SIMPLY WORLD CLASS

The UC San Diego Department of Ophthalmology at the Shiley Eye Institute offers 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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This year, our campus was listed as the 3rd best public university in the United States and the 20th best university in the world by the Center for the World University Rankings.

This year marks the 25th anniversary of the Shiley Eye Institute at UC San Diego, the only academic institution in the region offering the most advanced treatments across all areas of eye care. Throughout the years, faculty and researchers at the Shiley Eye Institute have demonstrated their dedication to providing the best possible care to prevent, treat and cure eye diseases, and they are at the forefront of our innovative investigations that are leading to discoveries and benefiting our citizens.

The excellence of the research, education and care at the Shiley Eye Institute bolsters UC San Diego’s service and standing. UC San Diego was recently ranked as the 3rd best public university in the United States and the 20th best university in the world. These rankings are a reflection of our talented campus members and generous supporters. It is because of you that UC San Diego and the Shiley Eye Institute have grown and flourished over the decades.

Every day we are improving and transforming the lives of people in our community and around the world through our mission of education, research and service.

I thank you for supporting UC San Diego and the Shiley Eye Institute as we continue to fulfill our mission to transform California and a diverse global society by educating, generating and disseminating knowledge and creative works, and engaging in public service.

With kind regards,

Pradeep K. Khosla, Ph.D.
Chancellor
University of California, San Diego
Dear Colleagues, Alumni and Friends,

2015 was a year of great accomplishment for the Shiley Eye Institute. In February, we received Institute status, acknowledging our emergence as a major center for clinical care and research, as well as our commitment to patient care excellence and collaborative campus programs. This designation also is another step forward in the dream of Donald and Darlene Shiley for a world class Eye Institute, which now incorporates the Shiley Eye Center, the Ratner Children’s Eye Center, the Jacobs Retina Center and the Hamilton Glaucoma Center.

This annual report highlights pioneering research that had a central role in our success this past year. Our brilliant team of researchers reported a novel non-surgical treatment for cataracts using eye drops. Shiley scientists also discovered a link between a glaucoma gene and a molecular treatment target for the disease. We also had two new outstanding translational scientists join our team. Finally, we share several patient triumphs that bring hope for many with similar conditions.

Looking ahead, 2016 marks our 25th anniversary! Our missions are unwavering with faculty and staff who will continue to offer the most advanced treatments to prevent, treat and cure eye disease. As Director of the Shiley Eye Institute, I am reminded daily of the tremendous responsibility we have to our patients and their families. Our research will continue to be at the forefront to develop new methods for diagnosis and treatment. And, we will further endeavor to educate future ophthalmology leaders and to serve San Diego and the global community.

On behalf of the Shiley Eye Institute and the UC San Diego Department of Ophthalmology, I wish you the best of health and prosperity in 2016. Thank you for your continued support.

Sincerely,

Robert N. Weinreb, M.D.
Chairman and Distinguished Professor of Ophthalmology
Director, Shiley Eye Institute
Director, Hamilton Glaucoma Center
Morris Gleich, M.D. Chair in Glaucoma
Dear Friends of the Shiley Eye Institute,

I commend the faculty and staff of the Department of Ophthalmology and Shiley Eye Institute for their amazing year in 2015. 2016 promises to be even more exciting. Earlier in 2015, we renamed the Shiley Eye Center to the Shiley Eye Institute in recognition of the collaborative specialized units, outstanding patient-centered clinical care, and dedication to education.

The Shiley Eye Institute is a world leader in translational vision research, including stem cell and gene therapy to ameliorate vision loss and cure blinding eye diseases. Recent groundbreaking discoveries have included a novel therapy for cataracts using eye drops as a curative therapy and the establishment of the Richard C. Atkinson Laboratory for Regenerative Ophthalmology. UC San Diego Department of Ophthalmology faculty continue to collaborate throughout the entire UC San Diego campus, including Bioengineering, Nano-engineering, and Neuroscience. Clinical trials and research grants at the Shiley Eye Institute are at an all time high.

This year marks the Shiley’s 25th anniversary of outstanding contributions to vision science, patient care, and advancing the future of ophthalmology. Congratulations to all faculty and staff for their hard work and dedication to making the Shiley Eye Institute one of the leading eye care and research facilities in the world.

Sincerely,

David A. Brenner, M.D.
Vice Chancellor, Health Sciences and Dean, School of Medicine
University of California, San Diego

Patty Maysent, M.P.H., M.B.A.
CEO, UC San Diego Health
EYEMOBILE
GIVING CHILDREN THE WORLD TO SEE

CHILDREN EXAMINED 22,039

FREE GLASSES DISPENSED 1,686

PATIENT VISITS 120,407

SURGERIES PERFORMED 4,950

CLINICAL TRIALS 43

PEER-REVIEWED PUBLICATIONS 185

LECTURES 162

GRANTS 36

SINCE 1974 SHILEY HAS TRAINED 426 RESIDENTS & FELLOWS IN OPHTHALMOLOGY

SHILEY RANKED US NEWS & WORLD REPORT TOP 25

SHILEY RESIDENCY RANKED DOXIMITY TOP 25
Reflecting its emergence as a regional hub for unparalleled clinical care, research, education and community service, the UC San Diego Shiley Eye Center has been renamed the UC San Diego Donald P. and Darlene V. Shiley Eye Institute, encompassing the Shiley Eye Center, the Hamilton Glaucoma Center, the Joan and Irwin Jacobs Retina Center and the Anne F. and Abraham Ratner Children’s Eye Center.

“The new name more accurately captures the fullness of the work being done at Shiley,” said Pradeep Khosla, chancellor of the University of California, San Diego. “The Institute and Department of Ophthalmology, working hand-in-hand with the School of Medicine and other programs across campus, will leverage every possible tool and expertise, from genetics, bioengineering and pharmacy to pathology, neurosciences and stem cell research, to improve the treatment of eye diseases, find new cures and hasten the day when blindness is entirely preventable.”

Robert N. Weinreb, M.D., chair of the Department of Ophthalmology and director of the Shiley Eye Institute, said the institute’s emphasis would remain focused upon achieving excellence – in the clinic and in the laboratory. “The department will continue to partner with groups in San Diego and throughout the world to translate research into better vision. We also will continue to nurture and grow our programs for community outreach and continuing medical education for physicians.”

“It was always very clear that my late husband had a special place in his heart for the Shiley Eye Center,” said Darlene Shiley, a staunch supporter of the center since it was founded in 1991. “I will never forget how moved he was by (former director and department chair) Dr. Stuart Brown’s description of the work being done and the work that still needed to be addressed. And now, decades later, Dr. Robert Weinreb is focused on patient-centric care excellence and leading Shiley into new areas of eye research and treatment. Successful past, bright future – how lucky we all are to have such dedicated physicians, researchers, staff and eager volunteers.”

The Institute will include the new Richard C. Atkinson Laboratory for Regenerative Ophthalmology, created with a $6.5 million gift from a grateful patient. The new laboratory will investigate cell replacement therapies, tissue engineering and other biomedical advances to reverse vision loss and blindness.

“A major goal of the laboratory is to help bridge the gap between laboratory and clinic by bringing together brilliant minds and diverse talents in a shared facility,” said Weinreb. “This integrated approach will speed the transformation of discoveries in regenerative ophthalmology into clinical applications that can be tested through clinical trials.”

“The new Shiley Eye Institute embraces the larger mission of UC San Diego, its schools and programs and the UC San Diego Health System,” said David Brenner, M.D., vice chancellor of health sciences and dean of the School of Medicine. “Our goal is unprecedented collaboration across all disciplines, moving basic science to real-world applications as quickly and as effectively as possible and doing so in a way that truly improves patient care and lives. I think people will see that vision come to life in the Institute.”
Pictured L to R: Stuart I. Brown M.D., Robert N. Weinreb, M.D., Darlene Shiley, Chancellor Pradeep Khosla, Paul Viviano, and Dean David Brenner, M.D.
1983
Department of Ophthalmology created with the appointment of Stuart I. Brown, M.D. as the first Chair

1984
Opening of Ophthalmology campus clinic

1990
The groundbreaking of Shiley Eye Center

1990
DIGS (Diagnostic Innovations in Glaucoma Study) grant from National Eye Institute to Pam Sample, Ph.D.

1995
Opening of Anne F. and Abraham Ratner Children’s Eye Center under the direction of David Granet, M.D.

1995
Anne F. Ratner Chair in Pediatric Ophthalmology to David Granet, M.D.

1996
Circle of Sight holds its first Vision Research Lecture

1997
Establishment of the multidisciplinary Thyroid Eye Clinic under the direction of Don O. Kikkawa, M.D. with David Granet, M.D., and Bobby Korn, M.D., Ph.D.

2001
Shiley EyeMobile for Children first traveled to Head Start schools in San Diego

2003
ADAGES (African Descent & Glaucoma Evaluation Study) grant from the National Eye Institute to Linda Zangwill, Ph.D.
2004
Opening of the Hamilton Glaucoma Center under the direction of Robert N. Weinreb, M.D.

2004
Dr. Richard & Tatiana Lansche Chair in Ophthalmology to Stuart I. Brown, M.D.

2004
Opening of the Bill & Eve Weyland Residents Library

2006
Morris Gleich, M.D.
Endowed Chair in Glaucoma to Robert N. Weinreb, M.D.

2008
Shiley Expansion — added glaucoma/retina clinics, faculty offices/labs & new surgery recovery room

2012
Ophthalmic BioBank launched under the direction of Radha Ayyagari, Ph.D. and Linda Zangwill, Ph.D.

2012
Appointment of Don O. Kikkawa, M.D. as Chief, Clinical Services

2013
ADAGES II genetics grant received from the National Eye Institute for Glaucoma Genetics to Robert N. Weinreb, M.D.

2014
Stuart I. Brown Chair in Ophthalmology in Memory of Donald P. Shiley to Natalie A. Afshari, M.D.

2014
Napoleone Ferrara, M.D. awarded both Antonio Champalimaud Vision Award and Canada Gairdner Award

2014
K12 grant from National Eye Institute for training physician scientists to Robert N. Weinreb, M.D.

2010s

2011
Appointment of Robert N. Weinreb, M.D. as Chair

2013
Ben and Wanda Hildyard Chair for Diseases of the Eye to Felipe A. Medeiros, M.D., Ph.D.

2015
Establishment of the Richard C. Atkinson Laboratory for Regenerative Ophthalmology

2015
Shiley Eye Center granted Institute status (Shiley Eye Institute)

2015
Report of first nonsurgical treatment of cataracts under the direction of Kang Zhang, M.D., Ph.D.
Cataract Surgery

Seeing Better

By Natasha Josefowitz, Ph.D.
Reprinted from the La Jolla Village News, July 2015

Dr. Weinreb & Natasha

The shuttle car drops me off in front of the Shiley Eye Institute, part of UCSD Healthcare. I’m getting a clouded, natural lens removed and a clear, acrylic one put in. Even though cataract surgery is one of the most common procedures in the aging population and I have Dr. Robert N. Weinreb—the best possible surgeon—doing the operation, I am anxious.
After checking in with the person at the front desk, I am told to wait. I barely sit down when my name is called. A nurse takes me to a curtained cubicle and gives me a gown to be tied at the back, nonslip socks, and a lovely blue bonnet to cover my hair.

I lie down on a bed, I am covered with a warm blanket, and the sides are put up. Is it so that I don’t roll out or so that I can’t escape? A series of nurses come and go, and I’m given numbing drops in my eye. Dr. Weinreb comes by in surgical garb to tell me I must wait half an hour for the drops to take effect. I assure him that I am retired and not going anywhere.

In the meantime, I observe his interactions with his staff: there is a feeling of colleagueship, camaraderie between the various doctors, nurses, and technicians and Dr. Weinreb. He is among the best-known glaucoma doctors in the world and the head of the Shiley Eye Institute. It is a teaching hospital, so he is a boss, an instructor, and a mentor. He told me what an incredible group he has working with him. The credit for this is of course due to the relationships he has established and interactions he has with his team. There was palpable warmth in the surgical unit and evident caring from staff to patients.

An anesthesiologist comes over to talk to me. I say I only want local anesthetic, I want to be fully awake and not given Versed (midazolam), the drug that makes you forget everything that happened during the operation. I want to be there and remember it. He is glad to oblige. It is so important to feel trust in the people in whose hands we place our lives. I am wheeled into the operating room, and a cloth is put over my face with an opening for my left eye. More drops are put in, and, as I am happily chattering, Dr. Weinreb says, “Don’t move and don’t talk.”

I have no pain but feel some pressure on my eye. I see blue squares; round, shiny objects; a bright light; and floating things. I am both participant and observer. I hear the surgical-team members exchanging information on how the procedure is going. I don’t understand what they are saying, but I do hear Dr. Weinreb saying to me, “We are halfway there.” I feel relief. Then, “Three more minutes,” then “We’re done.” I am now post-op. I am wheeled back to my cubicle and given juice. Dr. Weinreb comes over to tell me that my operation was difficult, but successful; he is pleased.

A nurse comes to give me post-op instructions: Do not bend down and do not lift heavy objects. I’m given two prescriptions for drops. One must be put in every hour to decrease inflammation; the other is four times a day, an antibiotic. Someone calls a taxi to take me home to my retirement community. Everything is blurry, I can’t read. At dinner my friends all look young and wrinkle-free, like aging movie stars photographed with Vaseline on the lens. That evening, the TV is a bit blurry. I sleep wearing a plastic shield over my eye for protection. The next morning, my vision is clear, and my friends all have more wrinkles. By the end of the day, they look older than they were before my surgery.

I see Dr. Weinreb the next day, he is pleased with the way things went and takes the time to explain what was entailed in the procedure. Apparently it was challenging as I have a genetic defect (pseudoexfoliation) which makes my lenses prone to dislocating. It didn’t, due to his skill, I know. Another appointment is scheduled for in a week.

Two days later, I see better without my old glasses, and I am writing this column. At no time did I feel any pain. We here in La Jolla—in California—in the U.S.—are privileged to be living at a time and place where the top medical procedures are not only available, but are safe and are the best the world has to offer. I am grateful that I live in such a place, where operations are affordable and where there are such excellent doctors and staff to provide outstanding care for their patients.
EYE DROPS MAY PRODUCE CURE FOR CATARACTS

Millions of people around the world have cataracts which are treatable only through surgical removal of the lens and replacement with intraocular implants. New research raises the hope that someday cataracts could be cured with eye drops.

Cataracts occur when the clear lens in the eye clouds over and affects vision. The lens is made mostly of water and proteins. The cataract is formed when the proteins gather together, mis-align and cloud an area of the lens. Kang Zhang, M.D., Ph.D., Professor at the Shiley Eye Institute, and his team of researchers have discovered a promising substitute to surgery: an eye drop that effectively reverses cataracts in animal testing. Their findings were published in the journal Nature (July 2015; 523:607-11).

According to the National Eye Institute, from 2000 to 2010, the number of cataract cases in the US rose by 20% from 20.5 million to 24.4 million. They estimate by 2050 the number of cataracts in the US will double and rise to about 50 million.

The majority of cataracts are age related, but some can develop the condition as a result of an injury or a genetic defect. While researching how this defect led to cataracts, Dr. Zhang and his team studied two families who had children born with cataracts, known as congenital cataracts. By sequencing the children’s genomes, they identified genetic mutations that interfered with the production of a small molecule known as lanosterol.

Lanosterol, a naturally occurring steroid in the body, can reverse the mis-alignment of proteins in the lens of the eye that appear to cause cataracts, Dr. Zhang and colleagues discovered. Lanosterol works by dissolving misaligned proteins that cloud the lens, leaving behind the normal clear proteins, called crystallin.
They first showed that lanosterol has the ability to prevent or even eliminate cataracts through lab cell cultures and dissected lenses from rabbits. Zhang then treated dogs with age-related cataracts, which can happen in canines as well as humans. The treated eyes received lanosterol in topical eye drops, one drop three times a day for six weeks. The lens clarity significantly improved compared to controls.

“This groundbreaking research in the field of cataracts has the potential of touching the life of everyone,” states Natalie A. Afshari, M.D., Chief of the Cornea Division at the Shiley Eye Institute. “Every individual who lives long enough will be affected by cloudy lens of the eye and hence cataracts and cataract surgery is the most commonly performed surgery in the world. A step towards reversing cataracts is a major step towards advancement of modern medicine.”

Before trials can begin in humans, Zhang stated, “the team will need to test the toxicity of lanosterol even though it is manufactured by our body. We will next need to formulate the eye drop medication for a human trial, possibly at the end of next year.”

Dr. Zhang believes that bringing this cure to humans will require more preclinical testing. In the future, the drops could be given preventatively to those individuals at risk of developing cataracts or possibly even to reverse cataracts that already exist. If proven safe and effective, the treatment could greatly reduce the need for cataract surgery and lens replacement, preserving natural vision. His main objective is to develop an inexpensive and effective drug that can be used around the world.
DANCING THROUGH THYROID EYE DISEASE

Lights. Camera. Action. Joyce Schumaker has heard these words since her first dance recital at the age of eight. Her beginnings in childhood dance blossomed into a career in performing arts, graduating with a degree from San Diego State and later earning her teaching credential. For the next thirty years, she taught theater and dance at The School For Creative and Performing Arts at Chula Vista High School, where she shared her passion with many generations of aspiring young performers.

After she turned 40, Joyce’s life changed. She began to lose her hair, she gained weight and easily became physically winded, even though she was in peak shape. Her symptoms came on slowly and it was hard to connect the dots of her illness. It took several doctors and specialists to diagnose her with Graves disease. Worst of all, she did not look like herself and her eyes were red and painful.

It was around this time that Joyce’s eyes started to bulge out more and more, most especially after getting radiation for Graves’ Disease, an autoimmune condition that affects the thyroid gland and eyes. She was getting her eyes checked when her physician led her to the Shiley Eye Institute and both Don O. Kikkawa, M.D. and David B. Granet, M.D.. She met with them but was worried about surgery. Moreover, she needed to make insurance changes before proceeding with any treatment. Finally getting the courage, Joyce had orbital decompression surgery first with Dr. Kikkawa – all the while continuing to work. She then had surgery for eye alignment with Dr. Granet and finally eyelids surgery, again with Dr. Kikkawa. She now comes back yearly for check ups.

She retired in 2011, but kept moving! Working as a team with her late husband, Jack Tygett, she choreographed eight seasons for Starlight Musical Theater. For the last two years, she has served as choreographer for the San Diego Follies, a lavish production created specifically for talented performers aged 55 and over.

Joyce is still dancing and performing and takes weekly classes in tap, jazz and musical theater dance. She has appeared for two seasons as the Grand Mama in the San Diego Ballet Company’s production of The Nutcracker. She also performs with the San Diego Civic Dance Association and at various retirement homes throughout the San Diego area.

Joyce recently added another honor in her long list of accomplishments. She was crowned Ms. Senior San Diego in 2014, and was the first runner-up in the Ms. Senior California Pageant in 2015. It was no surprise that she won the talent portion of the competition.

She is eternally grateful to Dr. Granet for clearing her double vision and to Dr. Kikkawa for his skill in enhancing her appearance and making her feel “normal” again. It is largely due to these doctors, that Joyce is again able to pursue her passion for dancing and enjoy a life that enables her to give back to others through her love of performing.
25 YEARS OF DIAGNOSTIC INNOVATIONS IN
GLAUCOMA STUDY

Pictured L to R are: Felipe A. Medeiros, M.D., Ph.D., Pam Sample, Ph.D., Robert N. Weinreb, M.D., and Linda Zangwill, Ph.D.

Just after joining the Department of Ophthalmology in 1984, Robert N. Weinreb, M.D. had an idea for a new type of glaucoma investigation that he thought could enhance glaucoma management and reduce the likelihood of vision loss in glaucoma. He thought that by systematically testing glaucoma patients over a sustained time period, that new information could be obtained about how to diagnose glaucoma earlier than was then possible. With earlier diagnosis or earlier detection of worsening of the disease, appropriate treatment could be initiated to lower the
intraocular pressure (IOP) and reduce the rate of worsening. Partnering with Pam Sample, Ph.D. (currently Professor Emeritus), who joined the Department of Ophthalmology after completing post-doctoral training at UCSD, they initiated the Diagnostic Innovations in Glaucoma Study (DIGS) to study different aspects of visual function.

Twenty-five years later, over 2,500 healthy participants, patients suspected (but not having) glaucoma and glaucoma patients have enrolled and have been followed in three offshoots of the DIGS, the largest observational cohort study of glaucoma patients in the world. “From the outset until now, I have been struck by the willingness of our patients to join and continue to participate in this seminal study,” said Dr. Weinreb.

The first DIGS: Visual Function was funded by the National Eye Institute (NEI) of the National Institutes of Health (NIH) in 1990 under the direction of Dr. Sample. In 1993, Linda Zangwill, Ph.D., now Professor of Ophthalmology, was recruited to UCSD faculty and in 1995 the second DIGS: Structural Assessment was funded by the NEI to evaluate how to utilize new imaging technologies in the management of glaucoma patients. In 2011, the third DIGS: Functional Impairment Study was funded to Felipe A. Medeiros, M.D., Ph.D., now Professor of Ophthalmology.

With over 300 publications, DIGS has improved the:
- detection of glaucomatous structural damage and change
- understanding of the complex relationship between optic disc damage and early visual field loss
- measurement of the rate of structural change and how it is influenced by IOP
- prediction of who will develop progressive visual field loss
- characterization of the functional impairment in glaucoma.

Most recently, the DIGS under the direction of Dr. Medeiros is investigating how glaucoma leads to disability and how the disability can be reduced. Using an innovative virtual reality paradigm for evaluating postural balance control, Dr. Medeiros is investigating how loss of nerve cells in glaucoma may increase the risk of falls, as well as evaluating the influence of glaucomatous damage on driving.

DIGS investigators also have recently demonstrated that structural changes not only strongly predict future visual field loss, but that imaging-based measurements meet the strict criteria for consideration as a surrogate endpoint for visual field loss in clinical trials of glaucoma treatments.

After more than 25 years, the DIGS is still providing critical new information about glaucoma and, particularly, how it can be better diagnosed, better monitored and better treated.
ACUTE GLAUCOMA DISCOVERED TO BE AN INFLAMMATORY DISEASE

Kang Zhang, M.D., Ph.D., and a team of researchers at the Shiley Eye Institute and the UC San Diego School of Medicine along with collaborators at the Sun Yat-sen University in China have shown that acute glaucoma in mice is largely an inflammatory disease. Moreover, high pressure in the eye causes vision loss by setting in motion an inflammatory response similar to that evoked by bacterial infections. The study, published in the Proceedings of the National Academy of Sciences (2014; 111:1181-6), has immediate clinical relevance in treating the tens of millions of people worldwide with a type of glaucoma known as acute closed-angle glaucoma.

“Our research is the first to show an inflammatory mechanism by which high eye pressure causes vision loss in acute glaucoma patients,” said co-senior author Kang Zhang, M.D., Ph.D. and Professor of Ophthalmology.

One of two leading causes of irreversible blindness globally, glaucoma refers to a group of eye diseases associated with optic nerve degeneration. They are broadly classified as either open-angle or closed-angle. Open-angle is sometimes called the silent thief of sight because of its slow, often overlooked worsening. By contrast, acute closed-angle glaucoma often is a painful ophthalmologic emergency in which there is a sudden rise in eye pressure and immediate damage to eyesight.

Less than 10 percent of glaucoma patients in America have the closed-angle form, but in parts of Asia it accounts for almost half of all cases. The higher prevalence of closed-angle glaucoma in Asians and women is believed to be due to a shallower anterior (front part) of the eye chamber.

In the study, researchers showed that a rapid, sustained large increase in eye pressure in mice turns on a gene (TLR4) that activates a protein known as caspase-8. This signaling protein in turn triggers the production of inflammatory proteins that normally help mammals fight microbial infections.

“This immune response is a double-edge sword because, while these proteins protect us from infection in a normal situation, they stimulate apoptosis (programmed cell death) in retinal cells in cases of acute glaucoma,” said Zhang, who is also a staff physician at the Veterans Affairs San Diego Healthcare System. To further confirm the mechanism linking high eye pressure to retinal damage, researchers showed that they could slow retinal cell death in mice with acute glaucoma by suppressing either the TLR4 gene or caspase-8 protein.

The latter is particularly significant because caspase-8 inhibitors are currently in clinical trials for treating cancer and stroke. “By injecting these inhibitors into the eyes of acute glaucoma patients, it may be possible to evaluate and bring them vision-sparing treatments more quickly,” said co-author Robert N. Weinreb, M.D., Chairman and Distinguished Professor of Ophthalmology.
EARLY RETINA CELL CHANGES IN GLAUCOMA IDENTIFIED

Glaucoma, the second leading cause of blindness, occurs when eye pressure damages and destroys specialized neurons in the eye known as retinal ganglion cells. Researchers led by Andrew Huberman, Ph.D., Assistant Professor of Ophthalmology, Neurosciences and Neurobiology, revealed how some types of retinal ganglion cells alter their structures within seven days of elevated eye pressure while others do not.

"Understanding the timing and pattern of cellular changes leading to retinal ganglion cell death in glaucoma should facilitate the development of tools to detect and slow or stop those cellular changes and ultimately preserve vision", stated Dr. Huberman.

Retinal ganglion cells are specialized neurons that send visual information from the eye's retina to the brain. Increased pressure within the eye can contribute to retinal ganglion cell damage leading to glaucoma. Even with pressure lowering drugs, these cells eventually die leading to vision loss.

The study, published in The Journal of Neuroscience (2015 Feb 11; 35(6):2329-43), uses mouse models engineered to express a green fluorescent protein in four specific retinal ganglion cells subtypes that differ in location in the eye. Within seven days of elevated eye pressure, the retinal ganglion cells underwent rearrangements in different parts of the retina.

"We are very excited about this discovery," Huberman stated. "One of the major challenges to detection and treatment of glaucoma is that you have to lose a lot of cells or eye pressure has to go way up before you know you have the disease. These results tell us we should design visual field tests that specifically probe the function of certain retinal cells."

This research was funded in part by the Glaucoma Research Foundation Catalyst for a Cure and the E. Matilda Ziegler Foundation for the Blind.
Mikaella (Mykee) was born in May 2013. She did not have eyelids in one eye and was missing an eye on the other side. She is the fourth child of Melissa and Michael Pecson from the Philippines. Immediately, the parents were concerned for their daughter’s condition and sought medical attention. Her family in the Philippines and in the United States began an exhaustive search to find help by telephone, internet research and speaking with medical personnel. Medical records and pictures were sent out to multiple academic medical centers throughout the US in the hope of a treatment plan that would render her vision.

The family found the Shiley Eye Institute online and determined that it was staffed with the best surgeons to help baby Mikaella. Her uncle Joseph, who lives in Murrieta, California, commented, “In particular, it was the biography of Dr. Kikkawa that caught our attention. All of the treatment Mykee needed was at Shiley.” Mykee and her family have been staying with Uncle Joseph and his family in Murrieta during her care in the US.

The family contacted Don O. Kikkawa, M.D., Professor of Ophthalmology and Chief, Division of Oculofacial Plastic and Reconstructive Surgery, and received a fast response with a call from him personally. Dr. Kikkawa learned that the baby was on the East Coast being evaluated and that they were able to fly to San Diego immediately to meet with him. Joseph went on to say, “This is a testament to the well-orchestrated Shiley Eye Institute at UC San Diego. Their ability to recognize a unique case, that presented with such a rare abnormality and quickly respond, are further testaments”.

The family was overwhelmed with the caring staff on their initial visit to the Shiley Eye Institute. They were first seen by Shira Robbins, M.D., Clinical Professor in the division of Pediatric Ophthalmology and her team at the Ratner Children’s Eye Center. Next, Dr. Kikkawa evaluated the baby’s eyelids and orbit and ordered an ultrasound to
further determine the extent of Mykee’s condition. The ultrasound of Mykee’s right eye appeared to be normal. Chris W. Heichel, M.D., Associate Clinical Professor in the Division of Cornea and Refractive Surgery, then examined Mykee. The three doctors diagnosed Mykee with partial cryptophthalmos (the skin is continuous over the eyeball) in the right eye and complete cryptophthalmos in the left eye. They offered their services to help baby Mykee quickly, as the window of opportunity for vision development was closing fast. The treatment would consist of a series of surgeries. Without intervention, they thought Mykee would lead a life without sight.

Her Uncle Joseph stated, “A ray of hope! This is where we need to be and who we need to see. There wasn’t any doubt in our minds that we had the right facility, the right doctors, and all the technological equipment to evaluate and operate to help baby Mykee. UCSD gave us hope and Mykee a fighting chance.”

Since Mykee was born, her parents had been inserting a moisturizing gel every 30 minutes into her eyes, for more than four months to keep the eyes lubricated. Her eyelids were fused to her right eye which did not allow normal blinking and her skin had grown over her cornea blocking her vision.

Uncle Joseph continues, “The day of her first surgery, all of the medical staff performed their tasks insuring us that everything would go as planned. What people don’t see is the countless number of staff that plan and coordinate to get the patients to the operating table. One could compare the procedures to that of a pre-flight checklist performed by pilots and aircrew to insure flight safety for their passengers. After the operation, we were greeted by well-wishers from the medical staff and told how Mykee has garnered the attention of everyone within the department.”

Since 2013, Mykee has had 6 more procedures. Joseph states, “We have truly been blessed. Every appointment has produced nothing but positive results. From our first visit to our latest follow up, the well-trained physicians and staff are true professionals who are well aware of their call to duty. The journey continues with more surgeries. Family, friends of family, well-wishers, and the staff of the Shiley Eye Institute have all been extremely supportive of Mykee. “Operation Vision” is underway and the end is in sight!”

Mikaela is almost three years old and now walks and runs without aid. She can read using glasses! She will continue to obtain her care with the specialized team of doctors at the Shiley Eye Institute. Updates on Mykee and the next chapter of her life will be shared from her Facebook page, “The End is in Sight.”
SHILEY EYE INSTITUTE WELCOMES
DOROTA SKOWRONSKA-KRAWCZYK, PH.D.

Dorota Skowronska-Krawczyk, Ph.D. is originally from Lodz, Poland. She was awarded her Ph.D. at the University of Geneva and conducted post doctoral research at the Eye Hospital Jules Gonin and UCSD in the laboratory of Michael G. Rosenfeld, M.D., in the Department of Cellular and Molecular Medicine.

Dr. Skowronska-Krawczyk’s studies have focused on molecular mechanisms’ roles in retina development using molecular and cellular approaches. She has developed a state-of-the art technology in retinas to study the in vivo association of transcription factors with target promoters and has applied this technology to study genomewide association of many transcription factors during organogenesis. She has also studied the role of intrinsic and extrinsic factors in retinal ganglion cell development.

In addition to her recent breakthrough research on glaucoma (see accompanying article), she has studied fetal brain development and how newly differentiated neurons undergo cell migration to reach appropriate bodily positions and form functional circuits. Dr. Skowronska-Krawczyk also has published on the nuclear organization and genome 3D structures that play prominent roles in the regulation of gene expression.

IDENTIFIED GENETIC INTERACTIONS OFFER POSSIBLE NEW TARGET FOR
GLAUCOMA THERAPY

It is fascinating to understand how transcriptional output, in this case expression of p16INK4a, can be modulated by subtle alterations in multiple pathways to mediate key changes in cell functionality and viability.

Dorota Skowronska-Krawczyk, Ph.D., newly appointed to the faculty of the Department of Ophthalmology and a team of scientists at the Shiley Eye Institute and the UC San Diego School of Medicine have elucidated a genetic interaction that may prove key to the development and progression of glaucoma, a potentially blinding disease that affects tens of millions of people worldwide and is a leading cause of irreversible blindness.
The findings, published in Molecular Cell (2015;59:921-40), suggest a new therapeutic target for treating the eye disease.

Primary open-angle glaucoma (POAG) is the most common form of glaucoma, affecting more than 3 million Americans, primarily after the age of 50. Pressure inside the eye (known as intraocular pressure) and age are the leading risk factors for POAG, resulting in progressive degeneration of retinal ganglion cells, optic nerve damage and eventual vision loss.

Genetics also plays a role. Recent genome-wide association studies have identified two genes – SIX1-SIX6 and p16INK4a – as strongly associated with POAG. SIX6 is required for proper eye development. P16INK4a irreversibly arrests cell growth, a phenomenon called senescence.

In their recently published article, the Shiley team reports that some variants of SIX6 boost expression of p16INK4a, which in turn accelerates senescence and death of retinal ganglion cells.

“We also show that high eye pressure in glaucoma increases expression of p16INK4a, making it a key integrator of inherent genetic and environmental risk factors that can result in glaucoma,” said Kang Zhang, M.D., Ph.D., senior author and Professor of Ophthalmology.

The findings suggest that inhibiting p16INK4a could offer a new therapeutic approach for glaucoma, which is currently treated by drugs that lower intraocular pressure. “Although lowering intraocular pressure can slow worsening of the disease, it does not stop it and prevent further cell death or possible blindness,” said co-author Robert N. Weinreb, M.D., Distinguished Professor of Ophthalmology and director of the Shiley Eye Institute. The authors also note that earlier studies in mouse models have shown that selective elimination of p16INK4a-positive senescent cells can prevent or delay age-related tissue deterioration.

Dr. Skowronska-Krawczyk states, “It is fascinating to understand how transcriptional output, in this case expression of p16INK4a, can be modulated by subtle alterations in multiple pathways to mediate key changes in cell functionality and viability.”

According to the Shiley research team, the next step is to conduct preclinical studies to assess the efficacy and safety of antisense oligonucleotides – strands of synthesized DNA or RNA that can prevent transfer of genetic information – which might inhibit p16INK4a expression and prevent worsening of glaucoma. “If they are effective, we may contemplate a human clinical trial in the future,” Zhang said.

Model of sequence of events leading to RGC death upon Six6 upregulation in glaucoma indicating p16INK4a as a downstream integrator of diverse signals such as inherited genetic risk, age and eye pressure, in the pathogenesis of glaucoma.

IOP-treatment of Thy1-CFP retinas shows that the majority of SA-βgal-positive (senescent) cells are also Thy1-CFP positive (arrowheads - double positive RGCs; arrow- nonsenescent RGC).
NEW TREATMENTS FOR RETINAL DISEASES

William R. Freeman, M.D. and his colleagues Eric Nudleman, M.D., Ph.D., Michael Goldbaum, M.D., Henry Ferreyra, M.D. and Kang Zhang, M.D., Ph.D. at the Shiley Eye Institute, are developing new treatments for macular degeneration, diabetes and retinal detachments.

Dry age-related macular degeneration (AMD), a slowly progressive disease causing blank areas in the vision which gradually progress, is currently treated with high dose anti-oxidant vitamins but the beneficial effect is small.

Figures 1 and 2 are fluorescein and autofluorescence scans of the retina with the geographic form of dry macular degeneration. These patients are now being treated at the Jacobs Retina Center by a long acting implant to prevent disease progression using a neuroprotective drug.

The Jacobs Retina Center is participating in two clinical trials for AMD. One involves administration of an intravenous medication monthly to slow down and halt the progression of the disease. This intravenous drug causes reabsorption of certain abnormal proteins believed to be responsible for the disease.

Additionally, retina specialists at the Jacobs Retina Center are testing a small implant which is placed into the vitreous cavity of the eye and a slow release of a neuroprotecting drug occurs to prevent degeneration.

The retina team is treating wet macular degeneration patients as well with combination therapy to try to get more vision improvement than is typically possible with treatment of one drug (e.g., Lucentis, Avastin or Eylea). These studies involve the addition of a new medication, Fovista, to the widely used treatments. The team also is evaluating longer acting medications for wet AMD. This includes implantation of cells in the eye which secrete drugs to halt the progression of wet AMD and longer acting formulations of current drugs.
People with achromatopsia, an inherited eye disorder, see the world literally in black and white. Jonathan H. Lin, M.D., Ph.D., Associate Professor of Ophthalmology and Pathology, and his international team have identified a previously unknown gene mutation that underlies this disorder. The study was published in the journal Nature Genetics.

“There are whole families with this sort of vision problem all over the world,” said Dr. Lin. “We’re very excited to have discovered a mutation in the ATF6 gene which plays a major role in this disorder.” The study found that a mutation in the ATF6 gene damaged proteins necessary for proper function of the eye’s cone photoreceptors in the retina. The eye has millions of these receptors, which control color recognition and daytime vision.

In achromatopsia, malfunction of the cone photoreceptors causes sufferers to be either totally or predominantly colorblind. “Achromatopsia sufferers see images on the gray scale,” explained Lin. They also have problems with visual acuity and sensitivity to light. As levels of light increase, their vision decreases. In severe cases, achromatopsia sufferers “can’t drive, read, watch TV or have a job,” said Lin. “With that level of vision, they are functionally blind.” About 10,000 Americans have the disorder.

The discovery also could have application in other diseases. “It raises the possibility that the ATF6 gene mutation may be related to other much more common eye diseases, such as macular degeneration and retinitis pigmentosa,” said Lin. These and several other eye diseases involve the loss of cone photoreceptors. The finding is exciting, continued Lin, because it provides an opportunity to eventually develop a treatment. Currently there is no cure or treatments for achromatopsia. “It’s early days yet,” he said. “But pinpointing the genetic cause allows us to focus on finding a way to block this mutation.

Clinical trials are already in the works to fix one of the other mutated genes, and gene therapy is also under investigation. The research team is very interested in hearing from other families that may have this disorder, added Lin. “There are probably more people out there with these gene mutations. We’re interested in doing screening and seeing if this is contributing to vision loss in other families.” The research was funded in part by the National Institutes of Health and other sources from study co-authors and their institutions.
PATIENT SEMINARS

THYROID EYE DISEASE (TED) AND GRAVES' DISEASE SEMINAR
On February 28, 2015, “The TED Journey – From Start to Finish” co-hosted with the Graves' Disease and Thyroid Foundation (GDATF) a patient seminar and live webinar were held at the Shiley Eye Institute. TED is characterized by abnormal enlargement of the thyroid gland and swollen or inflamed eye muscles that can cause the eyeballs to protrude from their sockets.

Physician presenters and panelists included Shiley's Thyroid Eye Clinic team David B. Granet, M.D., Don O. Kikkawa, M.D. and Bobby S. Korn, M.D., Ph.D. along with UCSD doctors Michael Bouvet, M.D. (Thyroid Surgery) and Karen McCowen, M.D. (Endocrinology.) The seminar also incorporated a panel with 3 patients from various ages and stages of TED giving their perspective on being diagnosed and experience of going through the treatment and surgical process. The patients brought hope and inspiration to the entire audience sharing their very personal and emotional TED journeys.

Established in 1990, the Graves' Disease and Thyroid Foundation provides education and support for patients, families, caregivers, friends and healthcare professionals on the symptoms and treatment for Graves' Disease.

Pictured L to R: Michael Bouvet, M.D., Karen McCowen, M.D., David B. Granet, M.D., Don O. Kikkawa, M.D. and Bobby S. Korn, M.D., Ph.D.
GLAUCOMA UPDATE
Each year, for more than three decades, Robert N. Weinreb, M.D. has presented a “Glaucoma Update” to his patients. He describes new trends in glaucoma research at the Shiley Eye Institute and around the world. This year’s lecture was entitled “Precisely Glaucoma” and he discussed personalizing each patient’s treatments or medicines according to their conditions, utilizing the latest technology like electronic medical records and the new Shiley BioBank.

CORNEAL DYSTROPHY CONFERENCE
The “Women of Vision” 2015 Corneal Dystrophy Symposium was held in San Diego on May 8-9, 2015 co-organized by the Shiley Eye Institute and the Corneal Dystrophy Foundation. Corneal dystrophy is a potentially blinding disease affecting the cornea, the transparent front part of the eye. The focus of the conference was Fuchs’ Dystrophy in which cells lining the inner surface of the cornea slowly die off and the cornea loses its clarity as it becomes swollen.

Natalie A. Afshari, M.D. was the Medical Chairman of the Symposium and discussed a genome wide association study of Fuchs’ endothelial corneal dystrophy and Fuchs research being done at the Shiley Eye Institute. Also presenting from Shiley was Esmeralda McClean, O.D. Individuals from throughout the US attended the conference. Many poignant stories were shared by patients who have been impacted by the disease.

The Corneal Dystrophy Foundation provides education and support to people who suffer from corneal dystrophy and provides guidance and resources for people seeking treatment and help in dealing with the disease. The mission of the Corneal Dystrophy Foundation is to increase the public’s awareness of corneal dystrophy.
SHILEY EYE INSTITUTE WELCOMES

KARL WAHLIN

The UC San Diego Shiley Eye Institute welcomes regenerative ophthalmology and stem cell researcher Karl Wahlin, Ph.D. The newly appointed Assistant Professor will inaugurate the establishment of the Richard C. Atkinson Laboratory for Regenerative Ophthalmology.
Dr. Wahlin joins the Shiley team from the Johns Hopkins School of Medicine where he completed a post-doctoral fellowship at the Wilmer Eye Institute. Dr. Wahlin received his doctorate in the Department of Neurosciences at Johns Hopkins School of Medicine where he studied retinal synaptogenesis, the process whereby neurons establish connections with one another. Much like the two-pronged plug on a lamp, the light responsive photoreceptors need to plug into the retina so that light signals originating in photoreceptors can pass to the brain. These so-called synaptic connections at the base of each photoreceptor are important since for stem cell transplantation to succeed, newly transplanted photoreceptors need to “plug-in” to the recipient retina.

“Dr. Wahlin’s innovative research in the Richard C. Atkinson Laboratory for Regenerative Ophthalmology will enhance the ability of our department to find further treatments and cures for retinal degenerations including macular degeneration, glaucoma and other eye diseases,” states Robert N. Weinreb, M.D., Distinguished Professor and Chair of the Department of Ophthalmology.

Dr. Wahlin has focused his efforts on implementing and developing technologies to coax human “induced pluripotent stem cells” (iPS) into retinal photoreceptors. He has developed 3D “mini-retinas” which resembled actual retinas and with newly developed genome engineering tools he has used sharpened molecular scissors to introduce fluorescent markers into cells in order to monitor their development and to introduce mutations to create stem cell based models of human retinal disease.

Dr. Wahlin will continue to develop cell-based strategies for vision repair in the Atkinson Laboratory at Shiley. Using stem cells, he will use high throughput techniques to study the biology involved in a cell’s transformation from an undifferentiated progenitor into a mature photoreceptor, RPE and ganglion cells. He will also develop stem cell models of inherited retinal dystrophy applicable towards macular degeneration, retinitis pigmentosa and glaucoma. Sometimes referred to as a “disease-in-a-dish” approach, this method is arguably the best opportunity to study the more than 280 mutations that result in retinal degenerations. It is hoped that these efforts will eventually lead to cell based therapies to treat retinal degenerations.

“I am honored to be part of UC San Diego’s Shiley Eye Institute which is strongly committed to developing the next generation of stem cell-based therapies. The resources, talent and wide range of expertise make this the best place to pursue these efforts. I look forward to working together with my new colleagues to develop exciting new treatments for degenerative eye diseases”.  

Human stem cell derived 3D retinas labeled with rod and cone markers.

Pluripotent stem cells engineered to express a green fluorescence protein.

Stem cells expressing the pluripotency transcription factor OCT4.
1977  Michael H. Goldbaum, M.D.
Retina - Ophthalmology was a division in the Department of Surgery

1983  Stuart I. Brown, M.D.
Cornea - Became inaugural Chair

1984  Robert N. Weinreb, M.D.
Glaucoma - First department recruit

1986  William R. Freeman, M.D.
Retina

1990  Dirk-Uwe Bartsch, Ph.D.
Retina Imaging Research

1991  James D. Lindsey, Ph.D.
Glaucoma Research Faculty

1993  David B. Granet, M.D.
Pediatric Ophthalmology and Adult Eye Alignment

1993  Don O. Kikkawa, M.D.
Ophthalmic Plastic and Reconstructive Surgery

1995  Linda Zangwill, Ph.D.
Glaucoma Research

1995  Rigby Slight, M.D.
Glaucoma
1996  Lingyun Cheng, M.D.  Retina Research
2000  Christopher Bowd, Ph.D.  Glaucoma Research
2003  Weldon W. Haw, M.D.  Cornea - Chief, La Jolla VA Hospital
Shira L. Robbins, M.D.  Pediatric Ophthalmology and Adult Eye Alignment
Gabriel A. Silva, Ph.D.  Retina Research
2004  Christopher W. Heichel, M.D.  Cornea
2005  Felipe A. Medeiros, M.D., Ph.D.  Glaucoma
Won-Kyu Ju, Ph.D.  Glaucoma Research
Bobby S. Korn, M.D., Ph.D.  Ophthalmic Plastic and Reconstructive Surgery
Radha Ayyagari, Ph.D.  Retina Research – Molecular Genetics
Henry A. Ferreyra, M.D.  Retina
2008  Jonathan H. Lin, M.D., Ph.D.  Ophthalmic Pathology
Peter J. Savino, M.D.  Neuro-Ophthalmology
Kang Zhang, M.D., Ph.D.  Retina and Genetics
Jeffrey E. Lee, M.D.  Comprehensive - Chief, UCSD Medical Center Eye Clinic
2009  Peter Shaw, Ph.D.  Retina Research
2010  Jiagang “Jack” Zhao, Ph.D.  Cornea Research
2011  Natalie A. Afshari, M.D.  Cornea and Refractive Surgery
Napoleone Ferrara, M.D.  Retinal Vascular Research
2012  2013  Akram Belghith, Ph.D.  Glaucoma Research
Siamak Yousefi, Ph.D.  Glaucoma Research
Eric Nudleman, M.D., Ph.D.  Retina
2014  Karl Wahlin, Ph.D.  Regenerative Ophthalmology
Dorota Skowronska-Krawczyk, Ph.D.  Vision Research
GLAUCOMA

Glaucoma can cause blindness if untreated and is the second leading cause of blindness in the United States. More than 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 UC San Diego Hamilton Glaucoma Center offers comprehensive and unparalleled glaucoma diagnostic services 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, a dedicated visual performance laboratory, objective perimetry with pupillometry, swept source OCT for imaging of the lamina cribosa and choroid, OCT angiography, as well as a visual performance laboratory with a driving simulator. Our glaucoma specialists are world renowned for their clinical and research excellence and offer unique management programs for glaucoma through clinical trials and innovative medical and surgical therapies that include genetic testing and regenerative ophthalmology.

ROBERT N. WEINREB, M.D.
Chairman & Distinguished Professor of Ophthalmology
Director, Shiley Eye Institute
Director, Hamilton Glaucoma Center
Morris Giebel, M.D. Chair of Glaucoma
Distinguished Professor of Bioengineering

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; The aging eye; Imaging of optic disc and nerve fiber layer; Neuroprotection in glaucoma; Drug delivery; Cataract surgery

NOTABLES
2014-2015 America’s Top Doctors; 2014-2015 Best Doctors in America; 2015 President, Pan American Glaucoma Society; Associate Editor, Journal of Glaucoma Editorial Board; Chief Editor, International Glaucoma; Editor, International Glaucoma Review; Research Editor, Survey of Ophthalmology; and Editor, Investigative Ophthalmology and Visual Science. 2015 Galvanizing Engineering in Medicine Award (UCSD); 2014-2015 US News and World Report Top Doctors (Top 1%); 2014-2015 Cited in Woodward/White Best Doctors in America. 2014 Honorary Professor, Chinese University of Hong Kong; 2014 Advisory Board, State Key Laboratory in Ophthalmology, Sun Yat-Sen University, Guangzhou; 2014-2015 President Pan American Glaucoma Society; 2013 Innovators Award, American Glaucoma Society; Visiting Professor, Huazhong University of Science and Technology, Wuhan, China (2013-2016); 2012-2014 President, American Glaucoma Society Foundation; 2013 Honorary Member, Societe Francaise D’Ophthalmologie; Heed Ophthalmic Foundation Award; Past-President, Association for Research in Vision and Ophthalmology; Past-President, World Glaucoma Association; Inaugural ARVO Gold Medal; Ridley Medal; Past-President American Glaucoma Society; Adjunct Professor, Chinese University of Hong Kong; Moeyt E Alvaro Medal; World Glaucoma Association Founders Award, Leydenck-Harrs Medal; Lifetime Achievement Award American Academy of Ophthalmology; Watson Medal of Cambridge University; Asia Pacific Glaucoma Society International Award
FELIPE A. MEDEIROS, M.D., PH.D.
Professor of Clinical Ophthalmology
Medical Director & Director, Visual Function Research
Ben and Wanda Hildyard Chair for Diseases of the Eye

MEDICAL SCHOOL & RESIDENCY
University of Sao Paulo

FELLOWSHIP
University of California, San Diego

CERTIFICATION
Board Certification in Ophthalmology

SPECIAL INTERESTS
Management of challenging glaucoma cases and new surgical procedures; Ocular Abnormalities; 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
2014 Glaucoma Institute Strategic Research Award; 2013 Ben and Wanda Hildyard Chair for Diseases of the Eye; 2013 Top 6 Glaucoma Researchers of the Decade (ExpertScout); 2013 Best Doctors in America; 2013 Rich Lecturer, University of Alabama at Birmingham; 2013 South African Glaucoma Society Honorary Member; 2012 Iranian Society of Ophthalmology Recognition Award; 2012 Federal University of Sao Paulo Special Recognition Award; 2012 American Academy of Ophthalmology (AAO) Glaucoma Subspecialty Day Planning Group; 2012 Member of the AAO B6CS Committee; 2012 Member of the Research Committee, American Glaucoma Society; Young Lowey 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; 2015 Best Doctors In America; University of Sao Paulo Recognition Award; AlYAO Foundation/Merck Innovative Ophthalmology Research Award; Arno Habicht Award for Research Sciences; David Worthen Memorial Lecture, Johns Hopkins University; Brazilian Council of Ophthalmology International Award

LINDA ZANGWILL, PH.D.
Professor of Ophthalmology in Residence
Co-Director of Clinical Research, Hamilton Glaucoma Center
Director, Hamilton Glaucoma Center, Data Coordinating Center

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

POSTDOCTORAL FELLOWSHIP
University of Waterloo, Waterloo, Ontario, Canada

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
2013 “Women Who Mean Business” Award from the San Diego Business Journal; Glaucoma Research Society (elected member); Achievement Award American Academy of Ophthalmology; Association for Research in Vision and Ophthalmology Silver Fellow; Glaucoma Societies; Achievement Award American Academy of Ophthalmology; Association for Research in Vision and Ophthalmology Silver Fellow

DOROTA SKOWRONSKA-KRAWCZYK, PH.D.
Associate Project Scientist of Ophthalmology

GRADUATE SCHOOL
University of Geneva, Switzerland

POSTDOCTORAL FELLOWSHIP
Eye Hospital Jules Gonin, Lausanne, Switzerland
University of California, San Diego

SPECIAL INTERESTS
Molecular mechanisms in retina development and in genetic and age related eye diseases.

NOTABLES
The San Diego Foundation Blasker Science & Technology Grant; EMBO (Excellence in Life Sciences) Long Term Fellowship; Swiss National Science Foundation Advanced Postdoctoral Mobility Fellowship; Swiss Society for Neuroscience Fellowship; Poland’s Minister of Education Scholarships
JOHN H.K. LIU, PH.D.
Adjunct Professor of Ophthalmology
Director, Glaucoma Molecular Pharmacology Laboratory

GRADUATE SCHOOL
National Tsing Hua University (M.S.)
Texas A&M University (Ph.D.)

POSTDOCTORAL FELLOWSHIP
Harvard University Medical School

SPECIAL INTERESTS
Regulation of intracocular pressure and ocular blood flow; 24-hour sleep lab for glaucoma and other eye diseases

AKRAM BELGHITH, PH.D.
Assistant Project Scientist of Ophthalmology

GRADUATE SCHOOL
University of Strasbourg, France

POSTDOCTORAL FELLOWSHIP
University of California, San Diego

SPECIAL INTERESTS
Change detection and monitoring of glaucoma; Image processing and machine learning classifier analyses

CHRISTOPHER BOWD, PH.D.
Research Scientist of Ophthalmology
Director, Hamilton Glaucoma Center-based Visual Field Assessment Center
Co-Director, Hamilton Glaucoma 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 of glaucoma; Improved techniques for monitoring structural and functional change related to glaucomatous progression using machine learning and pattern recognition based techniques; Combining structural and functional measurements to improve detection of glaucomatous progression

ANDREW D. HUBERMAN, PH.D.
Assistant Professor of Neurosciences/Neurobiology/Pharmacology

GRADUATE SCHOOL
University of California, Davis

POSTDOCTORAL FELLOWSHIP
Stanford University School of Medicine

SPECIAL INTERESTS
Retinal development and retinal ganglion cells

NOTABLES
Pew Biomedical Scholar Award (2013-2016), McKnight Neuroscience Scholar Award (2015-2016)
WON-KYU (DANIEL) JU, PH.D.
Associate Professor of Ophthalmology

GRADUATE SCHOOL
The Catholic University in Korea (Masters & Ph.D.)

POSTDOCTORAL FELLOWSHIP
Washington University in St. Louis (Postdoctoral Fellow)
Sanford-Burnham Medical Research Institute (Staff Scientist)

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
Johns Hopkins University School of Medicine

SPECIAL INTERESTS
Retinal ganglion cell function; Methods for retinal ganglion cell rescue and optic nerve regeneration; Mechanisms for aqueous outflow regulation

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
UC San Diego sleep study comparing the effects of investigational eye drops; UC San Diego Diagnostic Innovations in Glaucoma Study; Clinical research in glaucoma; UC San Diego Optic Disc Reading Center

SIAMAK YOUSEFI, PH.D.
Assistant Project Scientist of Ophthalmology

GRADUATE SCHOOL
Sahand University of Technology (M.S.)
University of Texas at Dallas (Ph.D.)

POSTDOCTORAL FELLOWSHIP
University of California, Los Angeles
University of California, San Diego

SPECIAL INTERESTS
Data mining, machine learning, and pattern recognition; Ophthalmic image analysis, optical imaging, and medical imaging; Brain-Computer Interface (BCI)

NOTABLES
Senior Member of IEEE, 2015; Teaching and Research Award from College of Science, San Diego State University 2015; Co-author of the Best Poster Award; Received TA/RA Full Graduate Scholarship Award from Electrical Engineering Department of UTD
RETINA & 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
Co-Director UCSD Retinal Engineering Center, Institute of Engineering in Medicine
Director, Retina Fellowship Training

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 (Vitreo-Retinal Surgery)

CERTIFICATION
Board Certification in Ophthalmology

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

NOTABLES
2015 Galvanizing Engineering in Medicine Award (UCSD); 2014-2015 America’s Best Doctors; 2014 Best Doctors in America; 2013 US News and World Report’s Top Doctors; 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
2015 Castle Connolly Top Doctor; 2013 US News and World Report’s Top Doctors; 2013 San Diego Magazine Top Doctor; Senior Achievement Award American Academy of Ophthalmology

RADHA AYYAGARI, PH.D.
Professor in Residence of Ophthalmology & Pathology
Chief, Ophthalmic Molecular Diagnostic Laboratory (CLIA certified)
Director, Shiley Eye Institute BioBank

GRADUATE SCHOOL
Osmania University, Hyderabad, India

POSTDOCTORAL FELLOWSHIP
Molecular Genetics at the National Eye Institute, NIH, Bethesda

CERTIFICATION
Board Certification in Molecular Diagnostics

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 pole

NOTABLES
Achievement Award from the American Academy of Ophthalmology; Fellow of the Association for Research in Vision and Ophthalmology; Association for Research in Vision and Ophthalmology (ARVO) Gold Fellow in the Class of 2013
LINGYUN CHENG, M.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

FELLOWSHIP
University of California, San Diego
Ideta Eye Hospital, Japan

SPECIAL INTERESTS
Ocular drug delivery and vitreoretinal diseases

HENRY A. FERREYRA, M.D.
Associate Clinical Professor of Ophthalmology
Director of Medical School Education

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; Paraneoplastic / autoimmune retinopathy; Age-related macular degeneration; Diabetic retinopathy; Retinopathy of prematurity; Adult and pediatric vitreoretinal diseases

NOTABLES
Outstanding Teaching Award for Medical School Education at UC San Diego; Outstanding Clinical Teaching Award for Residency Education at UC San Diego

ERIC NUDLEMAN, M.D., PH.D.
Assistant Professor of Clinical Ophthalmology

MEDICAL SCHOOL
Albert Einstein College of Medicine (M.D.)
Stanford University (Ph.D.)

RESIDENCY
Washington University in St. Louis

FELLOWSHIP
Associated Retinal Consultants / William Beaumont Hospital

CERTIFICATION
Board Certification in Ophthalmology

SPECIAL INTERESTS
Adult and pediatric vitreoretinal diseases, including macular degeneration, diabetic eye disease, retinal vein occlusions, retinal detachments, proliferative vitreoretinopathy, macular holes and epiretinal membranes; Specialty interest in pediatric vitreoretinal diseases, including the surgical management of advanced retinopathy of prematurity, familial exudative vitreoretinopathy, Coats disease, persistent fetal vascular syndrome, and intraocular trauma; Scientific focus on developmental angiogenesis, with emphasis on the role of the Wnt Signaling pathway in developmental vascular diseases

NOTABLES
2013 Ronald G. Michels Fellowship
PETER SHAW, PH.D.
Assistant Adjunct Professor of Ophthalmology

GRADUATE SCHOOL
McMaster University, Ontario, Canada

POSTDOCTORAL FELLOWSHIP
University of California, San Francisco

SPECIAL INTERESTS
Evaluation and diagnosis of eye diseases including macular degeneration; Diabetic retinopathy; Glaucoma and inherited retinal degenerations by genetic variants and plasma biomarkers; Investigation of how genetic and oxidative stress risk factors impact on disease pathology; Development of molecular and gene therapy methods to treat 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
Co-Director, Retinal Engineering Center

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
2015 Galvanizing Engineering in Medicine Award (UCSD); 2014 Biocom Cell Art Exhibit winning entry: "SEM of cortical neurons on optoelectronics nanowires"; 2013 - Society for Neuroscience (SfN) 2013 annual meeting ‘Hot Topic’ abstract; 2013 - ‘Faculty of the Year’ award for undergraduate education; 2012 - Tau Beta Pi engineering Honors Society; 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

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 in Translational Research; NIH Director’s Transformative R01 Award; NIH K23 Mentored Clinician 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
CORNEA & REFRACTIVE

The Shiley Eye Institute 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 treatments for complex and high-risk corneal and external diseases, as well as the most current vision correction procedures.

NATALIE AFSHARI, M.D.

Professor of Ophthalmology
Stuart I. Brown, M.D. Chair in Ophthalmology in Memory of Donald P. Shiley
Chief, Division of Cornea and Refractive Surgery
Director of Education

MEDICAL SCHOOL
Stanford University Medical School

RESIDENCY
Harvard University, Massachusetts Eye and Ear Infirmary

FELLOWSHIP
Harvard University, Massachusetts Eye and Ear Infirmary

CERTIFICATION
Board Certification in Ophthalmology

SPECIAL INTERESTS
Fuchs Dystrophy, Cataract surgery; Corneal transplantation; Endothelial keratoplasty (DSAEK & DMEK); Intacs and collagen crosslinking for keratoconus; Laser refractive surgery, including LASIK and PRK, Surgical and medical diseases of cornea

NOTABLES
America’s Best Doctors; 2014 Senior Achievement Award of American Academy of Ophthalmology (AAO); 2014 Women Who Mean Business Award; U.S. News and World Report Top Doctors; Top 10 Women in Medicine Award; Cornea Society Board of Directors; AAO Secretariat Award; 2014 Chair of American Society of Cataract and Refractive Surgery FDA committee; Chief Judge Emeritus for American Society of Cataract and Refractive Surgery Scientific Posters; Leadership Development Program of AAO; AAO Achievement Award; Councillor Emeritus AAO; Co-editor of textbook Principles and Practice of Cornea; Research to Prevent Blindness Award; Heed Foundation Award; WIO Educator Award; 2016 Fellow of The Association for Research in Vision and Ophthalmology; Educator Award-Women in Ophthalmology 2015; Board of Directors, San Diego Eye Bank (2013-present); Editorial Board member for: Investigative Ophthalmology & Visual Science; American Journal of Ophthalmology (AOJ); Cornea (Basic & Clinical Science Series); Topics In Ocular Antiinfectives; Eye & Contact Lens (ECL); Candeo Clinical/Science Communications, Advisory Board Member
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
Harvard University, Massachusetts Eye and Ear Infirmary

CERTIFICATION
Board Certification in Ophthalmology

SPECIAL INTERESTS
Methods of improving the efficiency of eye care delivery to pre-school age children throughout California; 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 (Chief Fellow)

CERTIFICATION
Board Certification in Ophthalmology

SPECIAL INTERESTS
Corneal transplantation; Refractive surgery/LASIK; Cataract surgery

NOTABLES
2015 Castle Connolly Top Doctors; US News & World Report’s Top Doctor; 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 keratoprosthesis (K/PRO); Descemet’s stripping endothelial keratoplasty (DSAEK); Descemet’s membrane endothelial keratoplasty (DMEK); Anterior segment and iris reconstruction; Surgeries for challenging and traumatic cataracts; IOL procedures, including reposition, exchange and sutured IOls; LASIK, PRK and Visian ICL; Advanced techniques in laser & refractive surgery; Treatment of Keratoconus, including INTACS and Collagen CrossLinking; Ocular surface tumors; Limbal stem cell transplantation

NOTABLES
2014-2015 Castle Connolly Top Doctors; 2013 US News & World Report’s Top Doctor; America’s Top Ophthalmologists; San Diego Magazine Top Doctor; Outstanding Surgical Teaching; Outstanding Teacher Award

JIAGANG “JACK” ZHAO, PH.D.
Associate Project Scientist of Ophthalmology

GRADUATE SCHOOL
Mount Sinai School of Medicine, New York

POSTDOCTORAL FELLOWSHIP
Salk Institute, La Jolla, California

SPECIAL INTERESTS
Stem cell-based approaches for ocular disease modeling and treatment; Differentiation mechanisms of eye cell fate restriction from pluripotent stem cells
OPHTHALMIC PLASTIC & 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 Oculofacial Plastic and Reconstructive Surgery
Professor of Clinical Surgery (Plastic 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; Eyelid, lacrimal and orbital surgery; Thyroid eye disease (orbital decompression and eyelid surgery); Craniofacial disorders involving the eyelids and orbits; Orbital and eyelid tumors; Facial aesthetics - soft tissue fillers and injectables.

BOBBY S. KORN, M.D., PH.D., F.A.C.S.

Associate Professor of Clinical Ophthalmology
Associate Professor of Clinical Surgery (Plastic Surgery)

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
Cosmetic & reconstructive surgery (eye, lid & face); Blepharoplasty (eyelid lift surgery); Ptosis surgery (droopy lid surgery); Asian Blepharoplasty (double eyelid surgery); Congenital birth defects; Endoscopic forehead lifting; Thyroid eye disease management; Eyelid and orbital tumors and cancers Lacrimal/tear outflow system disorders; Bulging or proptosis of eyes; Reconstruction of eyelids post cancer removal; Reconstruction after trauma / eye injuries; Botox, Restylane, Juvederm & facial fillers; Skin rejuvenation – chemical peels and laser

NOTABLES
Elected as a Director of the American Board of Ophthalmology 2015-2016; 2015 Castle Connolly Top Doctors; President, American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS); Best Doctors in America; America’s Top Doctor; 2013 U.S. News and World Report Top Doctor (Top 1%); 2012-2015 San Diego Magazine Physician of Excellence; 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

NOTABLES
NEURO-OPTHALMOLOGY

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 Institute’s skilled ophthalmologists conduct diagnostic testing and thorough evaluation while working with the referring physician to manage the condition or illness.

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
2015 America's Top Doctors; 2012, 2013 U.S. News and World Report Top Doctor (Top 1%); 2012, 2013 Outstanding Clinical Teaching Award, UC San Diego, Shiley Eye Center; 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; Sein Fisher Award, Chicago Ophthalmological Society
PEDIATRIC OPHTHALMOLOGY & 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.A.O., 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, Division of Pediatric Ophthalmology

MEDICAL SCHOOL
Yale University School of Medicine

RESIDENCY
New York University Medical Center (Chief Resident)

FELLOWSHIP
Children’s Hospital of Philadelphia University of Pennsylvania Medical Scheie Eye Institute

CERTIFICATION
Board Certification in Ophthalmology

SPECIAL INTERESTS
Pediatric ophthalmology & strabismus; Adult eye movement problems; State-of-the-art adjustable sutures strabismus surgery; Childhood eye misalignments & disorders; Nystagmus; Learning disorders & role of vision

NOTABLES
2015 America’s Top Doctors; 2012, 2013 US News and World Report Top Doctors (Top 1%); 2012 Senior Honor Award, American Association for Pediatric Ophthalmology & Strabismus; 2013 Aurora Award for UCSD-TV show “Colon Cancer Screening”; 2013 San Diego Magazine Top Doctors; Senior Achievement Award AAO; American Association of Pediatric Ophthalmology Senior Honor Award; Chair-Elect AAP Section of Ophthalmology; Best Doctors in America; Top Doctors in San Diego; Visiting Professor National University Singapore; Co-Founder World Congress of Pediatric 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.O., F.A.A.P.

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

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
2014-2015 Best Doctors in America; California Physician Leadership Program Graduate with Scholarship, USC Marshall School of Business 2014-2015; Best In Show Research Poster, American Association of Pediatric Ophthalmology and Strabismus Annual Meeting; Editor, Pediatric Section of Current Ophthalmology Reports; Elected member, American Eye Study Club; Elected, UC San Diego Academy of Clinician Scholars; Hartwell Investigator Individual Biomedical Award; Eye Wild founding member Pediatric Ophthalmology/Strabismus Section; Faculty American Fellowship Program; Co-Director International Fellowship Program; Journal Reviewer, British Journal of Ophthalmology; 2013 San Diego Magazine Top Doctors; 2013-2014 Best Doctors in America, National; 2014 Invited to the Editorial Board of Current Ophthalmology Reports (journal); 2014 Nominated Leonard Tow Humanism in Medicine Award; 2014 Elected into UC San Diego Academy of Clinician Scholars; Textbook Editor, AAP Challenging Cases in Pediatric Ophthalmology; Journal Section Editor, Current Ophthalmology Reports; National Institutes of Health LRP Award for Clinical Research
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
Chief of Clinical Service, UC San Diego Medical Center
Director, Teleophthalmology

MEDICAL SCHOOL
University of California, San Diego

RESIDENCY
University of California, San Diego

CERTIFICATION
Board Certification in Ophthalmology

SPECIAL INTERESTS
Orbital compartment syndrome in burn patients;
Complicated cataract surgery; Facial burns;
Orbital trauma; Inpatient ophthalmology; Ocular manifestations of HIV; Teleophthalmology

NOTABLES
Ophthalmology Outstanding Teacher 2013 for Residents; Ophthalmology Outstanding Teacher 2013 for Medical Students; UC San Diego PACE Faculty Award for Innovation and Quality

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
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 and Korn have helped hundreds of patients with this disfiguring disorder and have published extensively on its characteristics and treatment.
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.
Associate 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
(Anatomic 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/vitreoretinal specimens; Cellular and molecular mechanisms of retinal degeneration; RPE and ocular stem cells

NOTABLES
American Society for Investigative Pathology
Remzi Coitren Early Investigator Award; Karl Kirchgeissner Foundation Vision Research Award; American Federation for Aging Research New Investigator Award; Hellman Family Foundation Jon I. Eisenberg Fellow; Hope for Vision Foundation New Investigator Award
REGENERATIVE OPHTHALMOLOGY

Retinal degenerative (RD) disease, such as age-related macular degeneration (AMD), retinitis pigmentosa (RP), Leber’s congenital amaurosis (LCA) and glaucoma are blinding disorders, that unfortunately, are untreatable once photoreceptors or retinal ganglion cells are lost. Pluripotent stem cells (PSCs) are remarkable cells that can give rise to virtually every cell type in the body including cells that form the eye. Retinas derived from such stem cells offer a potential means to generate new cells and tissue for transplantation, a system to address the origins of disease and a platform to screen for drugs that could block the disease process. Researchers at the Shiley Eye Institute are using stem cell derived human 3D ‘mini-retinas’, genetic engineering and drug screening to better understand how the human retina forms and to understand the complex biology of human retinal disease and explore potential cures. Combining the power of stem cells and genetic engineering we are developing so-called ‘disease-in-a-dish’ models to explore totally new ways to treat retinal disease.

KARL WAHLIN, PH.D.
Assistant Professor of Ophthalmology
Director, Richard C. Atkinson Laboratory for Regenerative Ophthalmology

GRADUATE SCHOOL
Johns Hopkins School of Medicine (Neuroscience)

FELLOWSHIP
Johns Hopkins School of Medicine (Wilmer Eye Institute)

SPECIAL INTERESTS
Directed differentiation of pluripotent stem cells and their application towards the study of retinal development and eye disease; Photoreceptor cell development and retinal connectivity; Retinal and optic nerve regeneration.

NOTABLES
K99/R00 Pathways to Independence award from the NIH, Knights Templar Eye Foundation Early Career Award.

Left: Human pluripotent stem cell derived optic cup with a neural retina, optic stalk and lens.
RETINAL VASCULAR DISEASES

The regulation of angiogenesis is a pathological process that occurs in retinal vascular diseases such as diabetic retinopathy and age-related macular degeneration. Vascular endothelial growth factor (VEGF) is the principle mediator in this complex disease process and in 1989, our laboratory cloned this gene. We have subsequently developed two inhibitors of VEGF, bevacizumab and ranibizumab for clinical use. In 2006, ranibizumab was approved for the treatment of wet AMD after multiple Phase III trials demonstrating that administration of such agent results in substantial visual acuity gains. Since 2006, the FDA has expanded the use of ranibizumab, approving it to treat retinal vein occlusion in 2010 and diabetic macular edema in 2012.

NAPOLEONE FERRARA, M.D.
Distinguished Professor of Ophthalmology and Pathology
Senior Deputy Director for Basic Sciences, UCSD Moores Cancer Center

MEDICAL SCHOOL
University of Catania Medical School, Catania, Italy

RESIDENCY
University of Catania Medical School, Catania, Italy

FELLOWSHIP
University of California, San Francisco

SPECIAL INTERESTS
Regulation of angiogenesis (the formation of new blood vessels) and the role of VEGF (vascular endothelial growth factor); Continue to develop new therapies to treat age related macular degeneration building upon past development of Avastin® and Lucentis®

NOTABLES
Elected to the Advisory Council of the Health Secretary of the Italian Republic 2014; Reel Summ Award 2014; Leslie Dana Gold Medal from the St. Louis Society for the Blind & Visually Impaired 2015; Hope Funds for Cancer Research Award 2015; Elected Member of the United States National Academy of Medicine 2015; 2014 Gairdner Foundation International Award; 2014 Antonio Champalimaud Vision Award; 2010 Lasker DeBakey Clinical Medical Research Award; 2012 Juvenile Diabetes Research Foundation Award; 2012 The Economist Innovation Award (Bioscience); 2013 Elected Fellow and Member of Council of Advisors to the American Association of Cancer Research Academy; Damon Runyon-Rachleff Innovation Award Committee Member; North American Vascular Biological Organization Scientific Advisory Board Member; San Francisco State University Biology Program Advisory Board Member; 2012 Humanitas Clinical Institute Scientific Advisory Board Member; 2013 The Economist Innovation Award Jury Member; 2013 Breakthrough Prize in Life Sciences
OPTOMETRY & LOW VISION

Shiley Eye Institute 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.

JOHN F. KULISCHAK, O.D.
OPTOMETRY SUPERVISOR

ANNE B. LAM, O.D.

LARA HUSTANA, O.D.

LAURA GOMEZ, M.D., O.D.

PAMELA A. HOO, O.D.

LIANNE MIZUGUCHI, O.D.

ESMERALDA MCCLEAN, O.D.

JESSICA A. TASTO, O.D.
WORLD LEADERS

The Nature Index, a database of author-affiliation information from 68 high-quality science journals, ranks the relative scientific output of nations and institutions by analyzing some 57,000 research articles. The results show us who leads the world in scientific output.

TOP COUNTRIES
The Nature Index’s country-by-country rankings remain fairly consistent from year to year, but a notable change for 2015 is the surge in research coming from China: the nation produced 16 percent more of the work counted by the index than it did in the previous year.

TOP INSTITUTIONS
Out of a total of 8,208 institutions, the top 10 universities and 5 large research organizations (represented on the right column) accounted for about 15 percent of the total research output, as measured by a term called the weighted fractional article count.*

Source: October 2015 Scientific American.
*Numbers refer to weighted fractional article counts in a select group of journals, as presented in the Nature Index. The weighted values provide a way of measuring the contribution of each country/ institution to the total body of research while avoiding overrepresentation by astronomy and astrophysics journals.

(June 1, 2014-May 31, 2015 weighted fractional article count)
The UC San Diego Ophthamology Residency Training Program is a three-year program with a total of 12 resident physicians (four per year of training).

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 at the Shiley Eye Institute. 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 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.
Napoleone Ferrara, M.D., Distinguished Professor of Ophthalmology and Pathology, was elected to the National Academy of Medicine (NAM). Formerly known as the Institute of Medicine, NAM was chartered by Congress in 1970 to provide authoritative, independent, scientifically balanced advice on health and medical issues of national importance. The announcement was made at the organization’s annual meeting, bringing NAM’s total active membership to 1,963 worldwide. Election to NAM is considered among the highest honors in the fields of health and medicine.

Dr. Ferrara has devoted his career to investigating and remediating the effects of angiogenesis — a process fundamental to embryonic development but also contributes to retinal damage and loss of vision in the wet form of age-related macular degeneration, an eye disease characterized by abnormal blood vessel growth that can result in severe vision loss.

In the late 1980s, while working at Genentech, Ferrara and colleagues were the first to isolate and clone vascular endothelial growth factor (VEGF) — and prove that VEGF promoted the growth of blood vessels in animals. He and colleagues then discovered a way to inactivate VEGF, essentially cutting off a tumor’s blood supply. The work ultimately led to development of bevacizumab (marketed as Avastin) in 2004, the first clinically available angiogenesis inhibitor drug in the United States. Avastin is now used to treat wet age-related macular degeneration and multiple forms of cancer.

Ferrara was also instrumental in development of another anti-VEGF monoclonal antibody drug called ranibizumab (Lucentis), which is used to treat wet age-related macular degeneration.
Shiley Eye Institute 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.

**FELLOWS**

**RETINA**

- Natalia Camacho, M.D.
- Arash Mozayan, M.D.
- Joseph Nezdota, M.D.
- Hong Ouyang, Ph.D.
- Frank Tsai, M.D.
- Qisheng You, M.D.

**CORNEA**

- Julio Echegoyen, M.D., Ph.D.
- Ron Gutmark, M.D.
- C. Andres Benatti, M.D.
- Hideki Fukuda, M.D., Ph.D.
- Hong Seok Yang, M.D., Ph.D.

**OCULOPLASTICS**

- Ramzi Alameddine, M.D.
- Bradford Lee, M.D.
- Michael Kinori, M.D.
- Kyle Miller, M.D.
OPHTHALMOLOGY EDUCATION

OPHTHALMOLOGY COMMUNITY LECTURE SERIES & GRAND ROUNDS
The UC San Diego Department of Ophthalmology conducts a Community Lecture Series the first Monday of each month with visiting world renowned ophthalmologists. Continuing medical education (CME) credits are offered to attendees along with a reception immediately following the lectures. The community is also invited to the departmental weekly Grand Rounds every Monday afternoon. The Grand Rounds consist of case presentations with moderated discussion. Interesting eye diseases, treatment dilemmas and surgical challenges are often the theme. These are offered in the Shiley Eye Institute Education Center.

2014 - 2015 VISITING PROFESSORS

09/08/14 THOMAS J. LIESEGANG, M.D.
Mayo Clinic Health System
Louis & Evelyn Krueger Professor in Ophthalmology
Title: "Herpes Zoster Prevention: When and Why Patients Should Get Zoster Vaccine"

10/06/14 JOHN TIMOTHY STOUT, M.D.
Chair, Department of Ophthalmology
Aike Eye Center, Baylor College of Medicine
Title: "The Rocky Road to Successful Gene Therapy"

11/02/14 MARK S. BLUMENKRANZ, M.D.
Professor & Chair, Stanford University SOM Department of Ophthalmology
Byers Eye Institute at Stanford
Title: "The Coming Era of Digital Ophthalmology"

12/03/14 JOEL S. SCHUMAN, M.D.
Director, UPMC Eye Center
Professor & Chair, Department of Ophthalmology
University of Pittsburgh Schools of the Health Sciences
Title: "Clinical Implications of Structure-function Relationships in Glaucoma"

01/12/15 DAVID W. PARKE II, M.D.
Executive Vice President & CEO
American Academy of Ophthalmology
Title: "How Does Ophthalmology 'Fit' in Healthcare Reform?"

02/09/15 JOAN M. O'BRIEN, M.D.
Chair, Department of Ophthalmology
Director, Scheie Eye Institute
Penn Presbyterian Medical Center
Title: "Uveal Melanoma"

04/06/15 TODD P. MARGOLIS, M.D., PH.D.
Distinguished Professor & Chair
Washington University in St. Louis
Department of Ophthalmology
Title: "The Diagnosis & Treatment of Herpes Simplex Eye Disease"

05/11/15 DOUGLAS RHEE, M.D
Chair, Department of Ophthalmology
UH Case Medical Center
Director, Eye Institute
Title: "Surgical Management of Glaucoma – Classic & Modern"

06/01/15 DONALD L. BUDENZ, M.D., M.P.H.
Kittner Family Professor & Chairman
University of North Carolina SOM
UNC Kittner Eye Center
Title: "Blindness & Glaucoma in Ghana, West Africa"

Pictured above are: Christopher W. Heichel, M.D., Thomas J. Liesegang, M.D., Natalie A. Afshari, M.D. and Robert N. Weinreb, M.D.

Pictured above are: Eric D. Nudelman, M.D., Ph.D., William R. Freeman, M.D., Mark S. Blumenkranz, M.D., Robert N. Weinreb, M.D. and Michael H. Goldbaum, M.D.

Pictured above with Shiley residents is David W. Parke II, M.D.

Pictured above are: Felipe Medeiros, M.D., Ph.D., David B. Granet, M.D., Robert N. Weinreb, M.D., Joel S. Schuman, M.D. and Shira Robbins, M.D.
OPHTHALMOLOGY UPDATE
The annual Ophthalmology Update was held February 13-15, 2015 at the Hilton Torrey Pines, La Jolla. The event was a great success with over 300 attendees. Don O. Kikkawa, M.D. and Robert N. Weinreb, M.D. served as Program Co-Chairs. The interdisciplinary faculty of ophthalmic subspecialties gave presentations on the latest surgical techniques, innovative ideas and research in ophthalmology. The keynote speaker was Robert Lustig, M.D., Professor of Pediatrics in the Division of Endocrinology at the University of California, San Francisco and Director of the Weight Assessment for Teen and Child Health Program at UCSF.

ARVO WRAP UP
After the May 3 – 7, 2015 Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO) in Denver, Colorado, the Department of Ophthalmology held an ARVO Wrap Up in the Shiley Eye Institute Education Center. The Department of Ophthalmology and the Shiley Eye Institute presented over 60 papers and posters.

Radha Ayyagari, Ph.D., Professor of Ophthalmology and Pathology, was named an ARVO Silver Fellow in the Class of 2015 and also Pooja Biswas, M.S., a graduate student, was selected to receive a Retina Research Foundation/Joseph M. and Eula C. Lawrence Travel Grant. The Wrap Up provided an opportunity for medical students, residents, fellows and faculty to hear and view the outstanding research that has been conducted in the Department during 2014-2015, as well as engaging the scientists in discussion about their projects.

KPRO STUDY GROUP
The Keratoprostheses (KPro) Study Group held a one day symposium, prior to the World Cornea Congress, at the Shiley Eye Institute with over 100 attendees from all over the world. Natalie A. Afshari, M.D. hosted the ophthalmologists who presented on topics such as the 10-year progress in KPro or artificial corneas, novel devices for patients, new diagnostics and management of corneal diseases. Claes H. Dohlman, M.D., Ph.D. from Harvard/Massachusetts Eye and Ear, was the guest of honor.

The KPro Study Group was established in 1990 to foster clinical and basic research on artificial and synthetic corneal implants. The group is comprised of researchers and surgeons to facilitate communication and research development to benefit patients worldwide.
On June 8, 2015 the Department of Ophthalmology graduated four outstanding residents with a ceremony and dinner. Jean-Paul Abboud, M.D., Ph.D. is now an oculoplastic fellow at West Virginia University; Lilit Minasyan, M.D. (Administrative Chief Resident) is now a fellow in glaucoma at the UCLA Doheny Eye Institute; Hema Ramkumar, M.D. (Academic Chief Resident) remains at Shiley in a retina fellowship; and Matthew Bedell, M.D. entered private practice in northern California.

During the graduation awards ceremony, the second annual “Lamont Ericson, M.D. Award for Outstanding Patient Care by a Resident” was presented by Dr. Weinreb to Abigail Huang, M.D. The award recipient was selected by the other residents. Dr. Ericson was an outstanding former resident in the Department who passed away in 2007 at a young age.
CLINICAL TRIALS

CORNEA
A Genome Wide Association Study of Fuchs Endothelial Corneal Dystrophy
Pt: Natalie A. Afshari, M.D.
A Multi-Center, Double-Blind, Randomized, Placebo-Controlled Evaluation of the Safety and Efficacy of SUN-131 Transdermal System (TDS) as Compared to Placebo TDS in Adult Patients with a Chalazion
Pt: Natalie A. Afshari, M.D.
Evaluation of Efficacy of 20 µg/ml rhNGF New Formulation (with Anti-Oxidant) in Patients with Stage 2 and 3 Neurotrophic Keratitis
Pt: Natalie A. Afshari, M.D.
Ketorolac Prophylaxis for Cystoid Macular Edema Assessed by Optical Coherence Tomography in Low Risk Patients Undergoing Uncomplicated Cataract Phacoemulsification Surgery
Pt: Christopher W. Heichel, M.D.
INTACS for Corneal Ectasia: Studying the Effects of Asymmetric Corneal Ring Segments with Adjunct Corneal Crosslinking (Oasis Medical Inc.)
Pt: Christopher W. Heichel, M.D.
Capsular Tension Rings: Indications, Safety and Outcomes: A Large Consecutive Case Series.
Pt: Christopher W. Heichel, M.D.
Capsular Tension Ring Use in Predicting Effective Lens Position.
Pt: Christopher W. Heichel, M.D.

GLAUCOMA
A Randomized, Multicenter, Double-Masked, Parallel-Group Study Comparing the Safety and Efficacy of BOL-303259-X 0.024%

[Latanoprostene Bunod] Ophthalmic Solution with Timolol Maleate Ophthalmic Solution 0.5% in Subjects with Open Angle Glaucoma or Ocular Hypertension – Lunar Study.
Pt: Felipe A. Medeiros, M.D., Ph.D.
Topcon DRI OCT-1 Optical Coherence Tomography System for the Acquisition of Retinal Thickness Measurements and Ocular Images of the Posterior Chamber: Agreement and Precision Study.
Pt: Felipe A. Medeiros, M.D., Ph.D.
Evaluation of Bimatoprost 0.01% and Bimatoprost 0.03% in Patients with Glaucoma or Ocular Hypertension.
Pt: Felipe A. Medeiros, M.D., Ph.D.
An Open Label (Stage 1) and Randomized (Stage 2), 24-Month Study of Safety and Efficacy of Bimatoprost Drug Delivery System in Patients with Open-Angle Glaucoma or Ocular Hypertension.
Pt: Felipe A. Medeiros, M.D., Ph.D.
The Efficacy and Safety of Bimatoprost SR in Patients with Open-angle Glaucoma or Ocular Hypertension.
Pt: Felipe A. Medeiros, M.D., Ph.D.
Effect of Eyelid Plication on Driving Performance Using a High-Fidelity Simulator.
Pt: Felipe A. Medeiros, M.D., Ph.D.
Sub Pt: Bobby S. Korn, M.D., Ph.D.
Retinal Amyloid Imaging in Glaucoma
Pt: Robert N. Weinreb, M.D.
OCT Angiography in Glaucoma Study
Pt: Robert N. Weinreb, M.D.
Imaging of Choroid with Swept Source OCT in Glaucoma
Pt: Robert N. Weinreb, M.D.
Enhanced vision by electrostimulation in Glaucoma
Pt: Robert N. Weinreb, M.D.

High Definition SD-OCT of Anterior Segment and Angle
Pt: Robert N. Weinreb, M.D.
Flexible electronic compliance monitor
Pt: Robert N. Weinreb, M.D. and Todd Coleman, Ph.D.
Effects of CG100649 on RGC Survival in Mouse Model of Optic Nerve Crush in Vivo or in Primary Culture System in Vitro
Pt: Won Kyo Ju, Ph.D.
Effect of Ubiquitin on retinal ganglion cell survival and mitochondrial alteration in mouse model
Pt: Won Kyo Ju, Ph.D.
Ischemic mouse model with acute IOP elevation (100mm Hg)
Pt: Won Kyo Ju, Ph.D.
Sleep laboratory analysis
Pt: John Liu, Ph.D.

PEDICRIC OPHTHALMOLOGY
Study of Binocular Computer Activities for Treatment of Amblyopia (ATS 18)
Pt: Shira L. Robbins, M.D. and David B. Granet, M.D.

RETINA
Phase 3 Multicenter, Randomized, Double-Masked, Sham-Controlled Study to Assess the Efficacy and Safety of Lampalizumab Administered Intravitreally to Patients with Geographic Atrophy Secondary to Age-Related Macular Degeneration.
Pt: Henry A. Ferrera, M.D.
A Two-Year, Randomized, Double-Masked, Multicenter, Three-Arm Study Comparing the Efficacy and Safety of RTH226E versus Afiblercept in Subjects with Neovascular Age-Related Macular Degeneration.
Pt: William R. Freeman, M.D.
A Phase 3 Randomized, Double-Blind, Controlled Trial to Establish the Safety and Efficacy of Intravitreous Administration of Fovista (Anti PDGF-B Pegylated Aptamer) Administered in Combination with Either Avastin or Eylea Compared to Avastin or Eylea Monotherapy in Subjects with Subfoveal Neovascular Age-Related Macular Degeneration.
Pt: William R. Freeman, M.D.
Evaluation of Abicipar Pegol in Patients with Decreased Vision Due to Diabetic Macular Edema.
Pt: William R. Freeman, M.D.
A Phase 3 Randomized, Double-Blind, Controlled trial to establish the safety and efficacy of Intravitreous Administration of Fovista (Anti PDGF-B Pegylated Aptamer) Administration in Combination with Lucentis compared to Lucentis Monotherapy in Subfoveal Neovascular Age-Related Macular Degeneration.
Pt: William R. Freeman, M.D.
Rescue of Bevacizumab or Ranibizumab Failure by Intravitreal Afiblercept (RAFT Study).
Pt: William R. Freeman, M.D.
A Phase 2, Multi-center, Randomized, Double-masked, Placebo Controlled, Parallel-group Study to Investigate the Safety, Tolerability, Efficacy, Pharmacokinetics and Pharmacodynamics of GS933776 in Adult Patients with Geographic Atrophy (GA) Secondary to Age-related Macular Degeneration (AMD).
Pt: William R. Freeman, M.D.
VGF-TD-1009: A Double-Blind, Randomized, Active-Controlled, Phase 3 Study of the Efficacy and Safety of Intravitreal Administration of VEGF Trap-Eye in Patients with Diabetic Macular Edema.
Pt: William R. Freeman, M.D.
Daunorubicin-Loaded Porous Silicon Study.  
Pt: Gabriel Silva, Ph.D.

Testing & Evaluation of a Retinal Prosthesis.  
Pt: Dirk-Uwe Bartsch, Ph.D.

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

BRVO Study of Affiberaject for Branch Retinal Vein Occlusion.  
Pt: William R. Freeman, M.D.

BRIMO2 Study of Brimonidine Implant for Rescue of Macular Tissue after Retinal Detachment.  
Pt: William R. Freeman, M.D.

PALM-DME Study of a Novel Therapeutic for Diabetic Macular Edema.  
Pt: William R. Freeman, M.D.

Ocriplasmin Research to Better Inform Treatment (OriBIT).  
Pt: Eric D. Nudleman, M.D., Ph.D.

NT-503 ECT. A Multi-Center, Two-Stage, Open-Label Phase I and Randomized, Active Controlled, Masked Phase II Study to Evaluate the Safety and Efficacy of Intravitreal Implantation of NT-503 3 Encapsulated Cell Technology Compared with Eylea for the Treatment of Recurrent Subfoveal Choroidal Neovascularization (CNV) Secondary to Age-Related Macular Degeneration (AMD).  
Pt: William R. Freeman, M.D.  
Sub Pt: Eric D. Nudleman, MD, Ph.D.

BEACON. Safety and Efficacy of Brimonidine Posterior Segment Drug Delivery System in Patients with Geographic Atrophy Secondary to Age-Related Macular Degeneration.  
Sub-Pt: Eric D. Nudleman, M.D., Ph.D.

Pt: Kang Zhang, M.D., Ph.D.

Seven year observation of macular degeneration patients post marina/anchor and horizon trials.  
Pt: Kang Zhang, M.D., Ph.D.

GLAUCOMA RESEARCH  
LONGTIME PATIENT

Henry Suchard, OD, a retired optometrist, turned 100 years old this June. Dr. Suchard has been in the Diagnostic Innovations in Glaucoma Study (DIGS) for over 20 years and is the longest living patient in the study. He started his glaucoma treatment with Robert N. Weinreb M.D., in the mid 1990’s when the study first started at the Shiley Eye Institute.

Dr. Suchard practiced optometry in Illinois for over 30 years before retiring in San Diego. He noted that “I have seen many changes in eye care over these many years but am extremely impressed with the research being conducted at Shiley involving the new technology developed especially for Visual Function.”

Dr. Suchard celebrated his 100th birthday with an appointment in the Shiley Eye Institute clinic. Pictured with Drs. Suchard and Medeiros, are longtime ophthalmic technicians: Eric Cabezas, Bill Ramirez and Juan Arias.
PUBLICATIONS

CORNEA


GLAUCOMA


NEURO-OPTHALMOLOGY


OCTPLASTICS

Hodgson N, Bratton E, Whipple K, Priel A, Oh SR, Fante RG, Kikkawa DO, Korn BS. Outcomes of Endonasal


Ju WK, Kim KY, Shin MS, Weinreb RN. Coenzyme Q10 and Oxidative Stress-Induced Retinal Neurodegeneration. Coenzyme Q10.


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**OPHTHALMIC PATHOLOGY**


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**PEDIATRIC OPHTHALMOLOGY**


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**RETINA**


LECTURES

NATALIE A. AFSHARI, M.D.
"Presence of Silicon Oil, No Prior Corneal Surgery and Postop Contact Lens Use", International Keratoplasty Meeting Host, World Cornea Congress VII 2015, La Jolla, CA, April 2014.

"New Horizons in Corneal Endothelium and Fuchs Dystrophy: From the Laboratory to the Clinic", Harvard Medical School Department of Ophthalmology and Massachusetts Eye and Ear Alumni Distinguished Speaker, Boston, MA, June 2014.


"A Journey Through Cornea From A to Z", Grand Rounds Lecture, University of Buffalo Visiting Professor, Buffalo, NY, September 2014.

Phacoemulsification Wet Lab, Course Instructional Faculty, Abbott Medical Optical Basic Cataract Surgery Course, Santa Ana, CA, September 2014.


"Management of Vitreous for the Anterior Segment", Lecture Course Director, Skills Transfer Course Director, American Academy of Ophthalmology, Chicago, IL, October 2014.

"Long Term Care" and "Penetrating Keratoplasty", Course Instructional Faculty – Wet Lab, Johns Hopkins Cataract and Cornea Practice, Baltimore, MD., November 2014.


“Emmetropization Epidemiology and Genetics of Myopia”, Invited Lecturer; “Current Hot FDA Topics: Update on drug compounding”, FDA Symposium Moderator; and “Keratorefractive LASIK and Refractive Surgery”, Invited Moderator, American Society of Cataract and Refractive Surgery, San Diego, CA, April 2015.


“Practical IOL Calculation”, Harvard University Cataract Surgery Course, Boston, MA, June 2015.

CHRISTOPHER BOWD, PH.D.
“A hierarchical framework for estimating neuroretinal rim area using 3D spectral domain optical coherence tomography (SD-OCT) optic nerve head (ONH) images of healthy and glaucoma eyes”, 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, IL, August 2014.

“Glaucomatous retinal nerve fiber layer patterns of loss identified by unsupervised Gaussian model with expectation maximization (GEM) analysis” and “Assessment of lamina cribrosa surface depth in glaucoma and healthy eyes”, 21st International Visual Field and Imaging Symposium, State University College of Optometry, New York, NY, September 2014.


LINGYUN CHENG, M.D.
“GL-SS19 - New Delivery Approaches to Drug Therapy in Glaucoma-Symposium, Controlled Release of Antimetabolites to Promote Success of Glaucoma Filtering Surgery” and “VS SS01 - Drugs and Therapeutics Symposium 3, Horizon of sustained drug delivery to retina and choroid through sclera”, Chair and Moderator, APAC (Asian Pacific Association of Ophthalmology) Congress Guangzhou, China, April 2015.


NAPOLEONE FERRARA, M.D.

Best of America Society of Clinical Oncology, Shanghai, China, July 2014.


Anti-Angiogenesis Symposium, University of Catania, Italy, April 2015.

“Discovery of VEGF-A, a Key Regulator of Intraocular Neovascularization”, ARVO/Champalimaud Award Lecture, Denver, CO, May 2015.


HENRY FERREYRA, M.D.
Annual Ophthalmology Lecture, UC San Diego School of Medicine, La Jolla, CA, February 2014.


“Principles to Practice”, UC San Diego School of Medicine, La Jolla, CA, February 2015.

WILLIAM R. FREEMAN, M.D.


“Decanted Triamcinolone for Macular Edema in Non-vitrectomized and Vitrectomized Eyes”, “High-dose Afibercept for Eyes with Wet Age-related Macular Degeneration Resistant to Standard Therapy”, “Reproducibility of Macular Pigment Optical Density Measurement by Two-wave Length Autofluorescence”, “A Novel Approach of
**DAVID B. GRANET, M.D.**

“Delayed Adjustable Sutures”, A world through a child’s eye: Pediatric Conference, University of Pittsburgh Medical Center, Pittsburgh, PA, October 2014.


“How you can be a Superhero”, Veterans Administration Surgery Center Staff, VA Medical Center, La Jolla, CA, December 2014.

“Ocular Allergy: The Ophthalmologist’s Perspective” and “Evaluation and Treatment of the Dry Eye”, 53rd Annual Scientific Session of the Western Society of Allergy, Asthma & Immunology, Kauai, HI, January 2015.


“Which glasses are better for myopic children?”, Contact Lens Association of Ophthalmologists’ American Society of Cataract and Refractive Surgery (CLAO/ASCRS), Symposium on Myopia, San Diego, CA, April 2015.

“How to be a Superhero”, National Nurses Week Symposium, Veterans Administration Hospital & Health Center, La Jolla, CA, May 2015.


**WELDON HAW, M.D.**

AMO Cataract Surgery Wet Laboratory Course, Instructor, La Jolla, CA, August 2014.


Alcon Wet Laboratory Cataract Workshop, UC San Diego Shiley Eye Institute, La Jolla, CA, July 2015.


**CHRISTOPHER W. HEICHEL, M.D.**

“Capsular Tension Rings: Should We Use Them for Every Cataract Surgery Case”, Ophthalmology Update, La Jolla, CA, February 2015.


**DANIEL “WON-KYU” JU, PH.D.**

“Blocking excitotoxicity triggers mitochondrial biogenesis in glaucomatos optic nerve head astrocytes”, Vision Research Lecture, Shiley Eye Institute, UC San Diego, La Jolla, March 2014.


**DON O. KIKKAWA, M.D.**

“Orbital Decompression and Orbital Case Presentation”, TEDS Course, ASORPS Spring Meeting, St. Thomas, USVI, May 2014.


“Battle of the Bulge”, Richard G Chenoweth Lecture, Devers Eye Institute, Portland, OR, September 2014.


“Ten Minute Ptosis Repair”, William H. Hevener Lecture, The Ohio State University, Columbus, OH, March 2015.

“Multidisciplinary Treatment of Thyroid Orbitopathy,” Visiting Professor, Dalhousie University Department of Ophthalmology, Halifax, Nova Scotia, Canada March 2015.

“Approach to Congenital Ptosis: From Mild to Severe” and “X Files in Oculoplastics”, Moderator, Asia Pacific Academy of Ophthalmology, Guangzhou, China, April 2015.


**BOBBY KORN, M.D., PH.D.**


"Oculoplastic Surgeon's Perspective On Cataract Surgery" and "Mastering Oculoplastic Procedures for the General Ophthalmologist", Invited Speaker, Continuing Professional Education Course, Fort Worth, TX, August 2014.

"Integrating Ptosis Repair with Aesthetic Blepharoplasty" invited Speaker, Multi-Specialty Plastic Surgery Symposium, Cedars-Sinai Department of Surgery, Los Angeles, CA, November 2014.


"The Droopy Lid: Management Options for Ptosis" Invited Speaker, Hawaiian Eye 2015, Maui, HI, January 2015.


"Integrating ptosis repair with aesthetic blepharoplasty", "DCR in ten minutes", "Transcutaneous lower blepharoplasty with orbital suspension", "Levator extirpation and Frontalis Sling for Marcus Gunn Jaw Wink", "Periocular fillers: Pearls and Pitfalls", "Lower blepharoplasty with fat repositioning" and "New Technologies and Advances in Oculoplastic Surgery", Invited Speaker, 38th Annual SIMASP Symposium, Ophthalmology Congress, Paulista School of Medicine, Federal University of Sao Paulo, Sao Paulo, Brazil, March 2015.

*Applications of 3D Printing for Orbital Reconstruction* and *Postblepharoplasty lower eyelid retraction*, Invited Speaker, 30th Asia Pacific Academy of Ophthalmology 2015, Guangzhou, China, April 2015.


**JONATHAN H. LIN, M.D., PH.D.**


University of Alabama-Birmingham, Department of Vision Sciences, Invited speaker, Birmingham, AL, May 2015.

Georgia Regents University, Department of Cellular Biology and Anatomy, Invited speaker, Augusta, GA, May 2015.


**FELIPE A. MEDEIROS, M.D., PH.D.**


"Structure and Function in Glaucoma", "24 th Effect of Intraocular Pressure Medications" and "Post-graduation in the USA", Federal University of Sao Paulo Annual Meeting, Sao Paulo, Brazil, February 2015.


World Glaucoma Congress Symposium on Intraocular Pressure, Chair, Hong Kong, June 2015.

"Combining Structure and Function", "Detecting Progression with Function Specific Perimetry", "How to Incorporate Imaging Measurements in Clinical Practice" and "How to Assess IOP variability", World Glaucoma Congress, Hong Kong, June 2015.
ERIC NUDLEMAN, M.D., PH.D.

Emerging Therapies for Age-Related Macular Degeneration, Healthy and Active Aging Conference, UC San Diego Health, La Jolla, CA, August 2015.

Telemedicine in ROP, Universal Screening, and Validation, Chinese Academy of Pediatric Ophthalmologists, Zhengzhou, China, September 2015.

New born universal eye screening, current progress and perspective, Nanjing MCH Hospital, Nanjing, China, September 2015.

Telemedicine in ROP, Universal Screening and Validation, Jiangsu MCH Hospital, Hangzhou, China, September 2015.

Telemedicine in ROP, Universal Screening, and Validation, Suzhou University Children’s Hospital, Suzhou, China, September 2015.

SHIRA L. ROBBINS, M.D.
Retinopathy of Prematurity for Neonatologists, NICU Lecture Series, UC San Diego, La Jolla, CA, July 2014.

Retinopathy of Prematurity, Ophthalmology Residents Lecture Series, UC San Diego, La Jolla, CA, July 2014.

Delivering Bad News in Ophthalmology, Resident/Fellow Lecture Series, UC San Diego, La Jolla, CA, August 2014.


Vision Screening in Young Children, Child Health and Disability Prevention Program, Bi-Annual Workshop, San Diego, CA, November 2014.

“Horizontal Strabismus”, Ophthalmology Residents Lecture Series, UC San Diego, La Jolla, CA, February 2015.


What’s New in Amblyopia, Ophthalmology Update, La Jolla, CA, February 2015.

OKAP Review, Ophthalmology Residents Lecture Series, Shiley Eye Institute, UC San Diego, La Jolla, CA, March 2015.


PETEER J. SAVINO, M.D.
Research Study Club of Los Angeles, 83rd Midwinter Conference, Invited Guest Speaker, Los Angeles, CA, February 2015.


Department of Neurology, Branch of Shanghai First People’s Hospital, Visiting Professor, Shanghai, China, March 2015.


ROBERT N. WEINREB, M.D.

“Personalizing Intraocular Pressure for the Management of Glaucoma”, International Award Lecture, 2nd Asia-Pacific Glaucoma Congress, Hong Kong, September 2014.


“Personalizing Angle Surgery”, 31st Pan American Congress of Ophthalmology, Keynote Lecture (Glaucoma Subspecialty Day), Bogota, Colombia, August 2015.

SIAMAK YOUSEFI, PH.D.
Glucomatous retinal nerve fiber layer patterns of loss identified by unsupervised Gaussian mixture model with expectation maximization (GEM) analysis, Imaging and Perimetry Society (IPS) Meeting, New York, NY, September 2014.


Predicting glaucomatous conversion from baseline RNFL thickness measurements in glaucoma suspect eyes using an AdaBoost classifier, Annual Conference of the International Society for Imaging in the Eye (ARVO/ISIE), Poster, Denver, CO, May 2015.
LINDA ZANGWILL, PH.D.

"Detection of Progression Using Spectral Domain OCT" Asian Glaucoma Summit, La Jolla, CA, March 2015.

"Rate of change of the retinal nerve fiber layer and the ganglion cell complex in normal subjects and glaucoma patients", 6th World Glaucoma Congress, Hong Kong, June 2015.

"Incorporating the rate of structural change in glaucoma management", Korean Glaucoma Society Symposium, 6th World Glaucoma Congress, Hong Kong, June 2015.

Posterior Segment Imaging Session, 6th World Glaucoma Congress, Co-Chair, Hong Kong, June 2015.

KANG ZHANG, M.D., PH.D.

"Role of Genetics in the Growth Rate of GA", Angiogenesis, Exudation, and Degeneration 2015, Miami, FL, February 2015.

"New Strategies of Corneal Epithelial Stem Cell Expansion and Tissue Engineering", The 30th AAPD Congress, Guangzhou, China, April 2015.

"Genetics, Epigenetics, and Stem Cell Based Therapy for Blinding Eye Diseases", The Second Annual Gavin Herbert Eye Institute Symposium, UC Irvine, CA, June 2015.

GRANTS

GENERAL
Ophthalmology and Visual Sciences Career Development K12 Program
Pl: Robert N. Weinreb, M.D.
NIH, 04/01/2015-03/31/2020

P30: Center Core Grant for Vision Research
Pl: Linda Zangwill, Ph.D.
NIH, 07/01/2012-06/30/2017

CORNEA
Limbal Stem Cell Fate and Corneal Specific Enhancers
Pl: Kang Zhang, M.D., Ph.D.
NIH/NEI, 03/01/2013-02/28/2016

Integrative Genetic Analyses in Fuchs Endothelial Corneal Dystrophy
Pl: Natalie Ashari, M.D.
NIH/NEI, 03/01/2015-02/28/2020

GLAUCOMA
Predicting and Detecting Glaucomatous Progression Using Pattern Recognition
Pl: Christopher Boward, Ph.D. (Linda Zangwill, Ph.D., Co-I)
NIH/NEI, 02/2012-02/2016

Diagnostic Innovations in Glaucoma: Functional Impairment
Pl: Felipe A. Medeiros, M.D., Ph.D., (Linda Zangwill, Ph.D., Co-I)
NIH, 09/01/2011-08/31/2016

Development of a Portable Objective Method for Assessment of Visual Field Loss
Pl: Felipe A. Medeiros, M.D., Ph.D.
NIH, 08/01/2015-07/31/2017

Brain-based Method for Assessment of Functional Loss
Pl: Felipe A. Medeiros, M.D., Ph.D.
Qualcomm Institute, 07/01/2014-06/30/2015

Study to Assess Rapid Disease Progression by Clinical and Genetic Factors in Glaucoma Patients that are High Risk (STARYISH)
Pl: Robert N. Weinreb, M.D.
Genentech, 08/31/2011-12/31/2016

Phase IIA Double-masked Randomized Shamcontrolled Trial of QPI-1007
Pl: Robert N. Weinreb, M.D.
Quark, 12/01/2013-11/30/2018

ADAGES III: Contribution of Genotype to Glaucoma Phenotype in African Americans
Pl: Robert N. Weinreb, M.D.
NIH, 09/30/2013-08/31/2018

Continuous and Direct Intraocular Pressure Monitoring by Fluid-sensitive 3D Photonic Crystal Implants
Co-I: Robert N. Weinreb, M.D.
UCSD CTR: Galvanizing Engineering in Medicine Award, 07/15/2016-12/31/2016

Ocular Hypertension Treatment Study (OHTS – Clinical Center)
Pl: Robert N. Weinreb, M.D.
NIH, 07/01/2015 – 06/30/2017

Diagnostic Innovations in Glaucoma: Structural Assessment
Pl: Linda Zangwill, Ph.D.
NIH, 04/01/1995-04/30/2016

African Descent and Glaucoma Evaluation (ADAGES) II: Glaucoma Progression
Pl: Linda Zangwill, Ph.D.
NIH, 02/01/2010-01/31/2016

Ocular Hypertension Treatment Study (OHTS – Reading Center)
Pl: Linda Zangwill, Ph.D. (subcontract)
NIH, 07/01/2015 – 06/30/2020

Genetics Determinants of Optic Nerve Head Structure
Pl: Zangwill, Linda (subcontract)
NIH, 04/01/2013-03/31/2015

OPHTHALMOLOGIC PATHOLOGY
Protein Homeostasis and Proteotoxicity Mechanisms
Pl: Jonathan Lin, M.D.
NIH/NIH, 02/01/2015-01/31/2020

PEDIATRIC OPHTHALMOLOGY
Study of Binocular Computer Activities for Treatment of Amblyopia (ATS 18)
Pl: Shira L. Robbins, M.D.
NIH/JAEB Center for Health Research, 10/14/2014 – 12/31/2018

Omega-3 Fatty Acids as a Non-Invasive Therapy for the Prevention of Retinopathy of Prematurity
Pl: Shira L. Robbins, M.D.
The Hartwell Foundation, 04/01/2015 – 03/31/2018

Omega-3 Nutrition and Retinopathy of Prematurity
Pl: Shira L. Robbins, M.D.
UC San Diego Center for Translational Research Institute, Catalyst Grant, 04/2014 – 03/2016

Can Omega-3 Supplementation in Preterm Infants with Retinopathy of Prematurity Prevent Irreversible Vision Loss?
Pl: Shira L. Robbins, M.D.
UC San Diego Academic Senate Pilot Grant 01/2014 – 12/2015

RETINA
Molecular Basis of Hereditary Retinal Degenerations
Pl: Radha Ayyagari, Ph.D.
NIH/NEI, 09/01/2011-08/31/2016
Genetics of Hereditary Retinal Degenerations
Pt: Rechaa Ayyagari, Ph.D.
The Foundation Fighting Blindness, 07/01/2011-07/31/2016

Insights into AMD Derived from the Genetic Mechanisms in Late Onset Retinal Macular Degeneration (LMRD)
Pt: Rechaa Ayyagari, Ph.D.
The Heme Memorial Foundation, 12/31/2014-12/30/2016

Molecular Pathology Underlying Retinal Degeneration Due to the Involvement of CTRP/CigNTF5 and MFRP Genes
Pt: Rechaa Ayyagari, Ph.D.
The Foundation Fighting Blindness, 06/30/2015-06/29/2018

Mechanistic-Based, Non-Invasive Assessment of Retinal Damage in the HAART Era
Pt: Dirk-Uwe Bartosch, Ph.D.
NIH/NEI, 09/30/2013-08/31/2015

Porous Silicon Particles for Sustained Intravitreal Drug Delivery
Pt: Lingyun Cheng, M.D.
NIH/NEI, 11/01/2011 – 08/31/2016

Micropower Integrated Nano-engineered Retinal Interface
Co-I: William R. Freemen, M.D.
Co-I: Gabriel A. Silva, Ph.D.
UCSD CTRI Galvanizing Engineering in Medicine Award, 07/1/15-07/31/16

HTRA1 as a Therapeutic Target in the Treatment of Wet AMD
Pt: Peter Shaw, Ph.D.
NIH/NEI, 08/01/2015-06/30/2020

Experimental Testing and Validation of a Quantum Dot FRET Calcium Sensor
Pt: Gabriel A. Silva, Ph.D.
NIH/NIBIB, 09/30/2013 – 08/31/2015

Regeneration of Retinal Neurons by Chemically Induced Reprogramming of Muller Glia
Pt: Kang Zhang, M.D., Ph.D.
NIH, 9/30/2013-8/31/2015

Generation of Fibroblast Cell Lines in Patients with Common Blinding Eye Diseases
Pt: Kang Zhang, M.D., Ph.D.
California Institute for Regenerative Medicine, 10/01/2013-09/30/2016

Biomaterial Enhancement of Stem Cell Transplant Efficacy for Macular Degeneration
Co-Pt: Kang Zhang, M.D., Ph.D.
NIH/NEI, 02/01/2014-03/31/2017

Layer-by-Layer Bioprinting of Stem Cells for Retinal Tissue Regeneration
Co-Pt: Kang Zhang, M.D., Ph.D.
DoD, 09/30/2014-09/29/2016

Non-coding Variants Predisposing at Age Related Macular Degeneration
Pt: Kang Zhang, M.D., Ph.D.
NIH/NEI, 08/24/2015-06/30/2018

HARTWELL FOUNDATION
INDIVIDUAL BIOMEDICAL RESEARCH AWARD

Shira L. Robbins, M.D., Associate Clinical Professor in the Department of Ophthalmology at the UC San Diego Shiley Eye Institute, received a prestigious Hartwell Foundation Individual Biomedical Research Award to study omega-3 fatty acids as a therapy for the prevention of retinopathy of prematurity (ROP), a condition that affects the vision of preterm infants. She will use this annual funding of $100,000 for three years to improve the methods by which doctors diagnose, prevent and treat blinding disease in the smallest most vulnerable of babies.

As part of the study, Dr. Robbins and her team are investigating premature infants’ fatty acid biochemistry and biomarkers of pro-inflammatory and angiogenic genes. This could potentially lead to new therapies to treat babies born prematurely, resulting in a transformative benefit to prevent ROP and the associated blindness.

Dr. Robbins performs research to preserve and protect the vision of premature infants. She stated, “These tiny two pound babies, born way too early, must heroically battle to survive and then tragically develop this blinding disease. My research targets ways to give these babies and their families a fighting chance at more normal vision. I cannot imagine a more fulfilling career.”
GIVING OPPORTUNITIES

For over 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. 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.

VISIONARY CIRCLE
Members of the Visionary Circle are cumulative lifetime contributors of one million dollars or more to the Department of Ophthalmology. We appreciate their generosity.

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OUTRIGHT GIFTS | IMMEDIATE IMPACT
Outright gifts of all sizes made with cash, check, credit cards, savings bonds, stocks, marketable securities or property provide immediate impact to our faculty and facility. If writing a check, please make payable to the “UC San Diego Foundation” and put the Shiley Eye Institute in the memo section. The check should be accompanied with a letter stating the focus of your donation and mailed to The Shiley Eye Institute, Mail code 0946, 9415 Campus Point Drive, Room 241B, La Jolla, CA, 92030-0946.

PLANNED GIFTS | VISION FOR TOMORROW
Please consider a charitable bequest in your estate plan that will benefit the future and directly supports the Department of Ophthalmology. You can turn your appreciated stocks into extra retirement income, receive a charitable tax deduction, avoid capital gains tax and support Shiley at the same time. We would be pleased to provide you, your attorney, accountant or tax advisor with specific bequest language for inclusion in your will, trust or as a beneficiary of your retirement account – all of which can lessen the impact of taxes on your heirs or give you comfort of knowing that your assets will benefit those you leave behind.

TRIBUTE GIFTS | ACKNOWLEDGE SOMEONE SPECIAL
Contributions can be made in memory, honor or in 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.

MATCHING GIFTS | DOUBLE OR TRIPLE YOUR GIFT
Many employers offer a matching gift program to their employees meaning that your donations are worth even more. All you need is a Matching Gift Form from your employer.

ENDOWMENTS | GIFTS IN PERPETUITY
A gift of endowment demonstrates your long-term commitment to the Department of Ophthalmology since the fund is maintained in perpetuity. Your gift can support programs, lectures, awards, fellowships and Chairs. An endowment serves as an enduring legacy since it often bears the name of a donor or loved one.

ANNUAL GIFTS | CIRCLE OF SIGHT
Started in 1996, the Circle of Sight is the Shiley Eye Institute’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 Institute’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 Institute within the San Diego community. The Circle of Sight group is the backbone of many of our successful initiatives.

For further information about making a donation, please contact:
KAREN ANISKO RYAN
PHONE 858-534-8017
E-MAIL KANISKO@UCSD.EDU
The Honor Roll for the Department of Ophthalmology gratefully acknowledges donations from July 1, 2014 through June 30, 2015. Thank you to all of the individuals, foundations and corporations listed.

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MEMORIALS

The Department of Ophthalmology sadly acknowledges a few friends and key supporters who have passed away during the past year. They remain in our thoughts.

Sheldon Bernstein
Lowell Blankfort
Dorothy Ettinger
Howard C. Kontje
B. James and Peggy Polak
E. Robert Sawyer
Forrest Shumway
Sarah Tiano
Erna Viterbi
Thomas Wade
Jack White
Morris Wolfe

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Research to Prevent Blindness (RPB) is the world’s leading voluntary organization supporting eye research. RPB has provided grants totaling over $3.5 million to the Shiley Eye Institute and the Department of Ophthalmology since our inception. “We are extremely grateful to RPB for their generous and ongoing support of our scientific discoveries and translational research,” said Robert N. Weinreb, M.D., Chairman and Distinguished Professor.
RECENT GRADUATE STARTS EDUCATIONAL FUND FOR FUTURE OCULOPLASTIC FELLOWS

Bradford W. Lee, M.D., MSc, a recent graduate of Shiley's ASOPRS Fellowship in Ophthalmic Plastic and Reconstructive Surgery, has made a donation to start a fund at the UC San Diego Foundation to support future oculoplastic fellows' educational activities. Dr. Lee worked with his preceptors and mentors, Don O. Kikkawa, M.D., and Bobby S. Korn, MD, Ph.D., from 2013 to 2015 and served as a clinical instructor for Shiley residents and UCSD medical students over the course of two years. The fellowship is 24 months long and is sponsored by the American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS.) Upon completing his fellowship, Dr. Lee joined the faculty at Bascom Palmer Eye Institute at the University of Miami, where he is an Assistant Professor of Clinical Ophthalmology.

“Dr. Kikkawa and Dr. Korn are such dedicated and gifted teachers, and I view the surgical skills, clinical principles, and life lessons they taught me as gifts that I will use every day over the course of my career to help my patients and teach my residents and fellows. In oculoplastics, our clinical domain encompasses aspects of plastic surgery, dermatology, ENT, and neurosurgery. Gaining further exposure to these fields through courses, meetings, and observerships can really enhance the world-class core oculoplastics experience this fellowship already provides.

I was blessed to have many such opportunities to pursue enrichment activities during my fellowship, and my goal in starting this fund was to help enable future Shiley oculoplastics fellows to pursue these enrichment activities, regardless of their financial situations. I feel honored to be part of the Shiley Oculoplastics family, and I hope that this fund will only further attract the best and brightest fellowship applicants to what is already one of the most sought after and esteemed oculoplastics fellowships in the world.”
Shiley Eye Institute
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