomy specimens; Cellular and molecular mechanisms of retinal degeneration; RPE and ocular stem cells.

### Notables

American Society for Investigative Pathology Ramzi Cotran Early Investigator Award; Karl Kirchgessner Foundation Vision Research Award; American Federation for Aging Research New Investigator Award; Hellman Family Foundation Jon I. Isenberg Fellow; Hope for Vision Foundation New Investigator Award



**Anne B. Ho, O.D.**



**Pamela A. Hoo, O.D.**



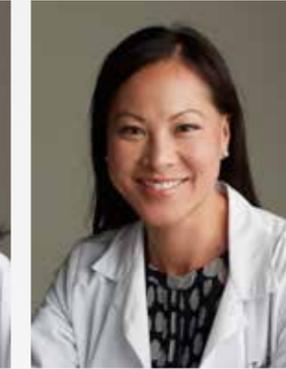
**Lara Hustana, O.D.**



**John F. Kulischak, O.D.**



**Lianne Mizoguchi, O.D.**

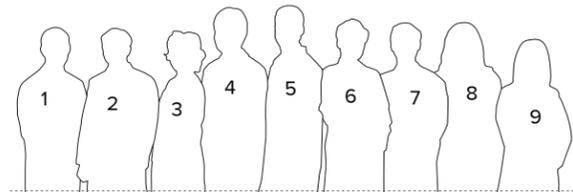


**Jessica A. Tasto, O.D.**



## OPTOMETRY & LOW VISION

Shiley Eye Center optometrists are eye care professionals who perform comprehensive eye exams and are experts at fitting all types of contact lenses and glasses. Visual impairment from inherited diseases to diabetic retinopathy and macular degeneration can result in profound vision loss. Using the latest technological advancements in optical aids, optometrists provide much needed care for our low vision patients. Working hand in hand with Shiley ophthalmologists, the optometry service strives to deliver the best possible care to each patient.



1st year residents: [8] Charlotte Gore, M.D., [9] Elizabeth Pinney, M.D., [6] Cristiana Vasile, M.D.

2nd year residents: [7] Jeffrey Liu, M.D., [5] Solomon Shaftel, M.D., Ph.D., [1] Kevin Tan, M.D.

3rd year residents: [3] Chief Resident: Sara Bozorg, M.D., [2] Milad Hakimbashi, M.D., [4] Jonathan Tung, M.D.

# RESIDENCY

Our highly selective residency program receives over 400 applications per year from all over the country to fill four positions. It is known for its outstanding clinical and surgical training, as well as the value placed on scholarly activity and compassionate patient care. Our residents are among the brightest and most motivated, and continue to be high achievers during and after their training. As a result, graduating residents are regularly chosen for competitive post-residency Fellowship training in various subspecialties of Ophthalmology, such as Cornea,

Glaucoma, Ophthalmic Plastic and Reconstructive Surgery and Retina.

During their training residents learn, under the supervision of the renowned Shiley faculty, to care for patients from all walks of life and with every type of eye problem, from common to very rare eye conditions. In addition, with Departmental support, residents partake in the many cutting-edge research opportunities available in the UC San Diego Department of Ophthalmology and present their work at pre-eminent national meetings

The UC San Diego Ophthalmology Residency Training Program is a three-year program with a total of 12 resident physicians (four per year of training).

such as the American Academy of Ophthalmology and the Association for Research in Vision and Ophthalmology.

The UC San Diego Ophthalmology Residency Training Program was recently recognized by the national accrediting body, the Accreditation Council for Graduate Medical Education, with a commendation on the excellence of the Residency Program and its faculty.

# FELLOWSHIPS

Shiley Eye Center offers world-class fellowships in cornea, glaucoma, ophthalmic plastic and reconstructive surgery, pediatric ophthalmology, and retina. Fellows are exposed to intense training in both the clinical and research settings. Many go on to prominent academic positions around the world as well as practicing as outstanding clinicians in the global ophthalmic community.

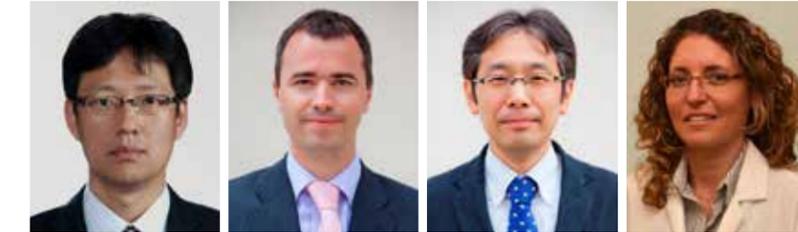
## CORNEA



## GLAUCOMA



## OPHTHALMIC PLASTIC & RECONSTRUCTIVE SURGERY



## RETINA



## PEDIATRICS



### Cornea

Andrew Crothers, M.D.  
Sujata Prabhu, M.D.

### Glaucoma

Anjali Parekh, M.D.  
Syril Dorairaj, M.D.  
Kaweh Mansouri, M.D.  
You Hyun Noh, Ph.D.\*  
Renato Lisboa, M.D.  
Dongwook Lee, M.D., Ph.D.  
Andrew Tatham, M.D.  
Yeoun Sook Chun, M.D.\*  
Atsuya Miki, M.D., Ph.D.  
Na'ama Hammel, M.D.

### Ophthalmic Plastic and Reconstructive Surgery

Katherine Whipple, M.D.  
Lee Hooi Lim, M.D.

### Pediatrics

Christopher O'Brien, M.D.

### Retina

Payam Amini, M.D.  
Candy Chan, M.D., Ph.D.  
Azadeh Khatibi, M.D.  
Giulio Barteselli, M.D.  
Su-Na Lee, M.D., Ph.D.  
Feiyan Ma, M.D.  
Jing Luo, M.D., Ph.D.

\* Not Photographed

# CLINICAL TRIALS

## GLAUCOMA

Nidek Optical Coherence Tomography RS-3000 for the Measurements of Retinal and RNFL Thickness and Optic Disc Analysis. PI: Robert N. Weinreb, M.D.

The effects of the water drinking test on choroidal thickness in normal volunteers and glaucoma patients. PI: Robert N. Weinreb, M.D.

Study to Assess Rapid disease progression by clinical and genetic Factors In glaucoma patients that are High risk (STARFISH). PI: Robert N. Weinreb, M.D.

Comparison of measurements of intraocular pressure pre- and post-topical ocular hypotensive treatment in glaucoma patients. PI: Felipe A. Medeiros, M.D., Ph.D.

24-hr intraocular pressure patterns of glaucoma patients before and after cataract surgery. PI: Felipe A. Medeiros, M.D., Ph.D.

24-hour intraocular pressure patterns of glaucoma patients before and after selective laser trabeculoplasty. PI: Felipe A. Medeiros, M.D., Ph.D.

Retinal and peripapillary blood flow assessment before and after therapeutic intervention in glaucoma. PI: Felipe A. Medeiros, M.D., Ph.D.

The effects of the water drinking test on intraocular pressure of glaucoma patients undergoing 24 hour continuous monitoring. PI: Felipe A. Medeiros, M.D., Ph.D.

24-hour IOP-lowering effect of 0.01% bimatoprost. PI: John H.K. Liu, Ph.D.

Efficacy of 24-hour intraocular pressure fluctuation recording. PI: John H.K. Liu, Ph.D.

Safety and ocular hypotensive efficacy of AR-12286 in patients with open-angle glaucoma or ocular hypertension. PI: Robert N. Weinreb, M.D.

Efficacy and safety of AL-54478 0.005% compared to latanoprost 0.005% and AL-54478 vehicle in the treatment of patients with open-angle glaucoma or ocular hypertension. PI: John H.K. Liu, Ph.D.

African Descent and Glaucoma Evaluation Study (ADAGES). (EY14267 NIH study) PI: Linda M. Zangwill, Ph.D.

Diagnostic Innovations in Glaucoma Study (DIGS): Structural Assessment. (EY11008 NIH study) PI: Linda M. Zangwill, Ph.D.

Diagnostic Innovations in Glaucoma Study (DIGS): Functional Impairment. (EY021818 NIH study) PI: Felipe A. Medeiros, M.D., Ph.D.

Evaluation of visual and task performance in patients with glaucoma, suspected of having glaucoma and healthy controls. PI: Felipe A. Medeiros, M.D., Ph.D.

## RETINA & VITREOUS

A phase 2, multicenter, randomized, double-masked, placebo controlled, parallel-group study to investigate the safety, tolerability, efficacy, pharmacokinetics and pharmacodynamics of GSK933776 in adult patients with geographic atrophy (GA, Dry Macular Degeneration) secondary to age-related macular degeneration (AMD) (BAM114341 study). PI: William R. Freeman, M.D.

A Multicenter, Patient-Masked, Safety Extension Study to Evaluate the Biodegradation of the Brimonidine Tartrate Posterior Segment Drug Delivery System (Brimo Extension). PI: William R. Freeman, M.D.

A prospective, multicenter data collection

of standard therapies in diabetic macular edema: Combination anti-VEGF and navigated retinal photocoagulation (CAVNAV study). PI: Igor Kozak, M.D.

A double-masked, randomized, active-controlled, phase 3 study of the efficacy and safety of intravitreal administration of VEGF Trap-Eye in patients with diabetic macular edema. PI: William R. Freeman, M.D.

A double-masked, randomized, active-controlled, phase 3 study of the efficacy and safety of intravitreal administration of VEGF Trap-Eye in neovascular age-related macular degeneration. PI: William R. Freeman, M.D.

A double-masked, randomized, active-controlled, phase 3 study of the efficacy and safety of intravitreal administration of VEGF Trap-Eye in patients with macular edema secondary to branch retinal vein occlusion. PI: William R. Freeman, M.D.

A double-masked, randomized, active-controlled, phase 3 study of the efficacy and safety of intravitreal administration of VEGF Trap-Eye in patients with macular edema secondary to central retinal vein occlusion. PI: William R. Freeman, M.D.

Long-term follow-up of patients who participated in the Multicenter Uveitis Steroid Treatment trial (MUST Trial Follow-up Study). PI: William R. Freeman, M.D.

A prospective, multicenter, long-term national study on ocular complications in AIDS (acquired immune deficiency syndrome) patients - Longitudinal Study of Ocular Complications of AIDS (LSOCA study). PI: Igor Kozak, M.D.

A prospective, non-interventional clinical

trial to assess visual function in HIV-positive patients on highly active antiretroviral therapy without infectious retinitis (HAART study). PI: William R. Freeman, M.D.

A phase III, double-masked, multicenter, randomized, active treatment controlled study of the efficacy and safety of 0.5 mg and 2.0 mg Ranibizumab administered monthly or on an as-needed basis (prn) in patients with subfoveal neovascular age-related macular degeneration. PI: Kang Zhang, M.D., Ph.D.

COMPASS: Clinical Assesment of age-related Macular Degeneration Patients after Early Diagnosis and Treatment with Ranibizumab. PI: Kang Zhang, M.D., Ph.D.

Prospective Case Crossover Study to Assess Whether PDE5 Inhibitor Exposure in Men with Erectile Dysfunction Increases the Risk for the Development of non-arteritic Anterior Ischemic Optic Neuropathy (NAION). PI: Kang Zhang, M.D., Ph.D.

## OPHTHALMIC PLASTIC & RECONSTRUCTIVE SURGERY

The Development of a Patient Reported Outcome Questionnaire for Symptomatic Exophthalmos Associated Thyroid Eye Disease. PI: Don O. Kikkawa M.D.

Loteprednol Etabonate Ophthalmic Ointment vs. Soothe Night Time Ointment for Inflammation Following Eyelid Surgery. PI: Bobby S. Korn, M.D., Ph.D.

# PUBLICATIONS

## CORNEA

Leich J, Levack A. A qualitative investigation of visual tasks with which to assess distance-specific visual function. Quality of life research: an international journal of quality of life aspects of treatment, care and rehabilitation 2012.

Manche EE, Haw WW. Wavefront-guided laser in situ keratomileusis (Lasik) versus wavefront-associated photorefractive keratectomy (Prk): a prospective randomized eye-to-eye comparison (an American Ophthalmological Society thesis). Transactions of the American Ophthalmological Society 2011;109:201-20.

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Kluchova D, Bolekova A, Heichel C, Bron AJ, Kozak I. NADPH-diaphorase expression in the meibomian glands of rat palpebra in postnatal development. European journal of histochemistry: EJV 2010;54:e47.

## GENETICS & STEM CELL

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SN, Riazuddin S, Hejtmancik JF, Sieving PA, Zack DJ, Katsanis N. A splice-site mutation in a retina-specific exon of BBS8 causes nonsyndromic retinitis pigmentosa. American journal of human genetics 2010;86:805-12.

Riazuddin SA, Shahzadi A, Zeitz C, Ahmed ZM, Ayyagari R, Chavali VR, Ponferrada VG, Audo I, Michiels C, Lancelot ME, Nasir IA, Zafar AU, Khan SN, Husnain T, Jiao X, MacDonald IM, Riazuddin S, Sieving PA, Katsanis N, Hejtmancik JF. A mutation in SLC24A1 implicated in autosomal-recessive congenital stationary night blindness. American journal of human genetics 2010;87:523-31.

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Sommer JR, Chavali VR, Simpson SG, Ayyagari R, Petters RM. Cloning, characterization, and expression analysis of the pig (Sus scrofa) Ctq tumor necrosis factor-related protein-5 gene. Molecular vision 2012;18:92-102.

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## GLAUCOMA

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Cheng TW, Liu XB, Faulkner RL, Stephan AH, Barres BA, Huberman AD, Cheng HJ. Emergence of lamina-specific retinal ganglion cell connectivity by axon arbor retraction and synapse elimination. The Journal of neuroscience : the official journal of the Society for Neuroscience 2010;30:16376-82.

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in optic disc, retinal nerve fiber layer, and macular structure in healthy subjects. Arch Ophthalmol 2010;128:541-50.

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outcomes in adult open-angle glaucoma patients: one-year follow-up. Clinical and Surgical Ophthalmology 2010;28:5-9.

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## PEDIATRIC OPHTHALMOLOGY

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# LECTURES

## ROBERT N. WEINREB, M.D.

Helen Keller Lecture, University of Alabama School of Medicine, Birmingham, 2001.

Robert N. Shaffer Lecture, Annual Meeting of the American Academy of Ophthalmology, 2001.

Stanford and Joan Alexander Lecture, University of Texas, Houston – School of Medicine, 2002.

Wilmer Distinguished Faculty Lecture, Johns Hopkins University, Baltimore 2002.

Transamerica Lecture, University of California, San Francisco, 2003.

Samuel J. Kimura Lecture, University of California, San Francisco, 2004.

Jules Stein Lecture, University of California, Los Angeles, 2004.

Armaly Lecture, University of Iowa College of Medicine, Iowa City, 2004.

Arthur J. Bedell Lecture, Wills Eye Hospital, Philadelphia, 2005.

Doheny Memorial Lecture, University of Southern California, Los Angeles, 2005.

Research for Sight Lecture, University of Toronto, Ontario, Canada, 2006.

Ridley Medal Lecture, St. Thomas' Hospital, London, 2006.

Florence Teicher Lecture, Columbia University, New York, 2006.

Albert C. Snell Memorial Lecture, University of Rochester, New York, 2007.

David M. Worthen Lecture, Johns Hopkins University, Baltimore, 2008.

Michael A. Kass, MD Lecture, Washington University, St. Louis, 2009.

Philip P. Ellis Lecture, University of Colorado, Denver, 2009.

Keynote Lecture, Moorfields Glaucoma Symposium, University College London, Royal College of Physicians, London, 2010.

E.B. Spaeth Oration, Philadelphia Academy of Medicine, Philadelphia, 2010.

Goodwin M. Breinin Lecture, New York University, New York, 2010.

Peter Kronfeld Memorial Lecture, University of Illinois School of Medicine, Chicago, 2010.

Leydhecker-Harms Medal Lecture, Julius-Maximilians Universitat Wurzburg, Germany, 2010.

“Evidence-Based Glaucoma” 9th Congress of the European Glaucoma Society, Keynote Lecture, Madrid, Spain, 2010.

“Intraocular Pressure” Watson Medal Lecture, University of Cambridge, Cambridge, England, 2010.

“Visualizing the Neurodegeneration of Glaucoma” Distinguished Lectur, Annual Meeting of the American Society of Cataract and Refractive Surgery 2011, San Diego.

“Personalizing Intraocular Pressure” Inaugural Marilyn Glick Lecture at the opening of the Eugene and Marilyn Glick Eye Institute, Indiana University School of Medicine, Indianapolis, IN, 2011.

## MADHU BALASUBRAMANIAN, Ph.D.

“Relationship between Retinal Structure and Function Measurements over Time” 19th Imaging and Perimetry Society Symposium, Tenerife, Spain, March 23-26, 2010.

## CHRIS BOWD, Ph.D.

“Variational Bayesian independent component analysis-mixture model (VIM) to identify patterns of glaucomatous defect in Frequency Doubling Technology (FDT) perimetry data” Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, May 6, 2012.

“Pattern electroretinogram use in glaucoma” World Glaucoma Congress. Paris, France, June 30, 2011.

“Predicting glaucomatous progression from baseline HRT and SAP measurements using relevance vector machine (RVM) classifiers” Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, May 4, 2011.

“Agreement among SD-OCT instruments for assessing retinal nerve fiber layer thickness in the Diagnostic Innovations in Glaucoma Study (DIGS)” Annual Meeting of the Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, May 4, 2010.

“Effect on HRT Topographic Change Analysis parameter estimates when combining HRT-I and HRT-II examinations in longitudinal series” 19th International Visual Field and Imaging Symposium, Puerto de la Cruz, Tenerife, Spain, March 24, 2010.

## STUART I. BROWN, M.D.

“Congenital Corneal Opacities and Their Treatment” The Royal College of Ophthalmologists Annual Congress, Birmingham, England, May 24, 2011.

“Transplantation of Congenitally Opaque Corneas: Pearls and Pitfalls” American Academy of Ophthalmology Annual Meeting, Orlando, FL, October 22, 2011.

“The Herpes Viruses and Their Clinical Manifestations” Hadassah Hospital, Ein Karem, Jerusalem, Israel, January 27, 2012.

## LINGYUN CHENG, Ph.D.

“How much we know about subtenon triamcinolone injection?” Chinese vitreoretinal society meeting, Shanghai, 2010.

“Ocular Drug Delivery Systems-Advantages and Disadvantages” Chinese Ophthalmology Society Meeting, Guangzhou, 2011.

## HENRY A. FERREYRA, M.D.

“Update on retinal dystrophies” Braille Institute, San Diego, CA, April 22, 2010.

“Update on retinal dystrophies” Braille Institute, San Diego, CA, April 14, 2011.

“Retinal dystrophies” American Society of Ophthalmic Registered Nurses Annual Meeting, October 23, 2011.

## WILLIAM R. FREEMAN, M.D.

“Retinitis and Immune Recovery Uveitis” International Society of Ocular Infections. West Palm Beach, FL, February 2010.

“Navigated Retinal Laser Photocoagulation” 1st International Conference on Retinal Imaging. Como, Italy, March 2010.

“Clinical Experience with a Second Generation Retinal Navigating Laser, the NAILAS, in a Series of 120 Eyes with Clinically Significant Macular Edema from Diabetes or other Retino-vascular Disease” Retina Society Annual Meeting. San Francisco, CA, September 2010.

“Intraocular drug delivery systems for retina pathologies: present and future” 87th Congress of the Spanish Society of Ophthalmology, Oviedo, Spain, September 2011.

“New development in retinal imaging and their influence in clinical practice; HIV and the retina; new considerations in retinitis

management and vision loss in HIV” Visiting Professor, Henry Ford Health System. Detroit, MI, March 2011.

“Changing Treatments for Choroidal Neovascularization” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

## DAVID B. GRANET, M.D.

“Assessment of the Patient with Red Eye”, “The Ophthalmologist’s Approach to Allergic Eye Disease” Western Society of Allergy, Asthma & Immunology’s 48th Annual Scientific Session, Lanai, HI, January 2010.

“Double Trouble, Diplopia in Cataract & Refractive Surgery”, Ocular Drug & Surgical Therapy Update, Annual Meeting, Dana Point, CA, February 2010.

“Adult Strabismus”, “Reading: Do the Eyes Have It?”, 2010 Post Graduate Convention Keynote, Oregon Academy of Ophthalmology, Portland, OR, March 2010.

“Thyroid related strabismus: Early Surgery is Preferable”, “Should all adult technologies be applied to children? Refractive Surgery in Children debate”. 1st World Congress on Controversies in Ophthalmology (COPHY), Prague, Czech Republic, March 2010.

“Update on Childhood Eye Diseases & Research”, The Braille Institute, La Jolla, CA, April 2010.

“Surgical Secrets: Adjustable Sutures”, 36th Annual Meeting of the American Association for Pediatric Ophthalmology & Strabismus, Orlando, FL, April 2010.

“Ophthalmology for the Pediatrician”, Scripps Memorial Hospital, Department of Pediatrics, La Jolla, CA, April 2010.

“Double Trouble: Preventing Double Vision in Eye Surgery”, 2010 Comprehensive Ophthalmology: Pearls Symposium, Vanderbilt Eye Institute, Nashville, TN, May 2010

“Pediatric Ophthalmology Video Gems”, The American Eye Study Club (AESC) Annual Meeting, Farmington, PA, August 2010

“When Extraocular Muscles Are Involved”. 2010 Oculofacial Plastic Surgery Subspecialty Day, Annual American Academy of Ophthalmology Meeting, Chicago, IL, October 2010.

“Treating Bacterial Conjunctivitis”, Pediatric Conjunctivitis: Clinical Decision-Making for Optimal Treatment, 23rd Annual Infectious Diseases In Children Symposium. New York City, NY, November 2010.

“Diplopia following refractive and pterygium surgery”, Congress of the Portuguese Society of Ophthalmology, Faro, Portugal, December 2010.

“Prevention and Treatment of Diplopia related to Refractive Surgery and Pterygium”, University of Rochester, Flaum Eye Institute Annual Meeting, Rochester, New York, December 2010.

“Accommodative Esotropia”, “Brown Syndrome”, & “Duane Syndrome” 2nd World Congress on Controversies in Ophthalmology (COPHY), Barcelona, Spain, March 2011.

“Adult Strabismus” & “Pterygium Induced Diplopia”, Asia Pacific Academy of Ophthalmology (APAO) Annual Meeting, Sydney, Australia, March 2011.

“Update on Childhood Eye Diseases & Research”, The Braille Institute, La Jolla, CA, April 2011.

“Adult Strabismus”, International Professor - The Royal College of Ophthalmologists Annual Congress Meeting, London, England, May 2011.

“Psychologic Impact of Strabismus”, The American Eye Study Club (AESC) Annual Meeting, Pinehurst, NC, July 2011.

“Reading, Learning & Vision” and “Diplopia Associated With Refractive Surgery and Pterygium Repair”, 10th Annual Downeast Ophthalmology Symposium, Maine Society

of Eye Physicians and Surgeons, Bar Harbor, ME, September 2011.

“Your patient has thyroid ophthalmopathy.” Annual Meeting of the American Academy of Ophthalmology, Orlando, FL, October 2011.

“Reading, Learning and the Role of the Eyes”, David R. Stager, Sr., M.D. Named Lecture for the Retina Foundation of the Southwest, University of Texas Southwestern, Dallas, TX, February 2012.

“Extra Large (XXL) Strabismus” workshop, Annual Meeting of the American Association for Pediatric Ophthalmology & Strabismus (AAPOS), Orlando, FL, March 2012.

“Adult Strabismus” workshop, Annual Meeting of the American Association for Pediatric Ophthalmology & Strabismus, Orlando, FL, March 2012.

Visiting Professor, Yong Loo Lin School of Medicine, National University Health System, Singapore. May 2012.

### WELDON W. HAW, M.D.

“Update on Herpes Simplex Keratitis - Medical and Surgical Therapies” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

“Update on Ocular Surface Disease - Dry Eye Syndrome” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

“Update on Ocular Allergies” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

### CHRIS W. HEICHEL, M.D.

“Advancement in Corneal Transplantation” American Society of Ophthalmic Registered Nurses Annual Meeting, Chicago, IL, October 2010.

“Complicated Cataract Surgery” New Approaches to Medical and Surgical

Therapies, San Diego, CA, February 2012.

“Risk Management in Clinical Practice” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

### ANDREW D. HUBERMAN, Ph.D.

Janelia Farm/HHMI, Constructing Neural Circuits Meeting, 2012.

UCLA, Neurobiology Dept. Conference on Microcircuits, 2012.

Vanderbilt University, Vision Sciences Seminar Series, 2012.

Gordon Research Conference on Neural Development, 2012.

### WON-KYU (DANIEL) JU, Ph.D.

“Mitochondrial dysfunction and neuroprotection during glaucomatous neurodegeneration” 283th IISong Institute of Life Science Meeting, Hallym University, Seoul, South Korea, April 2010.

“Mitochondrial dysfunction and neuroprotection during glaucomatous neurodegeneration” 13th Annual Vision Research Conference, Fort Lauderdale, FL, April 2010.

“OPA1 expression-mediated NMDA receptor activation in the mouse retina.” International Society for Eye Research, Biennial Meeting XIX, Montreal, Canada, July 2010.

“Mitochondrial dysfunction and neuroprotection during glaucomatous neurodegeneration.” The Korean Association of Anatomists, 60th Annual Conference, Jeju Island, South Korea, October 2010.

“Mitochondrial dynamics and dysfunction, and their potential as therapeutic targets in glaucoma.” 2012 Vanderbilt Eye Institute symposium “Regenerative Medicine in Glaucoma and Optic Nerve Injury”, Vanderbilt University Eye Institute, Nashville, 2012.

### DON O. KIKKAWA, M.D.

“Preserving the Almond Shaped Eye in Blepharoplasty” Third Annual Atlanta Oculoplastics Symposium. Southeastern Society of Plastic and Reconstructive Surgeons. January 14, 2010.

“Aesthetic Oculofacial Surgery,” “Eyelid Reconstruction,” “Lacrimal Surgery,” “Multidisciplinary Treatment of Thyroid Eye Disease,” “Surgical Approaches to the Orbit,” “Customizing Orbital Reconstruction.” Visiting Professor and Commissioner Training. Tung Wah Eastern Hospital and Eye Centre. Hong Kong, January 18-22, 2010.

“Oculofacial Surgery in the 21st Century” Visiting Professor, California Pacific Medical Center Department of Ophthalmology. April 12, 2010.

“Eyelid Surgery in Graves Orbitopathy” World Ophthalmology Congress. Berlin, Germany, June 6, 2010.

Asia Pacific Society of Ophthalmic Plastic and Reconstructive Surgery. Beijing, China, September 15, 2010.

“Why consider orbital decompression?” “Use of antimetabolites in anophthalmic socket contraction,” “How to teach oculoplastics innovatively,” “Show me something I haven’t seen before: orbital mass,” “Management of difficult consults: aesthetic eyelid,” “Complications of Aesthetic Surgery in the Asian Patient” Asia Pacific Academy of Ophthalmology, Beijing, China, September 16-20, 2010.

“Everything you ever wanted to know about tearing.” ASORN Annual Meeting Chicago, IL, October 17, 2010.

“Lacrimal Probing and Decision Making In Pediatric NLDO” American Academy of Ophthalmology Annual Meeting Chicago, IL, October 18, 2010.

“I have chosen to have orbital decompression. What can I expect?” Graves Disease Foundation National Meeting, San Diego, CA, October 28, 2010.

“I have TED. What can I do about it?” Graves Disease Foundation Support Group Meeting, Del Mar, CA, November 18, 2010.

“The Science of Periorbital Aging,” “Aesthetic Surgery in the Asian Patient.” Fourth Annual Atlanta Oculoplastics Symposium. Southeastern Society of Plastic and Reconstructive Surgeons. Atlanta, GA, January 13, 2011.

“Preserving the almond shaped eye in Asian blepharoplasty,” “Ten tips on blepharoplasty” The Aging Face. American Academy of Facial Plastic Surgery. San Diego, CA, January 20-21, 2011.

“Anatomy for Blepharoplasty,” Advances in Cosmetic Blepharoplasty Brow, Midface Lift and Nonsurgical Facial Rejuvenation Techniques, St. Louis, MO, February 11-13, 2011.

“Patient assessment in Lower eyelid Rejuvenation,” Masters’ Symposium Blepharoplasty & Upper Facial Rejuvenation, Sydney, Australia, March 19, 2011.

“Contemporary Trends In Oculofacial Aesthetic Surgery,” Asia Pacific Academy of Ophthalmology, Sydney, Australia, March 22, 2011.

“Should Jones Tubes Be Placed in Children?” Asia Pacific Academy of Ophthalmology, Sydney, Australia, March 23, 2011.

“Multidisciplinary Treatment of Thyroid Eye Disease,” Beijing Tongren Eye Hospital, Beijing, China, April 18, 2011.

“Brow, Blepharoplasty and Ptosis Surgery,” National Oculoplastics Training Course, Chengdu, China, April 21, 2011.

“Complex periocular injuries,” Rehabilitation Nurse Coordinators Network, San Diego, CA, July 21, 2011.

“Ptosis Surgery,” “Midfacial Surgery,” “Congenital Eyelid Disorders,” “Pediatric Lacrimal Surgery,” “Lower Eyelid Complications” American Academy of Ophthalmology Annual Meeting Orlando, FL, October 23-25, 2011.

“Preserving the almond shaped eye in Asian blepharoplasty,” “Panel Discussant: Brow and Upper Lids,” “Panel Discussant: Lower Lids and Midface,” “Panel Discussant: Complications in Eyelid Surgery,” The Aging Face. American Academy of Facial Plastic Surgery. San Diego, CA, January 18-22, 2012.

“Tackling Ptosis,” and “Repair of Orbital Floor Blowout Fractures: Not So Fast,” Moderator and Session Chair, World Ophthalmology Congress, Abu Dhabi, UAE, February 17, 2012.

“Update on Aesthetic Oculoplastics” Ophthalmology Update 2012. San Diego, CA, February 19, 2012.

“Eyelid and Orbital Trauma,” Visiting Consultant Program Al Baraha Hospital, Dubai, UAE, March 8, 2012.

“Diagnosis and Management of Epiphora” National Oculoplastics Training Course, Xian China, April 5, 2012.

“Surgery of the Midface” Aesthetic Oculoplastics Session, Asia Pacific Academy of Ophthalmology, Busan Korea, April 13, 2012.

“Revision of the Eyelid Crease” KSOPRS Session, Asia Pacific Academy of Ophthalmology, Busan Korea, April 14, 2012.

“Perfecting Your Skills with the Aesthetic Patient” The 2012 Robert Axelrod Lecture. UCLA Jules Stein Eye Institute, June 15, 2012.

“Ten minute ptosis repair,” “Pearls of upper and lower lid blepharoplasty,” Management of complications of blepharoplasty,” “Case studies in anophthalmic socket contraction,” “Injectables: a replacement for surgery?” VII Curso Universitario Internacional de Oftalmologia. Hospital Clinico Unisersidad de Chile, Santiago, Chile, July 27-28, 2012.

### BOBBY S. KORN, M.D., Ph.D.

“Small Incision Facelifting” Asia Pacific Academy of Ophthalmology, Beijing, China, September, 2010.

“Transcutaneous Lower Lid Blepharoplasty with Orbitomalar Suspension.” California

Society of Facial Plastic Surgeons. Olympic Valley, CA, March 2011.

“New Horizons in Periocular Volume Enhancement and Fillers” Australian Academy of Facial Plastic Surgery, Sydney, Australia, March 2011.

“Complications in Blepharoplasty” Asia Pacific Academy of Ophthalmology, Sydney, Australia, March 2011.

“Orbitomalar Suspension as an Adjunct during High SMAS Facelifting” American Society of Ophthalmic Plastic Surgeons Annual Meeting, Orlando, FL, October 2011.

“See For Yourself” Primed/American College Physicians, Chicago, IL, September 2011.

“The Ten Minute Ptosis Repair” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

“Managing Complications in Oculofacial Surgery” California Society of Facial Plastic Surgery, Olympic Valley, CA, March 2012.

“Controversies in Lacrimal Surgery” Asia Pacific Academy of Ophthalmology, Busan, Korea, April 2012.

“Cosmetic Approaches to the Lower Face” Asia Pacific Academy of Ophthalmology, Busan, Korea, April 2012.

“Basic and Advanced Course in Ophthalmic Plastic and Reconstructive Surgery” Department of Ophthalmology, Sheikh Khalifa Medical City, Abu Dhabi, UAE, October 29-31, 2012.

### JEFFREY E. LEE, M.D.

“Direct Ophthalmoscopy for the Internist” American College of Physicians. San Diego, CA, April 2011.

“Interesting Cases from an Inpatient Ophthalmology Service” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

“Direct Ophthalmoscopy for the Internist”

American College of Physicians. New Orleans, LA April 2012.

### LEAH LEVI, M.B.B.S.

“Vision and the Brain: A Whirlwind Tour of Neuro-Ophthalmology” Braille Institute Annual Adult Eye Disease Seminar, La Jolla CA, April 2010.

“Restoring Vision: Updates on Stem Cells, Regenerating Nerve Cells, and Visual Prostheses” Braille Institute Annual Adult Eye Disease Seminar, La Jolla, CA, April 2011.

### JOHN H.K. LIU, Ph.D.

“What have we learned about IOP from the sleep laboratory?” World Ophthalmology Congress, Glaucoma Rhythms Symposium, Berlin, Germany, June 9, 2010.

“Continuous monitoring intraocular pressure. Its past, present, and future.” National Taiwan University, Department of Ophthalmology, Taipei, Taiwan, December 2010.

“IOP changes in normal tension glaucoma.” Asia-Pacific Joint Glaucoma Congress, Taipei, Taiwan, December 2010.

“The correlation between the IOP level and medication in different glaucoma.” Asia-Pacific Joint Glaucoma Congress, Taipei, Taiwan, December 2010.

“Intraocular pressure sensors” China Medical University Hospital, Taichung, Taiwan, December 2010.

“Measurement of 24-hour IOP” World Glaucoma Congress, IOP Measurements: Present and Future Symposium, Paris, France, July 2011.

“Clinical trials of ophthalmic drug and device for glaucoma management” China Medical University Hospital, Center of Clinical Trials, Taichung, Taiwan, January 2012.

“Monitoring intraocular pressure: Its past, present, and future” National Chiao

Tung University, Department of Electrical Engineering, Hsinchu, Taiwan, January 2012.

“Clinical trials of ophthalmic drug and device for glaucoma management” National Taiwan University Hospital, Department of Ophthalmology, Taipei, Taiwan, February 2012.

### FELIPE A. MEDEIROS, M.D., Ph.D.

“The 10 Commandments of Glaucoma” Australian and New Zealand Glaucoma Interest Group, Wellington, New Zealand, February 2010.

“The Future of Glaucoma”, Faculty, XXXIII SIMASP, Federal University of Sao Paulo, March 2010.

“Clinical Implications of SD-OCT imaging of the ONH, NFL and retina in glaucoma”, Glaucoma Research Society Meeting, Kyoto, Japan, April 2010.

Keynote Speaker, XXX Mexican Congress of Ophthalmology, Veracruz, Mexico, June 2010.

“Rates of Progressive Retinal Nerve Fiber Layer Loss with Scanning Laser Polarimetry” American Academy of Ophthalmology Editor’s Choice Symposium, Chicago, October 2010.

“Detecting Change Which is Better: Structure or Function?” American Academy of Ophthalmology Glaucoma Subspecialty Day, Chicago, October 2010.

“Fast and Furious: The Importance of Rates of Change in Glaucoma” New York Eye and Ear Infirmary, New York, November 2010.

“Risk Analysis for Glaucoma Progression” Beyond IOP Symposium, San Diego, CA, March 2011.

“Rates of Structural Change in Normal Tension Glaucoma” American Glaucoma Society Annual Meeting, Dana Point, CA, March 2011.

“Detection of Progression: Structure vs. Function” Brazilian Glaucoma Society, Belo Horizonte, Brazil, May 2011.



“African Descent and Glaucoma Evaluation Study (ADAGES): Racial Differences in Rates of Progressive Visual Field Loss in Glaucoma” Annual Meeting, Association for Research in Vision and Ophthalmology, Fort Lauderdale, FL, May 2011.

“Some Novel Methodologies for Glaucoma Studies and Risk Assessment” World Congress of Glaucoma, Paris, France, June 2011.

“Fast and Furious: The Importance of Rates of Change in Glaucoma” Congress of Ophthalmology of the University of Sao Paulo, Sao Paulo, Brazil, November 2011.

“Detecting Glaucoma Progression and Measuring Rates of Change with OCT and GDx” West Coast Glaucoma Symposium, Newport Beach, CA, December 2011

“Estimating Progression in Clinical Practice” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

“Detecting Glaucoma Progression: Changing the Paradigm” Yale University Department of Ophthalmology, New Haven, March 2012.

“Detecting Progression with Imaging: Research and Clinical Practice” American Glaucoma Society Annual Meeting, New York, March 2012.

“Rates of Structural and Functional Change” 96th Annual Clinical Assembly of the American Osteopathic Colleges of Ophthalmology and Otolaryngology, Palm Springs, CA, May 2012.

“Interpretation of OCT and Visual Fields” 96th Annual Clinical Assembly of the American Osteopathic Colleges of Ophthalmology and Otolaryngology, Palm Springs, CA, May 2012.

“Estimating the Rate of Retinal Ganglion Cell Loss in Glaucoma with a Combination of Structural and Functional Tests” Annual Meeting, Association of Research in Vision and Ophthalmology (ARVO), Fort Lauderdale, FL, May 2012.

### SHIRA L. ROBBINS, M.D.

“Evaluation of the Non-Seeing Infant” American Academy of Ophthalmology Annual Meeting– Pediatric Ophthalmology Subspecialty Day, Orlando FL, 2011.

“Revolution or Evolution? Adult Care for Children: Update on Retinopathy of Prematurity” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

“A Modification of the augmented Hummelsheim procedure for treatment of paralytic strabismus in sixth nerve palsy, the California Hummelsheim. American Association of Pediatric Ophthalmology and Strabismus Annual Meeting, San Antonio, TX, 2012.

### PETER J. SAVINO, M.D.

Dr. Guillermo Pico Santiago Lecture, 41st Annual Puerto Rico Ophthalmology Society Congress, San Juan, PR, 2010.

The 38th G. Victor Simpson Lecture, The Washington National Eye Center and the Department of Ophthalmology at Washington Hospital Center and Georgetown University Hospital, Washington, D.C. 2010.

Visiting Professor, University of South Florida, Tampa, 2012.

Invited Guest Lecturer, West Coast of Florida Monthly Regional Ophthalmology Meeting, 2012.

Invited Guest Speaker, Frontiers and Controversies in Ophthalmology, 2012 Joint Conference, Illinois Association of Ophthalmology and the Chicago Ophthalmological Society, Chicago, IL, March 9-10.

Invited Guest Speaker, Asian Pacific Ophthalmological Society meeting. Busan, South Korea, 2012.

### GABRIEL A. SILVA, M.Sc., Ph.D.

“Cell signaling in neural networks: Mapping

dynamic activity and a nano-photon interface”. 6th edition of the European school on Neuroengineering, Genova, Italy, 2012.

“Phototransduction and retinal neural stimulation with an ultra-high resolution nanoengineered pros- thesis”. Engineering Research Center on Sensorimotor Neural Engineering, San Diego State University, 2012.

“Predicting function form structure in cellular neural networks”. Computational Neuroscience Program seminar, University of Chicago, 2012.

### LINDA ZANGWILL, Ph.D.

“The rate of glaucomatous structural change in the Ocular Hypertension Treatment Study (OHTS), Diagnostic Innovations in Glaucoma Study (DIGS) and African Descent and Glaucoma Evaluation Study (ADAGES)” 19th Meeting of the Imaging and Perimetry Society Proceedings, Puerto de la Cruz, Tenerife, March 23-26, 2010.

“The rate of topographic optic disc change is faster in eyes developing POAG than in eyes not developing POAG: The Confocal Scanning Laser Ophthalmoscopy (CSLO) Ancillary Study to the Ocular Hypertension Treatment Study (OHTS)” Annual Meeting, Association for Research in Vision and Ophthalmology Fort Lauderdale, FL, May 2-6, 2010.

“Confocal scanning laser ophthalmoscopy (CSLO) to predict the onset of primary open angle glaucoma (POAG): Pooled analysis of the CSLO ancillary study to the Ocular Hypertension Treatment Study (OHTS) and the European Glaucoma Prevention Study (EGPS)” Fort Lauderdale, FL, May 1-5, 2011.

“Imaging (Disc/RNFL photographs, HRT, GDx, OCT)”. Glaucoma Management: Beyond Intraocular Pressure, San Diego, CA, 2010.

“Predicting glaucoma development” World Glaucoma Congress, Paris, France, 2011.

Zangwill LM. “Use of Imaging in Clinical Practice” New Approaches to Medical and Surgical Therapies, San Diego, CA, February 2012.

### KANG ZHANG, M.D., Ph.D.

Beckman Initiative in Macular Research, Irvine, CA, 2010.

Gordon Conference of Visual System Development, Lucca, Italy, 2010.

Chinese Ophthalmological Society, Asia Pacific Ophthalmology Annual Meeting, Beijing, China, 2010.

Annual Meeting of Chinese Ophthalmology Society, Guangzhou, China, 2011.

Second Symposium of Chinese Research in Vision and Ophthalmology, Wuhan, China, 2012.

International Masters of Retina, Dominican Republic, 2012.

Annual Meeting of Chinese Ophthalmology Society, Nanjing, China, 2012.

Annual Meeting of Chinese Retina Society, Wuhan, China, 2012.

Asian Pacific Academy of Ophthalmology Annual meeting, Pusan, Korea, 2012.

NIH Director’s Fund Regenerative Medicine Symposium, Bethesda, MD, 2012.

Molecular Mechanisms Underlying Macular Degenerations  
Radha Ayyagari, Ph.D.  
NIH/NEI, 06/01/00-05/31/12 (NCE)

New Techniques for Measuring Volumetric Structural Changes in Glaucoma  
Madhusudhanan Balasubramanian, Ph.D.  
NIH/NEI, 01/01/11-12/31/12

Mechanistic-Based Non-Invasive Assessment of Retinal Damage in HAART Era  
Dirk-Uwe Bartsch, Ph.D.  
NIH/NEI, 06/01/06-09/29/11 (NCE)

Mechanistic-Based Non-Invasive Assessment of Retinal Damage in HAART Era  
Dirk-Uwe Bartsch, Ph.D.  
NIH/NEI, 09/30/11-08/31/14

Predicting and Detecting Glaucomatous Progression Using Pattern Recognition  
Christopher Bowd, Ph.D.  
NIH/NEI, 01/01/11-12/31/12

Mechanistic-Based Non-Invasive Assessment of Retinal Damage in HAART Era  
Dirk-Uwe Bartsch, Ph.D.  
NIH/NEI, 02/01/12-01/31/16

Porous Silicon Particles for Sustained Intravitreal Drug Delivery  
Lingyun Cheng, M.D., Ph.D.  
NIH/NEI, 09/01/11-08/31/16

Age-Related Eye Disease Study II (AREDS II)  
Henry A. Ferreyra, M.D.  
EMMES Corporation/NIH/NEI, 04/12/07-12/31/12

Studies of Retinopathy of Aids in the HARRT Era  
William R. Freeman, M.D.  
NIH/NEI, 04/01/10-03/31/14

Multicenter Uveitis Steroid Treatment Trial

William R. Freeman, M.D.  
Johns Hopkins/NIH/NEI, 05/01/09-04/30/12

Crystalline Antiproliferative Drugs for Intraocular Diseases  
William R. Freeman, M.D.  
NIH/NEI, 09/30/08-07/31/12

The Development of a Patient Reported Outcome Questionnaire for Symptomatic Exophthalmos Associated Thyroid Eye Disease  
Don O. Kikkawa, M.D.  
Lithera, 09/23/10-09/30/12

Loteprednol Etabonate Ophthalmic Ointment vs. Soothe Night Time Ointment in the Treatment of Inflammation Following Eyelid Surgery  
Bobby S. Korn, M.D., Ph.D.  
Bausch and Lomb Pharmaceuticals, 02/01/12-07/01/14

Diagnostic Innovations in Glaucoma Study: Functional Impairment  
Felipe A. Medeiros, M.D., Ph.D.  
NIH/NEI, 09/01/11-08/31/16

Molecular Basis of Hereditary Retinal Degenerations  
Radha Ayyagari, Ph.D.  
NIH/NEI, 09/01/11-08/31/15

Amblyopia Treatment Study  
Shira L. Robbins, M.D.  
Jaeb Center For Health Research/NIH/NEI, 05/01/04-12/31/13

Research to Prevent Blindness Unrestricted Grant  
Robert N. Weinreb, M.D.  
Research To Prevent Blindness Inc., 01/01/11-12/31/12 (NCE)

Mitochondrial Dysfunction in Glaucomatous Optic Neuropathy  
Won-Kyu (Daniel) Ju, Ph.D.

NIH/NEI, 09/01/09-08/31/13

African Descent and Glaucoma Evaluation Study (ADAGES)  
Linda Zangwill, Ph.D.  
NIH/NEI, 09/01/09-08/31/12 (NCE)

African Descent and Glaucoma Evaluation Study (ADAGES) II: Glaucoma Progression  
Linda Zangwill, Ph.D.  
NIH/NEI, 02/01/10-01/31/15

Diagnostic Innovations in Glaucoma: Structural Assessment  
Linda Zangwill, Ph.D.  
NIH/NEI, 05/01/11-04/30/16

Genetics and Functional Studies of Age-Related Macular Degeneration  
Kang Zhang, M.D., Ph.D.  
NIH/NEI, 09/30/08-07/31/13

ELOVL4 and Retinal Disease  
Kang Zhang, M.D., Ph.D.  
NIH/NEI, 11/01/08-04/30/13 (NCE)

Regeneration of Retinal Neurons by Chemically Induced Reprogramming of Muller  
Kang Zhang, M.D., Ph.D.  
NIH/NEI, 09/30/10-08/31/15

Define Novel Genes for Diabetic Microvascular Complications  
Kang Zhang, M.D., Ph.D.  
Burroughs Wellcome, 07/01/08-06/30/13

Fellowship HHMI Krupa/Zhang  
Kang Zhang, M.D., Ph.D.  
Howard Hughes Medical Institute, 07/01/11-06/30/12

Ranibizumab for Edema of the Macula in Diabetes: Protocol 3 with High Dose - the READ 3 Study  
Kang Zhang, M.D., Ph.D.

Juvenile Diabetes Foundation, 05/28/10-05/27/11

Research to Prevent Blindness Senior Scientific Investigator Award  
Kang Zhang, M.D., Ph.D.  
Research To Prevent Blindness, 1/1/2011-12/31/2012

Endoplasmic Reticulum Stress in Retinal Degeneration  
Jonathan Lin, M.D., Ph.D.  
NIH/NEI, 09/1/2010-5/31/15

Retinal Mechanisms in Human Vision  
Donald I. MacLeod, Ph.D.  
NIH/NEI, 9/30/08–8/31/13

Development of retinofugal parallel pathways  
Andrew D. Huberman, Ph.D.  
NIH/NEI, 2/1/2012-1/31/17

Genomes in Eye Disease: Methods to Query Variants Across Multiple Genome-Wide Datasets  
Terry Gasterland, Ph.D.  
NIH/NEI, 4/1/2012-3/30/15



# GIVING OPPORTUNITIES

For almost 30 years, the philanthropic support from generous individuals, foundations and corporations has provided the Department of Ophthalmology with valuable resources for patient care, research, education and community service. The state of California provides less than 4% of our budget and therefore, we must rely on private gifts. As a friend of the Department of Ophthalmology, there are several giving options for those who wish to contribute to our tradition of excellence.

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### Annual Gifts *Circle of Sight*

Founded in 1996, the *Circle of Sight* is the Shiley Eye Center's recognition program that acknowledges donors who make annual gifts of \$250 or more to support the greatest needs of the Department. Several times a year, the Shiley Eye Center's *Circle of Sight* members are invited to attend Vision Research Lectures and receptions where members get to personally know our faculty. The members are also ambassadors for the Shiley Eye Center within the San Diego community. The *Circle of Sight* group is the backbone of many of our successful initiatives.

### Planned Gifts *Your Vision for Tomorrow*

Please consider a charitable bequest in your will, which benefits the future and directly supports the Department of Ophthalmology while saving your family estate tax dollars. We would be pleased to provide you, your attorney and your accountant or tax advisor, with specific bequest language for inclusion in your will or trust.

### Tribute Gifts *Acknowledge Someone Special*

Contributions can be made in memory, honor or celebration of a loved one or to commemorate a special occasion. Gifts can be made to honor a special physician, for example, who has played a significant role in your eye health. Such a gift creates a legacy and memorializes the person by providing direct support to the Department.

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### Endowments *Gifts in Perpetuity*

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*Every donation makes an impact on our patients, faculty and staff, as well as the field of Ophthalmology. We cherish the partnership that we have developed with those generous members of the community who invest in us. There are also naming opportunities for gifts including: endowed chairs, laboratories, specialized ophthalmic clinics and research initiatives. We would welcome the opportunity to have a confidential conversation with you, so we clearly understand how you want your gift to be used.*

For further information, please contact:  
Karen Anisko Ryan  
Phone: 858-534-8017  
Email: [kanisko@ucsd.edu](mailto:kanisko@ucsd.edu)

The Honor Roll for the Department of Ophthalmology acknowledges donors from August 1, 2009 to May 29, 2012. Thank you to all of the individuals, foundations and corporations listed below.

*The Department of Ophthalmology sadly acknowledges a few friends and key supporters who have passed away during the past year – Arthur Brody, Martin Gleich and Anne F. Ratner. They remain in our thoughts.*

**Gifts of \$500,000 & Above**

Marilyn B. & David J. Dunn  
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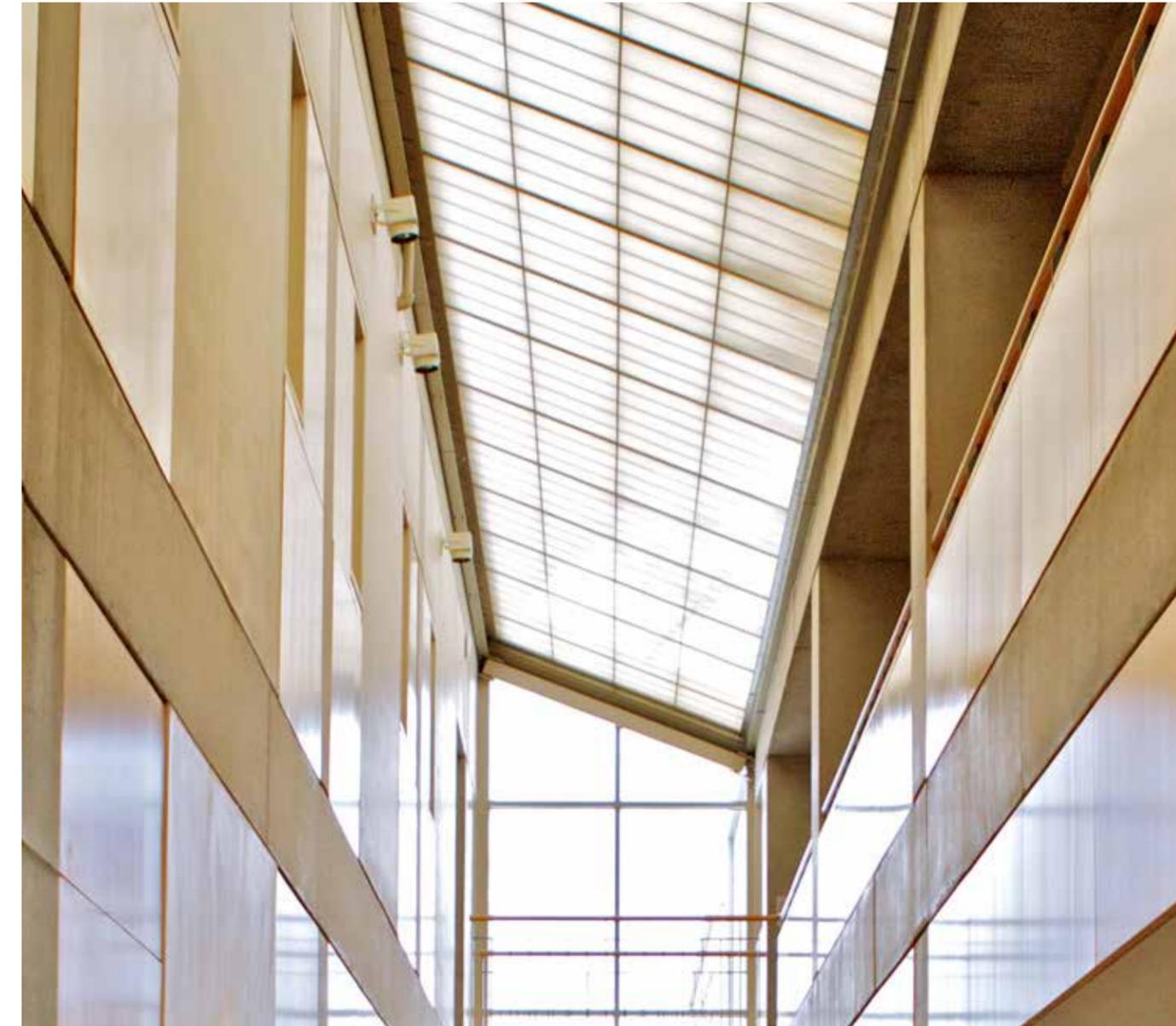
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