

CELEBRATING 25 YEARS

# FOR SIGHT



ANNUAL REPORT 2015

SHILEY EYE INSTITUTE  
UC SAN DIEGO

# 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

UC San Diego Health is the San Diego region's sole academic medical center, and our mission — to deliver outstanding patient care through a commitment to groundbreaking research and inspired teaching — is carried out every day at the Shiley Eye Institute. In fact, for many of our patients, Shiley represents their first experience with UC San Diego Health.

With a focus on excellence and providing high quality care, and recognition from U.S News & World Report as having among the Top 25 Ophthalmology departments in the nation, the Shiley Eye Institute attracts patients ages 1 to 106. The center's stellar reputation has also recently led to nearly double-digit growth in visit and surgical volumes. Still, the exceptional physicians and staff at Shiley remain as dedicated to the community as they are to their patients. Through the Shiley EyeMobile, the center provides essential vision screenings and care to underserved children across San Diego.

I am incredibly proud of the extraordinary work being done at the Shiley Eye Institute as we continue to recruit world-class physicians and researchers and explore ways to grow and meet patient demand for ophthalmology services.

Sincerely,



**Patty Maysent, M.P.H., M.B.A.**  
CEO, UC San Diego Health



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





# SHILEY YEAR IN REVIEW

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## EYEMOBILE

GIVING CHILDREN THE  
WORLD TO SEE

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CHILDREN EXAMINED  
**22,039**

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FREE GLASSES DISPENSED  
**1,686**

---

PATIENT VISITS  
**120,407**

---

SURGERIES PERFORMED  
**4,950**

---

CLINICAL TRIALS  
**43**

---

PEER-REVIEWED PUBLICATIONS  
**185**

---

LECTURES  
**162**

---

GRANTS  
**36**

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SINCE 1974 SHILEY HAS TRAINED **426 RESIDENTS & FELLOWS IN OPHTHALMOLOGY**

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SHILEY RANKED **US NEWS & WORLD REPORT TOP 25**

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SHILEY RESIDENCY RANKED **DOXIMITY TOP 25**

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## FROM CENTER TO INSTITUTE

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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.*

# 1980s

**1983**

Department of Ophthalmology created with the appointment of Stuart I. Brown, M.D. as the first Chair

**1984**

Opening of Ophthalmology campus clinic



*The groundbreaking of Shiley Eye Center*

**1990**

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

# 1990s

**1991**

Opening of the Shiley Eye Center in La Jolla



**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.

# 2000s

**2003**

ADAGES (African Descent & Glaucoma Evaluation Study) grant from the National Eye Institute to Linda Zangwill, Ph.D.

**2001**

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







**2004**  
Opening of the Hamilton Glaucoma Center under the direction of Robert N. Weinreb, M.D.

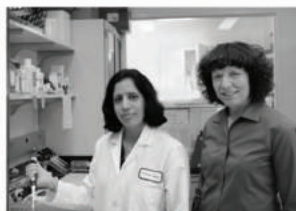
**2004**  
Dr. Richard & Tatiana Lansche Chair in Ophthalmology to Stuart I. Brown, M.D.

**2004**  
Opening of the Bill & Eva Weyland Residents Library



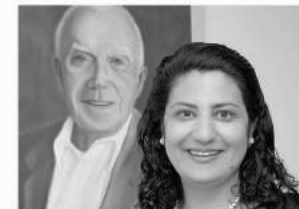
**2008**  
Morris Gleich, M.D. Endowed Chair in Glaucoma to Robert N. Weinreb, M.D.

**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



**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.

**2004**  
Opening of the Joan & Irwin Jacobs Retina Center under the direction of William R. Freeman, M.D.

**2004**  
First Annual Residents, Fellows & Alumni Day

**2004**  
Shiley Surgery Suite Expansion

# 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 non-surgical treatment of cataracts under the direction of Kang Zhang, M.D., Ph.D.



*Dr. Weinreb & Natasha*

CATARACT SURGERY

# SEEING BETTER

By Natasha Josefowitz, Ph.D.

*Reprinted from the La Jolla Village News, July 2015*

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 collegueship, 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 movies 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.

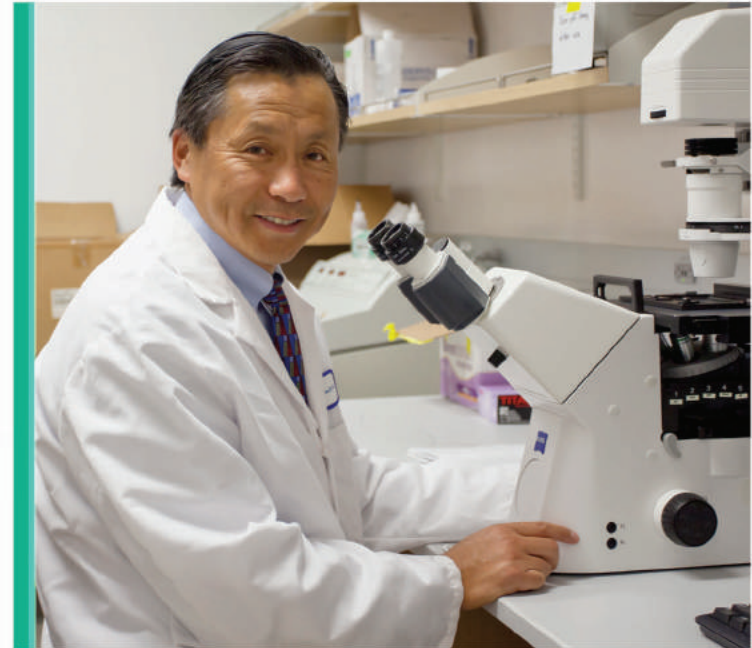


They first showed that lanosterol has the ability to prevent or even eliminate cataracts through lab cell cultures and dissected lenses from rabbits. Zhang then treated dogs with age-related cataracts, which can happen in canines as well as humans. The treated eyes received lanosterol in topical eye drops, one drop three times a day for six weeks. The lens clarity significantly improved compared to controls.

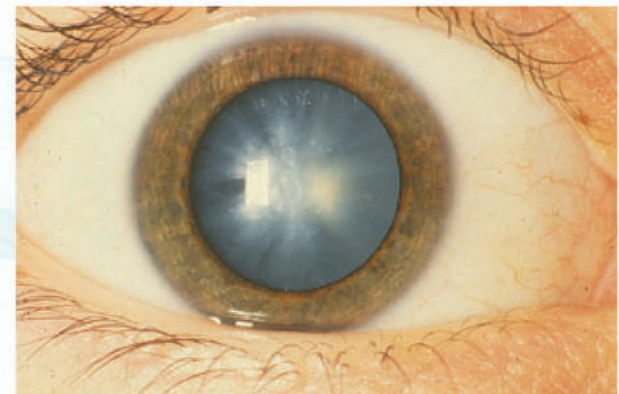
“This groundbreaking research in the field of cataracts has the potential of touching the life of everyone,” states Natalie A. Afshari, M.D., Chief of the Cornea Division at the Shiley Eye Institute. “Every individual who lives long enough will be affected by cloudy lens of the eye and hence cataracts 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.



*Kang Zhang, M.D., Ph.D.*





# DANCING THROUGH THYROID EYE DISEASE

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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; 111:11181-6.) 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.

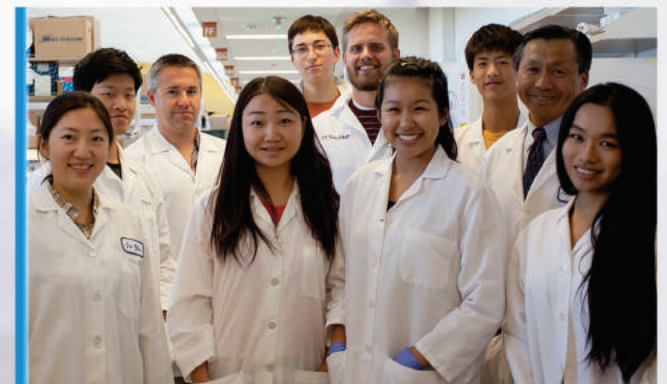
Less than 10 percent of glaucoma patients in America have the closed-angle form, but in parts of Asia it accounts for almost half of all cases. The higher prevalence of closed-angle glaucoma in Asians and women is believed to be due to a shallower anterior (front part) of the eye chamber.

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

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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.

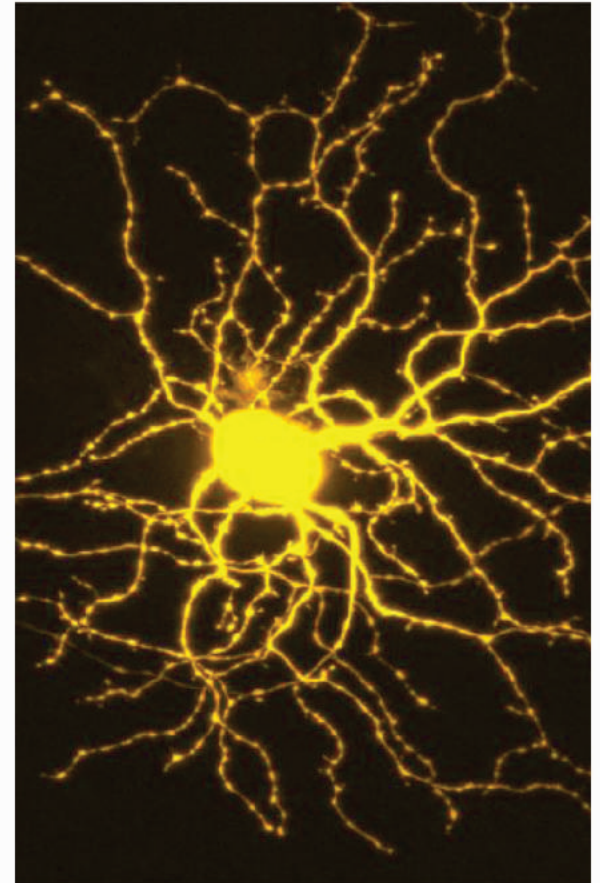
“Understanding the timing and pattern of cellular changes leading to retinal ganglion cell death in glaucoma should facilitate the development of tools to detect and slow or stop those cellular changes and ultimately preserve vision”, stated Dr. Huberman.

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 cell 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.



*Example of retinal ganglion cells with dendrites in the retina of a healthy eye.*

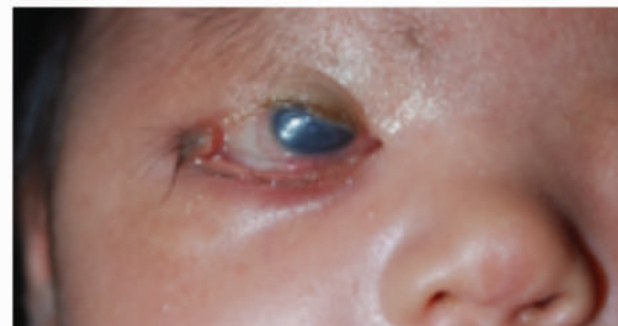
## COLLABORATIONS HELP A BABY GIRL SEE

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

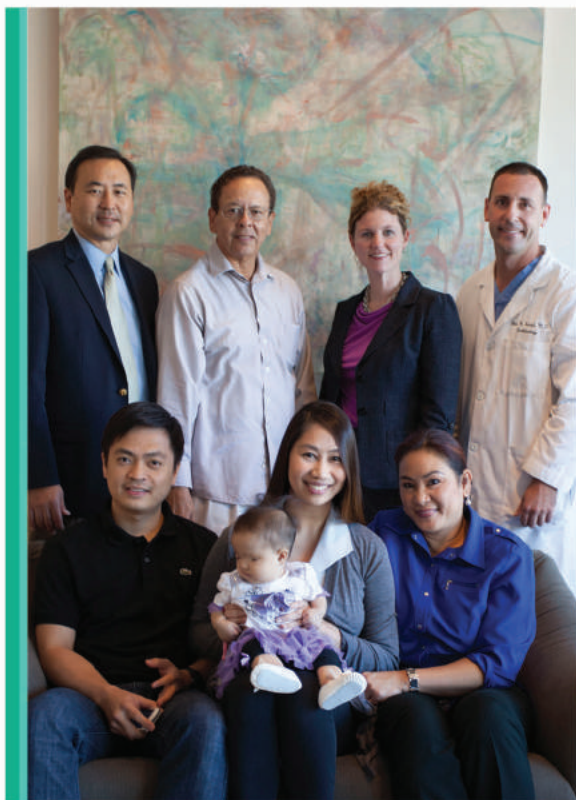


*Mikaella Pecson*



*Melissa and Mikaella Pecson*





*In 2013, pictured above L to R are: (standing) Don O. Kikkawa, M.D., Uncle Joseph Allen, Shira Robbins, M.D., Chris Heichel, M.D. and (seated) Michael and Melissa Pecson, baby Mikaella and her Aunt Josie Allen.*

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!"

Mikaella 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.

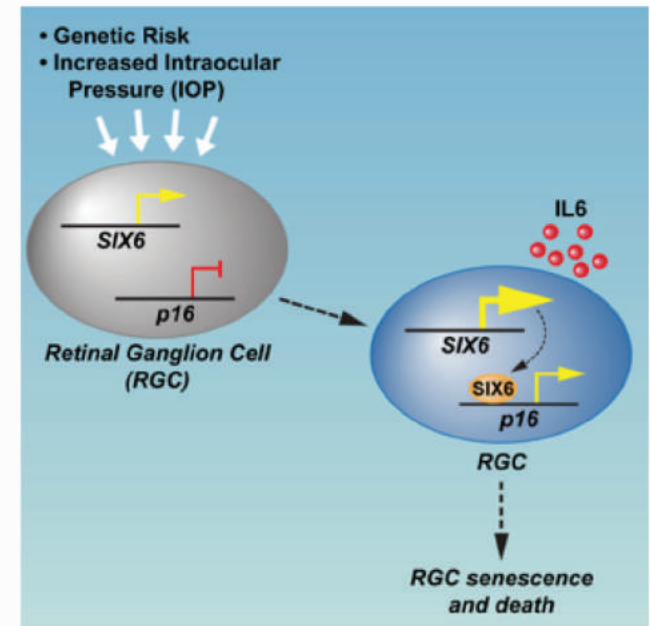
In their recently published article, the Shiley team reports that some variants of SIX6 boost expression of p16INK4a, which in turn accelerates senescence and death of retinal ganglion cells.

“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.

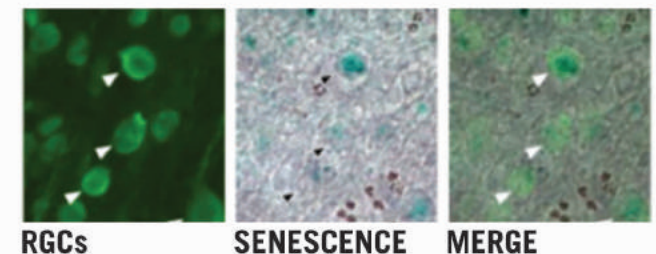
The findings suggest that inhibiting p16INK4a could offer a new therapeutic approach for glaucoma, which is currently treated by drugs that lower intraocular pressure. “Although lowering intraocular pressure can slow worsening of the disease, it does not stop it and prevent further cell death or possible 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- non-senescent 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.

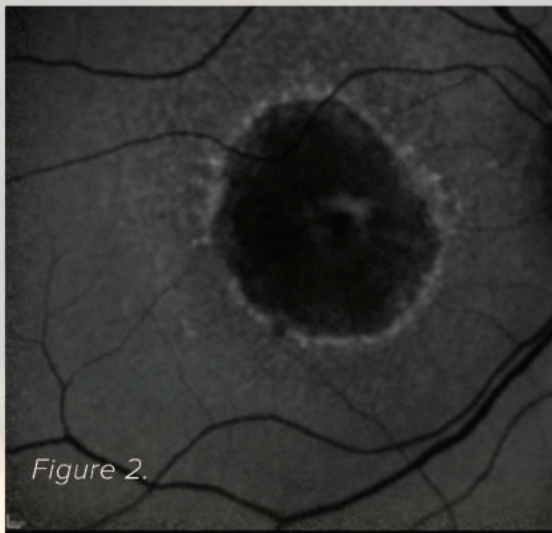
Figures 1 and 2 are fluorescein and autofluorescence scans of the retina with the geographic form of dry macular degeneration. These patients are now being treated at the Jacobs Retina Center by a long acting implant to prevent disease progression using a neuroprotective drug.

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.





## SEEING THE WORLD IN BLACK & WHITE

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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.



*Dr. Weinreb presenting at the UC San Diego Goldberg Auditorium to a packed house.*

## 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.



*Natalie A. Afshari, M.D. and Bob Bellizzi, Founder and Executive Director, Corneal Dystrophy Foundation.*



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.



*Karl Wahlin, Ph.D.*



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.

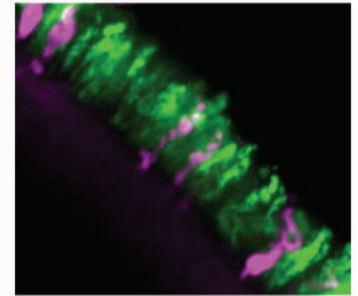
“Dr. Wahlin’s innovative research in the Richard C. Atkinson Laboratory for Regenerative Ophthalmology will enhance the ability of our department to find further treatments and cures for retinal degenerations including macular degeneration, glaucoma and other eye diseases,” states Robert N. Weinreb,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

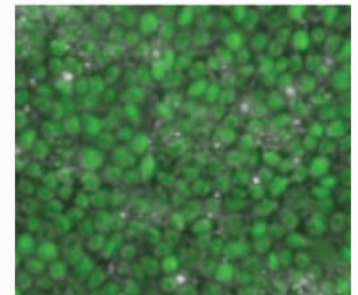
actual retinas and with newly developed genome engineering tools he has used sharpened molecular scissors to introduce fluorescent markers into cells in order to monitor their development and to introduce mutations to create stem cell based models of human retinal disease.

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.

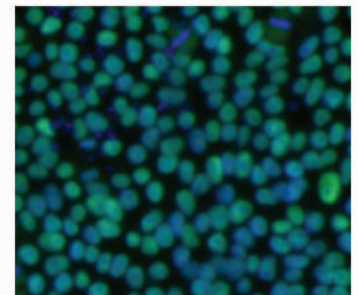
“I am honored to be part of UC San Diego’s Shiley Eye Institute which is strongly committed to developing the next generation of stem cell-based therapies. The resources, talent and wide range of expertise make this the best place to pursue these efforts. I look forward to working together with my new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



DEPARTMENT OF OPHTHALMOLOGY  
**FACULTY RECRUITMENT**



**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

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

**1991** **John Liu, Ph.D.**  
Glaucoma - 24 Hour  
Sleep Laboratory

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

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

**Linda Zangwill, Ph.D.**  
Glaucoma Research

**1995** **Rigby Slight, M.D.**  
Glaucoma



<b>1996</b>	<b>Lingyun Cheng, M.D.</b> Retina Research	<b>2008</b>	<b>Jonathan H. Lin, M.D., Ph.D.</b> Ophthalmic Pathology	<b>2013</b>	<b>Akram Belghith, Ph.D.</b> Glaucoma Research
<b>2000</b>	<b>Christopher Bowd, Ph.D.</b> Glaucoma Research		<b>Peter J. Savino, M.D.</b> Neuro-Ophthalmology		<b>Siamak Yousefi, Ph.D.</b> Glaucoma Research
<b>2003</b>	<b>Weldon W. Haw, M.D.</b> Cornea - Chief, La Jolla VA Hospital		<b>Kang Zhang, M.D., Ph.D.</b> Retina and Genetics	<b>2014</b>	<b>Eric Nudleman, M.D., Ph.D.</b> Retina
	<b>Shira L. Robbins, M.D.</b> Pediatric Ophthalmology and Adult Eye Alignment	<b>2009</b>	<b>Jeffrey E. Lee, M.D.</b> Comprehensive - Chief, UCSD Medical Center Eye Clinic	<b>2015</b>	<b>Karl Wahlin, Ph.D.</b> Regenerative Ophthalmology
	<b>Gabriel A. Silva, Ph.D.</b> Retina Research		<b>Peter Shaw, Ph.D.</b> Retina Research		<b>Dorota Skowronska-Krawczyk, Ph.D.</b> Vision Research
<b>2004</b>	<b>Christopher W. Heichel, M.D.</b> Cornea	<b>2010</b>	<b>Jiagang "Jack" Zhao, Ph.D.</b> Cornea Research		
<b>2005</b>	<b>Felipe A. Medeiros, M.D., Ph.D.</b> Glaucoma	<b>2011</b>			
	<b>Won-Kyu Ju, Ph.D.</b> Glaucoma Research	<b>2012</b>	<b>Natalie A. Afshari, M.D.</b> Cornea and Refractive Surgery		
<b>2007</b>	<b>Bobby S. Korn, M.D., Ph.D.</b> Ophthalmic Plastic and Reconstructive Surgery		<b>Napoleone Ferrara, M.D.</b> Retinal Vascular Research		
	<b>Radha Ayyagari, Ph.D.</b> Retina Research – Molecular Genetics				
	<b>Henry A. Ferreyra, M.D.</b> Retina				



# 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 Gleich, 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 Galvinizing 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'Ophtalmologie; Heed Ophthalmic Foundation Award; Past-President, Association for Research in Vision and Ophthalmology; Past-President, World Glaucoma Association; Inaugural ARVO Gold Metal; Ridley Medal; Past-President American Glaucoma Society; Adjunct Professor, Chinese University of Hong Kong; Moecyr E Alvaro Medal; World Glaucoma Association Founders Award, Leydheck-Harms 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; Cataract surgery; Advanced imaging analysis for diagnosis and detection of glaucoma progression; New techniques for intraocular pressure measurement; Functional impairment in glaucoma; Prediction models and risk assessment in glaucoma

### **NOTABLES**

2014 Qualcomm Institute Strategic Research Award; 2013 Ben and Wanda Hildyard Chair for Diseases of the Eye; 2013 Top 5 Glaucoma Researchers of the Decade (Expertscape); 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 BSCS Committee; 2012 Member of the Research Committee, American Glaucoma Society; Ronald Lowe Medal; American Glaucoma Society Mid-Career and Clinician Scientist Awards; Achievement Award American Academy of Ophthalmology; World Health Organization (WHO) Committee for Prevention of Glaucoma Blindness; 2015 Best Doctors in America; University of Sao Paulo Recognition Award; ARVO 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 (Excellent 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 intraocular pressure  
and ocular blood flow; 24-hour sleep  
laboratory 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/Ophthalmology

**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  
(2013-2015)





### **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 (Post-doctoral 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  
(Vitreous-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

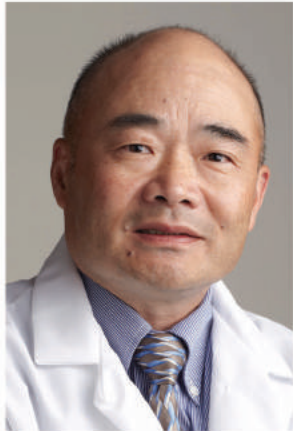
#### **SPECIAL INTERESTS**

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; Councilor Emeritus AAO; Co-editor of textbook Principles and Practice of Cornea; Research to Prevent Blindness Award; Heed Foundation Award; WIO Educator Award; 2015 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 (AJO); 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

Cornea 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.

## 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



**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 (eyelid & 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

2015 Best Doctors in America; San Diego Magazine Top Doctor 2014-2015; 2014 Outstanding Teacher Award from UCSD Ophthalmology Residents; 2014 ASOPRS Foundation Grant; Editorial Board, Ophthalmic Plastic and Reconstructive Surgery; 2012, 2013 U.S. News and World Report Top Doctor; 2008-2015 Star Recognition Award for Highest Rated Instructional Course awarded by the American Academy of Ophthalmology; 2012, 2013 San Diego Magazine Physician of Exceptional Excellence; Editorial Board EyeNet Magazine, Chair Editorial Board AAO BSCS Volume 7, American Academy of Ophthalmology Achievement Award; ASOPRS Research Award; Marvin H. Quickert Award; Outstanding teaching Award; Editor, Video Atlas of Oculofacial Plastic and Reconstructive Surgery Orbits.



# NEURO-OPHTHALMOLOGY

Neuro-ophthalmologists diagnose and treat neuro-sensory disorders including brain tumors, double vision, giant cell arteritis, ischemic optic neuropathy, optic neuritis, papilledema, pseudotumor cerebri, thyroid eye disease and visual field defects. Shiley Eye 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; Beem 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.

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**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 suture 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 Paediatric Ophthalmology  
& Strabismus; Co-Editor AAP Case Studies in Ophthalmology;  
Co-Director AAO Pediatric Ophthalmology Subspecialty Day 2011;  
Bronze Telly Award; Gold Aurora Award; Emmy Award



**SHIRA L. ROBBINS, M.D., F.A.A.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 Wiki 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.

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# 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  
(Ophthalmic Pathology)

## CERTIFICATION

Board Certification in Anatomic Pathology

## SPECIAL INTERESTS

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

## NOTABLES

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



# 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; Rell Sunn 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.**



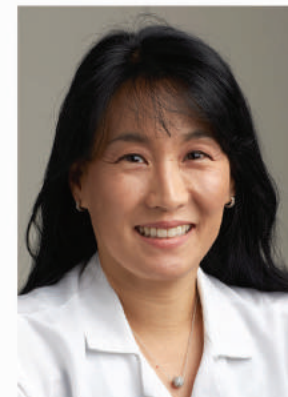
**LARA HUSTANA, O.D.**



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



**PAMELA A. HOO, O.D.**



**LIANNE MIZOGUCHI, 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\*)







TOP COUNTRIES

**UNITED STATES** 17,520  
CHINA 6,352  
GERMANY 3,964  
UNITED KINGDOM 3,236  
JAPAN 3,066  
FRANCE 2,150  
CANADA 1,441  
SWITZERLAND 1,218  
SOUTH KOREA 1,146  
SPAIN 1,061

TOP INSTITUTIONS

HARVARD 818  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY 498  
STANFORD UNIVERSITY 818  
UNIVERSITY OF CALIFORNIA, BERKLEY 358  
NATIONAL INSTITUTES OF HEALTH 334  
**UNIVERSITY OF CALIFORNIA, SAN DIEGO** 323  
YALE UNIVERSITY 308  
CHINESE ACADEMY OF SCIENCES 1,358  
MAX PLANCK SOCIETY 656  
HELMHOLTZ ASSOCIATION 424  
UNIVERSITY OF CAMBRIDGE 391  
UNIVERSITY OF OXFORD 368  
UNIVERSITY OF TOKYO 452  
FRENCH NATIONAL CENTER FOR SCIENTIFIC RESEARCH 2,150  
ETH ZURICH 327



## RESIDENCY

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



*Pictured above from left to right Brenda Nuyen, M.D., Courtney Ondeck, M.D., Nickisa Hodgson, M.D., Jean-Paul Abboud, M.D., Matthew Bedell, M.D., Hema Ramkumar, M.D., Lilit Minasyan, M.D., Kyle Godfrey, M.D., Brian Chang, M.D. (Administrative Chief), Usha Kumar, M.D., Roman Fajardo, M.D., Abigail Huang, M.D. (Academic Chief).*

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.



## FERRARA ELECTED TO NATIONAL ACADEMY OF MEDICINE

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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.



## FELLOWS

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.

### NOT PHOTOGRAPHED:

#### RETINA

Mostafa Alam, M.D.  
Kyung Seek Choi, M.D., Ph.D.  
Mark Espina, M.D.  
Ying Lin, Ph.D.  
Hongrong Luo, Ph.D.  
Sang Woong Moon, M.D.  
Yaoyao Su Zhu, Ph.D.

#### GLAUCOMA

Xin Xia, Ph.D.

## RETINA



**NATALIA CAMACHO, M.D.**



**ARASH MOZAYAN, M.D.**



**JOSEPH NEZGODA, M.D.**



**HONG OUYANG, PH.D.**



**FRANK TSAI, M.D.**



**QISHENG YOU, M.D.**

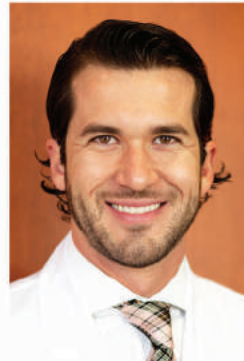
## CORNEA



**JULIO ECHEGOYEN,  
M.D., PH.D.**



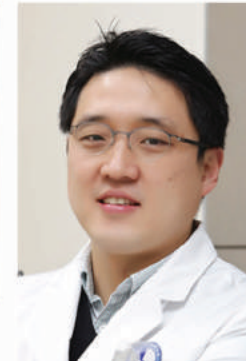
**RON GUTMARK, M.D.**



**C. ANDRES BENATTI, M.D.**

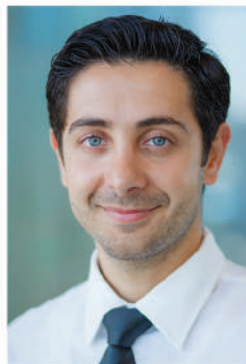


**HIDEKI FUKUOKA,  
M.D., PH.D.**



**HONG SEOK YANG,  
M.D., PH.D.**

## OCULOPLASTICS



**RAMZI ALAMEDDINE, M.D.**



**BRADFORD LEE, M.D.**



**MICHAEL KINORI, M.D.**

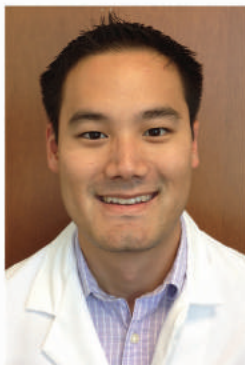


**KYLE MILLER, M.D.**

## PEDIATRICS



## GLAUCOMA



**RICARDO ABE, M.D.**



**ALENA BARTAKOVA, M.D.**



**LING BEI, M.D.**



**EVAN CAMERON, M.D.**



**ALBERTO DINIZ-FILHO,  
M.D., PH.D.**



**JOANA GALVAO, M.D.**



**NA'AMA HAMMEL, M.D.**



**KARL KADOR, PH.D.**



**TING LIU, M.D.**



**MYOUNG SUP SIM, PH.D.**



**TRAVIS STILES, PH.D.**



**CRISTIANA VASILE, M.D.**



**YAN WANG, M.D., PH.D.**



**ZHIYONG YANG, PH.D.**



**CHUNWEI ZHANG, 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  
Alkek 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"

### 12/08/14 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?"

### 03/09/15 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.PH.

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. Nudleman, 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 Keratoprosthesis (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.





## GRADUATION HIGHLIGHTS

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 oculoplastics 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.



*The entire Department celebrated the departing fellows with a Luau on June 22, 2015. Each specialty division chief awarded the diplomas.*



*Pictured above L to R are: (standing) Joyce McHugh, Jeff Lee, M.D., Robert N. Weinreb, M.D., Natalie Afshari, M.D., (seated) Hema Ramkumar, M.D., Lilit Minasyan, M.D., Matthew Bedell, M.D., Jean-Paul Abboud, M.D., Ph.D.*



*Pictured above L to R are: Robert N. Weinreb, M.D., and Abigail Huang, M.D.*



## CLINICAL TRIALS

### CORNEA

A Genome Wide Association Study of Fuchs Endothelial Corneal Dystrophy.  
PI: Natalie A. Afshari, M.D.

A Multi-Center, Double-Masked, 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.  
PI: 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.  
PI: 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.  
PI: Christopher W. Heichel, M.D.

INTACS for Corneal Ectasia: Studying the Effects of Asymmetric Corneal Ring Segments with Adjuvant Corneal Crosslinking (Oasis Medical Inc.)  
PI: Christopher W. Heichel, M.D.

Capsular Tension Rings: Indications, Safety and Outcomes. A Large Consecutive Case Series.  
PI: Christopher W. Heichel, M.D.

Capsular Tension Ring Use in Predicting Effective Lens Position.  
PI: 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.  
PI: 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.  
PI: Felipe A. Medeiros, M.D., Ph.D.

Evaluation of Bimatoprost 0.01% and Bimatoprost 0.03% in Patients with Glaucoma or Ocular Hypertension.  
PI: 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.  
PI: Felipe A. Medeiros, M.D., Ph.D.

The Efficacy and Safety of Bimatoprost SR in Patients with Open-angle Glaucoma or Ocular Hypertension.  
PI: Felipe A. Medeiros, M.D., Ph.D.

Effect of Eyelid Ptosis on Driving Performance Using a High-Fidelity Simulator.  
PI: Felipe A. Medeiros, M.D., Ph.D.  
Sub PI: Bobby S. Korn, M.D., Ph.D.

Retinal Amyloid Imaging in Glaucoma  
PI: Robert N. Weinreb, M.D.

OCT Angiography in Glaucoma Study  
PI: Robert N. Weinreb, M.D.

Imaging of Choroid with Swept Source OCT in Glaucoma  
PI: Robert N. Weinreb, M.D.

Enhanced vision by electrostimulation in Glaucoma  
PI: Robert N. Weinreb, M.D.

High Definition SD-OCT of Anterior Segment and Angle  
PI: Robert N. Weinreb, M.D.

Flexible electronic compliance monitor  
PIs: 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  
PI: Won Kyu Ju, Ph.D.

Effect of Ubiquinol on retinal ganglion cell survival and mitochondrial alteration in mouse model  
PI: Won Kyu Ju, Ph.D.

Ischemic mouse model with acute IOP elevation (100mm Hg)  
PI: Won Kyu Ju, Ph.D.

Sleep laboratory analysis  
PI: John Liu, Ph.D.

### PEDIATRIC OPHTHALMOLOGY

Study of Binocular Computer Activities for Treatment of Amblyopia (ATS 18).  
PIs: 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.  
PI: Henry A. Ferreyra, M.D.

A Two-Year, Randomized, Double-Masked, Multicenter, Three-Arm Study Comparing the Efficacy and Safety of RTH258 versus Aflibercept in Subjects with Neovascular Age-Related Macular Degeneration.  
PI: William R. Freeman, M.D.

A Phase 3 Randomized, Double-Masked, Controlled Trial to Establish the Safety and Efficacy of Intravitreal Administration of Fostiva (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  
PI: William R. Freeman, M.D.

Evaluation of Abicipar Pegol in Patients with Decreased Vision Due to Diabetic Macular Edema.  
PI: William R. Freeman, M.D.

A Phase 3 Randomized, Double-Masked, Controlled trial to establish the safety and efficacy of Intravitreal Administration of Fovista (Anti PDGF-B Pegylated Aptamer) Administration in Combination with Lucentis compared to Lucentis Monotherapy in Subfoveal Neovascular Age-Related Macular Degeneration  
PI: William R. Freeman, M.D.

Rescue of Bevacizumab or Ranibizumab Failure by Intravitreal Aflibercept (RAFT Study).  
PI: 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 GSK933776 in Adult Patients with Geographic Atrophy (GA) Secondary to Age-related Macular Degeneration (AMD).  
PI: William R. Freeman, M.D.

VGFT-OD-1009: A Double-Masked, Randomized, Active-Controlled, Phase 3 Study of the Efficacy and Safety of Intravitreal Administration of VEGF Trap-Eye in Patients with Diabetic Macular Edema.  
PI: William R. Freeman, M.D.

Daunorubicin-Loaded Porous Silicon Study.  
PI: Gabriel Silva, Ph.D.

Testing & Evaluation of a Retinal Prosthesis.  
PI: 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  
PI: William R. Freeman, M.D.

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

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

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

Ocriplasmin Research to Better Inform  
Treatment (ORBIT).  
PI: 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).  
PI: William R. Freeman, M.D.  
Sub PI: 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-PI: Eric D. Nudleman, M.D., Ph.D.

EAGLE: Evaluating Genotypes Using Intravitreal  
Aflibercept Injection.  
PI: Kang Zhang, M.D., Ph.D.

Seven year observation of macular  
degeneration patients post marina/anchor and  
horizon trials.  
PI: 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

Ouyang H, Xue Y, Lin Y, Zhang X, Xi L, Patel S, Cai H, Luo J, Zhang M, Zhang M, Yang Y, Li G, Li H, Jiang W, Yeh E, Lin J, Pei M, Zhu J, Cao G, Zhang L, Yu B, Chen S, Fu XD, Liu Y, Zhang K. WNT7A and PAX6 Define Corneal Epithelium Homeostasis and Pathogenesis. *Nature*. 2014 Jul 17;511(7509):358-61. doi: 10.1038/nature13465.

Schuster A, Thomas K, Heichel CW, Purcell T, Barker, PD, Schanzlin DJ. Using IOL-calculation Adjustment after Laser Refractive Surgery Using Scheimpflug Imaging: the STOP Post-refractive IOL Calculator. In Press.

Kim K, Alder B, Vora GK, Carlson AN, Afshari NA, Kuo AN, Kim T. Textural Interface Opacity after Descemet-stripping Automated Endothelial Keratoplasty. *J Cataract Refract Surg* 2014 Sep; 40:1514-20.

Li YJ, Minear MA, Qin X, Rimmier J, Hauser MA, Allingham RR, Igo RP Jr, Lass JH, Iyengar SK, Klintworth GK, Afshari NA, Gregory S. Mitochondrial Polymorphism A10398G and Haplogroup I Are Associated with Fuchs Endothelial Corneal Dystrophy. *Invest Ophthalmol Vis Sci*. 2014 Jun 10; 55:4577-84.

Said B, Afshari NA. Boston Keratoprosthesis. In Agarwal A, John T (eds.): *Mastering Corneal Surgery: Recent Advances and Current Techniques*. New Jersey: SLACK, 2014.

Chang DH, Grijalva J, Kahook MY, Krupa M, Afshari NA. Clinical Trials: What Young Practitioners Need to Know. *Cataract & Refractive Surgery Today* 2014; 6:23-26.

Sayegh R, Afshari NA. An Overview of Keratoprostheses. *Focal Points* 2014; 6:1-13.

Khor WB, Afshari NA. What are the Indications for Monovision vs Other Presbyopia-Correction IOL Options? How Much Anisometropia is Advisable with Monovision with Monofocal IOLs? Chapter 38; Henderson, BA and Yoo, S (eds.): *Curbside Consultations in Refractive and Lens-Based Surgery*. New Jersey: SLACK, 2015.

Said B, Afshari NA. History of Endothelial Keratoplasty. Chapter 13; Agarwal A, Editor. *Textbook on Mastering Endothelial Keratoplasty*. Chennai: Springer, 2015.

Zhao L, Chen XJ, Zhu J, Xi YB, Yang X, Hu LD, Ouyang H, Patel SH, Jin X, Lin D, Wu F, Flagg K, Cai H, Li G, Cao G, Lin Y, Chen D, Wen C, Chung C, Wang Y, Qiu A, Yeh E, Wang W, Hu X, Grob S, Abagyan R, Su Z, Tjondro HC, Zhao XJ, Luo H, Hou R, Perry JJ, Gao W, Kozak I, Granet DB, Li Y, Sun X, Wang J, Zhang L, Liu Y, Yan YB, Zhang K. Lanosterol Reverses Protein Aggregation in Cataracts. *Nature*. 2015 July 30;523(7562):607-11. doi: 10.1038/nature14650.

Ho JW, Afshari NA. Advances in Cataract Surgery: Preserving the Corneal Endothelium. *Curr Opin Ophthalmol* 2015; 26:22-7.

Ho JW, Afshari NA. The Quest to Optimizing Cataract Surgery Outcomes. *Curr Opin Ophthalmol* 2015;26:1-2.

Afshari NA. April consultation #6. *J Cataract Refract Surg* 2015; 41:898-9.

Li G, Xu F, Zhu J, Krawczyk M, Zhang Y, Yuan J, Patel S, Wang Y, Lin Y, Zhang M, Cai H, Chen D, Zhang M, Cao G, Yeh E, Lin D, Su Q, Li WW, Sen GL, Afshari NA, Chen S, Maas RL, Fu XD, Zhang K, Liu Y, Ouyang H. Transcription Factor PAX6 (Paired Box 6) Controls Limbal Stem Cell Lineage in Development and Disease. *J Biol Chem* 2015 Aug 14; 290: 20448-54.

Fukuoka H, Sutu C, Afshari NA. The Impact of Cataract Surgery on Cognitive Impairment. *Curr Opin Ophthalmol*. 2015 November.

Sutu C, Fukuoka H, Afshari NA. Mechanisms and Management of Dry Eye in Cataract Surgery Patients. *Curr Opin Ophthalmol*. 2015 November.

Stone J, Afshari NA. Cataract Surgery: The Ever-heightening Bar for Technical Precision and Patient Personalization. *Curr Opin Ophthalmol*. 2015 November.

Benatti A, Afshari NA. Post-operative Pain after Laser Refractive Surgery. *Int Ophthalmol Clin*. In Press.

Sevgi DD, Fukuoka H, Afshari NA. 20 years in Keratoprosthesis. *Curr Ophthalmol Rep*. In Press.

### GLAUCOMA

Springelkamp H, Höhn R, Mishra A, Hysi PG, Khor CC, Loomis SJ, Bailey JN, Gibson J, Thorleifsson G, Janssen SF, Luo X, Ramdas WD, Vithana E, Nongpiur ME, Montgomery GW, Xu L, Mountain JE, Gharahkhani P, Lu Y, Amin N, Karssen LC, Sim KS, van Leeuwen EM, Iglesias AI, Verhoeven VJ, Hauser MA, Loon SC, Despret DD, Nag A, Venturini C, Sanfilippo PG, Schillert A, Kang JH, Landers J, Jonasson F, Cree AJ, van Koolwijk LM, Rivadeneira F, Souzeau E, Jonsson V, Menon G; Blue Mountains Eye Study—GWAS group, Weinreb RN, de Jong PT, Oostra BA, Uitterlinden AG, Hofman A, Ennis S, Thorsteinsdottir U, Burdon KP; NEIGHBORHOOD Consortium; Wellcome Trust Case Control Consortium 2 (WTCCC2), Spector TD, Mirshahi A, Saw SM, Vingerling JR, Teo YY, Haines JL, Wolfs RC, Lemij HG, Tai ES, Jansonius NM, Jonas JB, Cheng CY, Aung T, Viswanathan AC, Klaver CC, Craig JE, Macgregor S, Mackey DA, Lotery AJ, Stefansson K, Bergen AA, Young TL, Wiggs JL, Pfeiffer N, Wong TY, Pasquale LR, Hewitt AW, van Duijn CM, Hammond CJ. Meta-analysis of Genome-wide Association Studies Identifies Novel Loci that Influence Cupping and the Glaucomatous Process. *Nat Commun*. 2014 Sep 22;5:4883. doi: 10.1038/ncomms5883.

Belghith A, Bowd C, Medeiros FA, Balasubramanian M, Weinreb RN, Zangwill LM. Glaucoma Progression Detection Using Nonlocal Markov Random Field Prior. *J Med Imaging (Bellingham)*. 2014 Oct;1:034504. PMID: PMC4478777.

Chi W, Li F, Chen H, Wang Y, Zhu Y, Yang X, Zhu J, Wu F, Ouyang H, Ge J, Weinreb RN, Zhang K, Zhuo Y. Caspase-8 Promotes NLRP1/NLRP3 Inflammasome Activation and IL-1 $\beta$  Production in Acute Glaucoma. *Proc Natl Acad Sci U S A*. 2014 Jul 29;111(30):11181-6. doi: 10.1073/pnas.1402819111.

Liu JHK, Weinreb RN. Asymmetry of Habitual 24-hour Intraocular Pressure Rhythm in Glaucoma Patients. *Invest Ophthalmol Vis Sci* 2014;55:7398-7402.

Bailey JN, Yaspan BL, Pasquale LR, Hauser MA, Kang JH, Loomis SJ, Brilliant M, Budenz DL, Christen WG, Finger J, Gaasterland D, Gaasterland T, Kraft P, Lee RK, Lichter PR, Liu Y, McCarty CA, Moroi SE, Richards JE, Realini T, Schuman JS, Scott WK, Singh K, Sit AJ, Vollrath D, Wollstein G, Zack DJ, Zhang K, Perica-Vance MA, Allingham RR, Weinreb RN, Haines JL, Wiggs JL. Hypothesis-independent Pathway Analysis Implicates GABA and Acetyl-CoA Metabolism in Primary open-angle Glaucoma and Normal-pressure Glaucoma. *Hum Genet*. 2014;133:1319-30.

Yang D, Fu J, Hou R, Liu JHK, Jonas JB, Wang H, Chen W, Li Z, Sang J, Zhang Z, Liu S, Cao Y, Xie X, Ren R, Lu Q, Weinreb RN, Wang N. Author response: Optic Neuropathy Secondary to Spontaneous Intracranial Hypotension (SIH) as Related to Experimental Primate Model. *Invest Ophthalmol Vis Sci*. 2014;55:6177.

Meier KI, Greenfield DS, Hilmantel G, Kahook MY, Lin C, Rorer EM, Singh K, Tarver ME, Weinreb RN, Eydelman MB, Liebmann JM. Special commentary: Food and Drug Administration and American Glaucoma Society Co-sponsored Workshop: the Validity, Reliability, and Usability of Glaucoma Imaging Devices. *Ophthalmology*. 2014;121:2116-23.



Tatham AJ, Boer ER, Rosen PN, Della Penna M, Meira-Freitas D, Weinreb RN, Zangwill LM, Medeiros FA. Glaucomatous Retinal Nerve Fiber Layer Thickness Loss is Associated with Slower Reaction Times under a Divided Attention Task. *Am J Ophthalmol*. 2014;158:1008-17. PMID: PMC4515218.

Liu Y, Garrett ME, Yaspan BI, Bailey JC, Loomis SJ, Brilliant M, Budenz DL, Christen WG, Fingert JH, Gaasterland D, Gaasterland T, Kang JH, Lee RK, Lichter P, Moroi SE, Realini A, Richards JE, Schuman JS, Scott WK, Singh K, Sit AJ, Vollrath D, Weinreb RN, Wollstein G, Zack DJ, Zhang K, Pericak-Vance MA, Haines JL, Pasquale LR, Wiggs JL, Allingham RR, Ashley-Koch AE, Hauser MA. DNA Copy Number Variants of Known Glaucoma Genes in Relation to Primary Open-angle Glaucoma. *Invest Ophthalmol Vis Sci*. 2014;55:8251-8. PMID: PMC4271633.

Xu G, Weinreb RN, Leung CK. Optic Nerve Head Deformation in Glaucoma: the Temporal Relationship between Optic Nerve Head Surface Depression and Retinal Nerve Fiber Layer Thinning. *Ophthalmology*. 2014;121:2362-70.

Zhang C, Tatham AJ, Weinreb RN, Zangwill LM, Yang Z, Zhang JZ, Medeiros FA. Relationship between Ganglion Cell Layer Thickness and Estimated Retinal Ganglion Cell Counts in the Glaucomatous Macula. *Ophthalmology*. 2014;121(12):2371-9.

Zhang C, Tatham AJ, Medeiros FA, Zangwill LM, Yang Z, Weinreb RN. Assessment of Choroidal Thickness In Healthy And Glaucomatous Eyes Using Swept Source Optical Coherence Tomography. *PLoS One*. 2014;9(10):e109683.

Mansouri K, Medeiros FA, Weinreb RN. Twenty-Four-Hour Intraocular Pressure Patterns in a Symptomatic Patient after Ab Interno Trabeculotomy Surgery. *Clinical Ophthalmology* 2014;8:2195-7.

Kim SY, Shim MS, Kim KY, Weinreb RN, Wheeler LA, Ju WK. Inhibition of Cyclophilin D by Cyclosporine A Promotes Retinal Ganglion Cell Survival by Preventing Mitochondrial Alteration in Ischemic Injury. *Cell Death and Disease*. 2014; 5:e1105.

Lisboa R, Meira-Freitas D, Tatham AJ, Marvasti AH, Sharpsten L, Medeiros FA. Use of Statistical Analyses in the Ophthalmic Literature. *Ophthalmology* 2014;121(7):1317-21.

Gracitelli CP, Tatham AJ, Zangwill LM, Weinreb RN, Liu T, Medeiros FA. Estimated Rates of Retinal Ganglion Cell Loss in Glaucomatous Eyes with and without Optic Disc Hemorrhages. *PLoS One* 2014;9(8):e105611.

Miki A, Medeiros FA, Weinreb RN, Jain S, He F, Sharpsten L, Khachatryan N, Hammel N, Liebmann JM, Girkin CA, Sample PA, Zangwill LM. Rates of Retinal Nerve Fiber Layer Thinning in Glaucoma Suspect Eyes. *Ophthalmology*. 2014;121:1350-8. PMID: PMC4310561.

Yousefi S, Goldbaum MH, Balasubramanian M, Medeiros FA, Zangwill LM, Liebmann JM, Girkin CA, Weinreb RN, Bowd C. Learning from Data: Recognizing Glaucomatous Defect Patterns and Detecting Progression from Visual Field Measurements. *IEEE Trans Biomed Eng*. 2014;61:2112-24. PMID: PMC4254715.

Belghith A, Balasubramanian M, Bowd C, Weinreb RN, Zangwill LM. A Unified Framework for Glaucoma Progression Detection Using Heidelberg Retina Tomography Images. *Comput Med Imaging Graph*. 2014;38:411-20. PMID: PMC4053521.

Chi W, Li F, Chen H, Zhu Y, Yang X, Zhu J, Wu F, Ouyang H, Ge J, Weinreb RN, Zhang K, Zhuo Y. Caspase-8 Promotes NLRP1/NLRP3 Inflammasome Activation and IL-1 $\beta$  Production in Acute Glaucoma. *Proc Natl Acad Sci U S A*. 2014;111:11181-6. PMID: PMC4121847.

Yang D, Fu J, Hou R, Liu K, Jonas JB, Wang H, Chen W, Li Z, Sang J, Zhang Z, Liu S, Cao

Y, Xie X, Ren R, Lu Q, Weinreb RN, Wang N. Glaucoma Considered as an Imbalance between Production and Clearance of Neurotoxins. *Invest Ophthalmol Vis Sci*. 2014;55:5353.

Luo N, Conwell M.D., Chen X, Kettenhofen CI, Westlake CJ, Cantor LB, Wells CD, Weinreb RN, Corson TW, Spandau DF, Joos KM, Iommi C, Obukhov AG, Sun Y. Primary Cilia Signaling Mediates Intraocular Pressure Sensation. *Proc Natl Acad Sci U S A*. 2014;111:12871-6. PMID: PMC4156748.

Springelkamp H, Hohn R, Mishra A, et al (including Weinreb RN). Meta-analysis of Genome-wide Association Studies Identifies Novel Loci that Influence Cupping and the Glaucomatous Process. *Nat Commun*. 2014;5:4883. PMID: PMC4199103.

Pourreza-Shahri R, Yousefi S, and Kehtarnavaz N. Optimization Method to Reduce Blocking Artifacts in JPEG images. *Journal of Electronic Imaging*, 2014 Nov; 23 (6): 0630231-11.

Yousefi S, Wein A, Kowalski K, Richardson A, Srinivasan L. Smoothness as a Failure Mode of Bayesian Mixture Models in Brain-machine Interface. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 2015 Jan; 23 (1):128-137.

Varnousfaderani ES, Yousefi S, Bowd C, Goldbaum MH. Vessel Delineation in Retinal Images Using Leung-Malik Filters and Two Levels Hierarchical Learning. *American Medical Informatics Association*, 2015. In press.

Medeiros FA. Biomarkers and Surrogate Endpoints in Glaucoma Clinical Trials. *The British Journal of Ophthalmology* 2015;99(5):599-603.

Diniz-Filho A, Boer ER, Gracitelli CP, Abe RY, van Driel N, Yang Z, Medeiros FA. Evaluation of Postural Control in Patients with Glaucoma Using a Virtual Reality Environment. *Ophthalmology* 2015;122(6):1131-8.

Yang Z, Tatham AJ, Weinreb RN, Medeiros FA, Liu T, Zangwill LM. Diagnostic Ability of Macular Ganglion Cell Inner Plexiform Layer Measurements in Glaucoma Using Swept Source and Spectral Domain Optical Coherence Tomography. *PLoS one* 2015;10(5):e0125957.

Tatham AJ, Boer ER, Gracitelli CP, Rosen PN, Medeiros FA. Relationship between Motor Vehicle Collisions and Results of Perimetry, Useful Field of View, and Driving Simulation in Drivers with Glaucoma. *Translational Vision Science & Technology* 2015;4(3):5.

Medeiros FA, Gracitelli CP, Boer ER, Weinreb RN, Zangwill LM, Rosen PN. Longitudinal Changes in Quality of Life and Rates of Progressive Visual Field Loss in Glaucoma Patients. *Ophthalmology* 2015;122(2):293-301.

Zhang P, Luo D, Li P, Sharpsten L, Medeiros FA. Log-Gamma Linear-Mixed Effects Models for Multiple Outcomes with Application to a Longitudinal Glaucoma Study. *Biometrical Journal Biometrische Zeitschrift* 2015;57(5):766-776.

Mansouri K, Medeiros FA, Liu JH, De Moraes CG, Weinreb RN. Analysis of 24-Hour IOP-Related Pattern Changes after Medical Therapy. *Journal of Glaucoma* 2015;24(5):396.

Kuo JZ, Zangwill LM, Medeiros FA, Liebmann JM, Girkin CA, Hammel N, Rotter JI, Weinreb RN. Quantitative Trait Locus Analysis of SIX1-SIX6 with Retinal Nerve Fiber Layer Thickness in Individuals of European Descent. *American Journal of Ophthalmology* 2015;160(1):123-30 e1.

Kuang TM, Zhang C, Zangwill LM, Weinreb RN, Medeiros FA. Estimating the Lead Time Gained by Optical Coherence Tomography in Detecting Glaucoma before Development of Visual Field Defects. *Ophthalmology* 2015.

Khachatryan N, Medeiros FA, Sharpsten L, Bowd C, Sample PA, Liebmann JM, Girkin CA, Weinreb RN, Miki A, Hammel N, Zangwill LM. The African Descent and Glaucoma Evaluation Study (ADAGES): predictors of visual field



- damage in glaucoma suspects. *American Journal of Ophthalmology* 2015;159(4):777-87.
- Gracitelli CP, Abe RY, Medeiros FA. Spectral-Domain Optical Coherence Tomography for Glaucoma Diagnosis. *The Open Ophthalmology Journal* 2015;9:68-77.
- Gracitelli CP, Abe RY, Diniz-Filho A, Vaz-de-Lima FB, Paranhos A, Jr., Medeiros FA. Ophthalmology issues in Schizophrenia. *Current Psychiatry Reports* 2015;17(5):28.
- Belghith A, Bowd C, Medeiros FA, Balasubramanian M, Weinreb RN, Zangwill LM. Learning from Healthy and Stable Eyes: A New Approach for Detection of Glaucomatous Progression. *Artificial Intelligence in Medicine* 2015;64(2):105-15.
- Abe RY, Gracitelli CP, Medeiros FA. The Use of Spectral-Domain Optical Coherence Tomography to Detect Glaucoma Progression. *The Open Ophthalmology Journal* 2015;9:78-88.
- Abe RY, Gracitelli CP, Diniz-Filho A, Zangwill LM, Weinreb RN, Medeiros FA. Frequency Doubling Technology Perimetry and Changes in Quality of Life of Glaucoma Patients: A Longitudinal Study. *American Journal of Ophthalmology* 2015;160(1):114-122 e1.
- Abe RY, Gracitelli CP, Diniz-Filho A, Tatham AJ, Medeiros FA. Lamina Cribrosa in Glaucoma: Diagnosis and Monitoring. *Current Ophthalmology Reports* 2015;3(2):74-84.
- Gisler C, Ridi A, Hennebert J, Weinreb RN, Mansouri K. Automated Detection and Quantification of Circadian Eye Blinks Using a Contact Lens Sensor. *Transl Vis Sci Technol*. 2015;4:4. PMID: PMC4306263.
- Mansouri K, Weinreb RN, Liu JH. Efficacy of a Contact Lens Sensor for Monitoring 24-H Intraocular Pressure Related Patterns. *PLoS One*. 2015;10:e0125530. PMID: PMC4420265.
- Yang Z, Tatham AJ, Weinreb RN, Medeiros FA, Liu T, Zangwill LM. Diagnostic Ability of Macular Ganglion Cell Inner Plexiform Layer Measurements in Glaucoma Using Swept Source and Spectral Domain Optical Coherence Tomography. *PLoS One*. 2015;10:e0125957. PMID: PMC4433247.
- Liu JH, Mansouri K, Weinreb RN. Estimation of 24-Hour Intraocular Pressure Peak Timing and Variation Using a Contact Lens Sensor. *PLoS One*. 2015;10:e0129529. PMID: PMC4468106.
- Savatsky E, Mwanza JC, Budenz DL, Feuer WJ, Vandenbroucke R, Schiffman JC, Anderson DR (Weinreb RN). Ocular Hypertension Treatment Study. Longitudinal Changes in Peripapillary Atrophy in the Ocular Hypertension Treatment Study: A Case-Control Assessment. *Ophthalmology*. 2015;122:79-86.
- Yang Z, Tatham AJ, Zangwill LM, Weinreb RN, Zhang C, Medeiros FA. Diagnostic Ability of Retinal Nerve Fiber Layer Imaging by Swept-Source Optical Coherence Tomography in Glaucoma. *Am J Ophthalmol*. 2015;159:193-201. PMID: PMC4293127.
- Lindsey JD, Duong-Polk KX, Hammond D, Chindasub P, Leung CK, Weinreb RN. Differential Protection of Injured Retinal Ganglion Cell Dendrites by Brimonidine. *Invest Ophthalmol Vis Sci*. 2015;56:1789-804.
- Medeiros FA, Gracitelli CP, Boer ER, Weinreb RN, Zangwill LM, Rosen PN. Longitudinal Changes in Quality of Life and Rates of Progressive Visual Field Loss in Glaucoma Patients. *Ophthalmology*. 2015;122:293-301. PMID: PMC4306625.
- Springelkamp H, Mishra A, Hysi PG, et al (including Weinreb RN). Meta-Analysis of Genome-Wide Association Studies Identifies Novel Loci Associated with Optic Disc Morphology. *Genet Epidemiol*. 2015;39:207-16. PMID: PMC4480365.
- Girkin CA, Nievergelt CM, Kuo JZ, Maihofer AX, Huisinigh C, Liebmann JM, Ayyagari R, Weinreb RN, Ritch R, Zangwill LM, ADAGES Study Group. Biogeographic Ancestry in the African Descent and Glaucoma Evaluation Study (ADAGES): Association with Corneal and Optic Nerve Structure. *Invest Ophthalmol Vis Sci*. 2015;56:2043-9. PMID: PMC4373542.
- Gracitelli CP, Abe RY, Tatham AJ, Rosen PN, Zangwill LM, Boer ER, Weinreb RN, Medeiros FA. Association between Progressive Retinal Nerve Fiber Layer Loss and Longitudinal Change in Quality of Life in Glaucoma. *JAMA Ophthalmol*. 2015;133:384-90.
- Vizzeri G, Bowd C, Medeiros FA, Weinreb RN, Zangwill LM. Response to Comment on the Article Entitled "Effect of Improper Scan Alignment on Retinal Nerve Fiber Layer Thickness Measurements Using Stratus Optical Coherence Tomograph" by Vizzeri G, et al published in *J Glaucoma*. 2008;17:341-349. *J Glaucoma*. 2015;24:334.
- Khachatryan N, Medeiros FA, Sharpsten L, Bowd C, Sample PA, Liebmann JM, Girkin CA, Weinreb RN, Miki A, Hammel N, Zangwill LM. The African Descent and Glaucoma Evaluation Study (ADAGES): Predictors of Visual Field Damage in Glaucoma Suspects. *Am J Ophthalmol*. 2015;159:777-87. PMID: PMC4361282.
- Lindsey JD, Duong-Polk KX, Hammond D, Leung CK, Weinreb RN. Protection of Injured Retinal Ganglion Cell Dendrites and Unfolded Protein Response Resolution after Long-Term Dietary Resveratrol. *Neurobiol Aging*. 2015;36:1969-81.
- Ju WK, Kim KY, Noh YH, Hoshijima M, Lukas TJ, Ellisman MH, Weinreb RN, Perkins GA. Increased Mitochondrial Fission and Volume Density by Blocking Glutamate Excitotoxicity Protect Glaucomatous Optic Nerve Head Astrocytes. *Glia*. 2015;63:736-53. PMID: PMC4373968.
- Mansouri K, Weinreb RN. Ambulatory 24-H Intraocular Pressure Monitoring in the Management of Glaucoma. *Curr Opin Ophthalmol*. 2015;26:214-20.
- Mansouri K, Medeiros FA, Liu JH, De Moraes CG, Weinreb RN. Analysis of 24-Hour IOP-Related Pattern Changes after Medical Therapy. *J Glaucoma*. 2015;396.
- Kaplowitz K, Blizzard S, Blizzard DJ, Nwogu E, Hamill CE, Weinreb RN, Mohsenin V, Loewen NA. Time Spent in Lateral Sleep Position and Asymmetry in Glaucoma. *Invest Ophthalmol Vis Sci*. 2015;56:3869-74.
- Weinreb RN, Ong T, Scassellati Sforzolini B, Vittitow JL, Singh K, Kaufman PL, VOYAGER study group. A Randomized, Controlled Comparison of Latanoprostene Bunod and Latanoprost 0.005% in the Treatment of Ocular Hypertension and Open Angle Glaucoma: The VOYAGER Study. *Br J Ophthalmol*. 2015;99:738-45. PMID: PMC4453588.
- Belghith A, Bowd C, Medeiros FA, Balasubramanian M, Weinreb RN, Zangwill LM. Learning from Healthy and Stable Eyes: a New Approach for Detection of Glaucomatous Progression. *Artif Intell Med*. 2015;64:105-15. PMID: PMC4465989.
- Wu Z, Xu G, Weinreb RN, Yu M, Leung CK. Optic Nerve Head Deformation in Glaucoma: A Prospective Analysis of Optic Nerve Head Surface and Lamina Cribrosa Surface Displacement. *Ophthalmology*. 2015;122:1317-29.
- Abe RY, Gracitelli CP, Diniz-Filho A, Zangwill LM, Weinreb RN, Medeiros FA. Frequency Doubling Technology Perimetry and Changes in Quality of Life of Glaucoma Patients: A Longitudinal Study. *Am J Ophthalmol*. 2015;160:114-122. PMID: PMC4465041.
- Mansouri K, Medeiros FA, Weinreb RN. Effect of Glaucoma Medications On 24-H Intraocular Pressure-Related Patterns Using a Contact Lens Sensor. *Clinical & Experimental Ophthalmology*. 2015. In Press.



Kuang TM, Zhang C, Zangwill LM, Weinreb RN, Medeiros FA. Estimating the Lead Time Gained by Optical Coherence Tomography in Detecting Glaucoma before Development of Visual Field Defects. *Ophthalmology*. 2015. In Press.

Harb E, Hyman L, Gwiazda J, Marsh-Tootle W, Zhang Q, Hou W, Norton TT, Weise K, Dirkes K, Zangwill LM; COMET Study Group. Choroidal Thickness Profiles in Myopic Eyes of Young Adults in the Correction of Myopia Evaluation Trial Cohort. *Am J Ophthalmol*. 2015;160: 62-71. PMID: PMC4465039.

Realini T, Zangwill LM, Flanagan JG, Garway-Heath D, Patella VM, Johnson CA, Artes PH, Gaddie IB, Fingeret M. Normative Databases for Imaging Instrumentation. *J Glaucoma*. 2015;24:480-483.

Macias BR, Liu JHK, Grande-Gutierrez N, Hargen AR. Intraocular and Intracranial Pressures During Head-Down-Tilt with Lower Body Negative Pressure. *Aerosp Med Hum Perform*. 2015;86:3-7.

Mansouri K, Medeiros FA, Liu JHK, De Moraes CG, Weinreb RN. Analysis of 24-Hour IOP-Related Pattern Changes after Medical Therapy. *J Glaucoma*. 2015;24:396.

Ju WK, Kim KY, Noh YH, Hoshijima M, Lukas TJ, Ellisman MH, Weinreb RN, Perkins GA. Increased Mitochondrial Fission and Volume Density by Blocking Glutamate Excitotoxicity Protect Glaucomatous Optic Nerve Head Astrocytes. *Glia*. 2015; 63(5):736-753.

Kim KY, Perkins GA, Shim MS, Bushong E, Alcasid N, Ju S, Ellisman MH, Weinreb RN, Ju WK. DRP1 Inhibition Rescues Retinal Ganglion Cells and their Axons By Preserving Mitochondrial Integrity in a Mouse Model of Glaucoma. *Cell Death and Disease*. 2015; 6:e1839.

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

From Fact to Fiction. Nova Science Publishers, Inc. 2015; Chapter 3: 49-62.

Yousefi S, Balasubramanian M, Goldbaum MH, Medeiros FA, Zangwill LM, Weinreb RN, Liebmann JM, Girkin CA & Bowd C. Unsupervised Gaussian Mixture Model with Expectation Maximization for Detecting Glaucomatous Progression in Standard Automated Perimetry Visual Fields. *Translational Vision Science & Technology*. 2015; In Press.

Yousefi S, Goldbaum MH, Varnousfaderani E, Belghith A, Jung T-P, Medeiros FA, Zangwill LM, Weinreb RN, Liebmann JM, Girkin CA & Bowd C. Detecting Glaucomatous Change in Visual Fields: Analysis with an Optimization Framework. *Journal of Biomedical Informatics*. 2015; In Press.

Khachatryan N, Bowd C, Medeiros FA & Zangwill LM. Optic Disk Imaging. In: T. Shaaraway, M.B. Sherwood, R. Hitchings, & J.G. Crowston Eds. *Glaucoma: Medical Diagnosis & Therapy*, 2nd Edition. Elsevier, London, England. 2015; 225-238

## NEURO-OPHTHALMOLOGY

Ramkumar HL, Savino PJ. Toxic Optic Neuropathy: An Unusual Cause. *Indian J Ophthalmol*. 2014; 62:1036-9.

Ramkumar HL, Savino PJ. A Novel Mutation in a Case of Dominant Optic Atrophy? *Indian J Ophthalmol*. 2014; 62:1034-6.

Danesh-Meyer HV, Wong A, Papchenko T, Matheos K, Styli S, Nichols A, Frampton C, Daniell M, Savino PJ, Kaye AH. Optical Coherence Tomography Predicts Visual Outcome for Pituitary Tumors. *J Clin Neurosci*. 2015; 22:1098-104.

## OCUPLASTICS

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

Dacryocystorhinostomy without Nasal Flap Preservation. *Ophthal Plast Reconstr Surg*, 2014, 30:24-7.

Korn BS and Kikkawa DO. Ophthalmic Manifestations of Electrical Burns. *New England Journal of Medicine*, 2014, 23:e6.

Lim LH, Scawn RL, Whipple KM, Oh SR, Lucarelli MJ, Korn BS, Kikkawa DO. Spontaneous Superior Ophthalmic Vein Thrombosis: A Rare Entity with Potentially Devastating Consequences. *Eye*, 2014, 28:348-51.

Hou Z, Korn BS, Ding J, Li D. Management of Extensive Epibulbar Choristoma Associated with Microphthalmos: A Rare Clinical Entity. *JAMA Ophthalmol*. 2014 Apr 3.

Parekh AS, Mansouri K, Weinreb RN, Tafreshi A, Korn BS, Kikkawa DO. Twenty-Four Hour Intraocular Pressure Patterns in Patients with Thyroid Eye Disease. *Clinical and Experimental Ophthalmology*. 2014 Jul 30.

Wong AJ, Planck SR, Choi D, Harrington CA, Troxell ML, Houghton DC, Stauffer P, Wilson DJ, Grossniklaus HE, Dailey RA, Ng JD, Steele EA, Harris GJ, Czyz C, Foster JA, White VA, Dolman PJ, Kazim M, Patel PJ, Edward DP, al Katan H, al Hussain H, Selva D, Yeatts RP, Korn BS, Kikkawa DO, Rosenbaum JT. IgG4 immunostaining and its implications in orbital inflammatory disease. *PLoS One*. 2014 Oct 10;9(10):e109847.

Tran AQ, Lee BW, Alameddine RM, Korn BS, Kikkawa DO. Reconstruction of Unilateral Incomplete Cryptophthalmos in Fraser Syndrome. *Ophthal Plast Reconstr Surg*, 2015, Mar 25.

Rosenbaum JT, Choi D, Wilson DJ, Grossniklaus HE, Sibley CH, Harrington CA, Planck SR, Orbital Disease Consortium (Korn BS). Molecular diagnosis of orbital inflammatory disease. *Exp. mol pathol*. 2015 Apr 98(225-9).

Rosenbaum JT, Choi D, Wilson DJ, Grossniklaus HE, Harrington CA, Dailey RA, Ng JD, Steele EA, Czyz CN, Foster JA, Tse D, Alabiad C, Dubovy S, Parekh P, Harris GJ, Kazim M, Patel P, White V, Dolman P, Edward DP, Alkatan H, Al Hussain H, Selva D, Yeatts P, Korn B, Kikkawa D, Stauffer P, Planck SR. Fibrosis, Gene Expression & Orbital Inflammatory Disease. *Br J Ophthalmol*. 2015 Jun 2. pii: bjophthalmol-2015-306614. doi: 10.1136/bjophthalmol-2015-306614.

Scawn RL, Foster A, Lee BW, Kikkawa DO, Korn BS. Customised 3D Printing: An Innovative Training Tool for the Next Generation of Orbital Surgeons. *Orbit*. 2015 June 29;34(4):216-9.

Rosenbaum JT, Choi D, Wilson DJ, Grossniklaus HE, Harrington CA, Sibley CH, Dailey RA, Ng JD, Steele EA, Czyz CN, Foster JA, Tse D, Alabiad C, Dubovy S, Parekh PK, Harris GJ, Kazim M, Patel PJ, White VA, Dolman PJ, Korn BS, Kikkawa DO, Edward DP, Alkatan HM, Al-Hussain H, Yeatts RP, Selva D, Stauffer P, Planck SR. Orbital Pseudotumor Can Be a Localized Form of Granulomatosis with Polyangiitis as Revealed by Gene Expression Profiling. *Exp Mol Pathol*. 2015 Jul 8;99(2):271-278.

Rosenbaum JT, Choi D, Wilson DJ, Grossniklaus HE, Harrington C, Sibley CH, Dailey RA, Ng JD, Steele EA, Czyz CN, Foster JA, Tse D, Alabiad C, Dubovy S, Parekh P, Harris GJ, Kazim M, Patel P, White V, Dolman P, Korn BS, Kikkawa D, Edward DP, Alkatan H, Al-Hussain H, Yeatts RP, Selva D, Stauffer P, Planck SR. Parallel Gene Expression Changes in Sarcoidosis Involving the Lacrimal Gland, Orbital Tissue, or Blood. *JAMA Ophthalmol*. 2015 Jul;133(7):770-7.

Scawn RL, Lim LH, Whipple KM, Dolmetsch A, Priel A, Korn B, Kikkawa DO. Outcomes of Orbital Blow-Out Fracture Repair Performed Beyond 6 Weeks after Injury. *Ophthal Plast Reconstr Surg*. 2015 Aug 13.

Rosenbaum JT, Choi D, Wong A, Wilson DJ, Grossniklaus HE, Harrington CA, Dailey RA, Ng JD, Steele EA, Czyz CN, Foster JA, Tse D, Alabiad C, Dubovy S, Parekh PK, Harris GJ, Kazim M, Patel PJ, White VA, Dolman PJ, Edward DP, Alkatan HM, Al Hussain H, Selva D, Yeatts RP, Korn BS, Kikkawa



DO, Stauffer P, Planck SR. The Role of the Immune Response in the Pathogenesis of Thyroid Eye Disease: A Reassessment. *PLoS One*. 2015 Sep 15;10(9):e0137654.

Salvi M, Scawn R, Fajardo R, Korn BS, Kikkawa DO. Management of Severe Thyroid Eye Disease and Use of Biological Agents. In: Douglas R, McCoy A, Gupta S (eds) *Thyroid Eye Disease*. Springer, New York, NY. 2015.

Baxter SL, Scawn R, Korn BS, Kikkawa DO. Psychological Disturbance in Thyroid Eye Disease. In: Douglas R, McCoy A, Gupta S (eds) *Thyroid Eye Disease*. Springer, New York, NY. 2015.

Foster A, Lee BW, Kikkawa DO, Korn BS. Abnormalities of the eyelashes. In: Ichhpujani P, Yanoff M, Spaeth GL (eds) *Expert Techniques in Ophthalmic Surgery*. Jaypee Publishing, 2015.

Scawn RL, Abboud JP, Kikkawa DO, Korn BS. Correction of Eyelid Retraction. In: Ichhpujani P, Yanoff M, Spaeth GL (eds) *Expert Techniques in Ophthalmic Surgery*. Jaypee Publishing, 2015.

Baxter SL, Scawn RL, Korn BS, Kikkawa DO. Management of Facial Palsy In: Ichhpujani P, Yanoff M, Spaeth GL (eds) *Expert Techniques in Ophthalmic Surgery*. Jaypee Publishing, 2015.

## OPHTHALMIC PATHOLOGY

Ouyang H, Xue Y, Lin Y, Zhang X, Xi L, Patel S, Cai H, Luo J, Zhang M, Zhang M, Yang Y, Li G, Li H, Jiang W, Weh E, Lin JH, Pei M, Zhu J, Cao G, Zhang L, Yu B, Chen S, Fu XD, Liu Y, Zhang K. WNT7A and PAX6 Define Corneal Epithelium Homeostasis and Pathogenesis. *Nature*. 2014;511(7509):358-361.

Chiang WC, Lin JH. IRE1, ATF6, and PERK signaling effects on adRP-linked Rhodopsins. *Adv Exp Med Biol*. 2014;801:661-667.

Karam R, Lou CH, Kroeger H, Huang L, Lin JH, Wilkinson MF. The Unfolded Protein Response is Shaped by the NMD Pathway. *EMBO Reports*. 2015;16:599-609.

Karam R, Lou CH, Kroeger H, Huang L, Lin JH, Wilkinson MF. Control Switch that Modulates Cell Stress Response May Be Key to Multiple Diseases. *EMBO Reports*, 2015 March.

Hiramatsu N, Chiang WC, Kurt TD, Sigurdson CJ, Lin JH. Multiple Mechanisms of Unfolded Protein Response-Induced Cell Death. *Am J Pathol*. 2015;185:1800-8.

Salganik M, Sergeyev VG, Meyers CA, Shinde V, Gorbatyuk MS, Lin JH, Zolotukhin S, Gorbatyuk OS. Loss of Glucose Regulated Protein 78 (GRP78) During Normal Aging or from Sirna Knockdown Augments Human Alpha-Synuclein Toxicity to Rat Nigral Neurons. *Neurobiol Aging*. 2015;36:2213-23.

Zou AE, Ku J, Honda TK, Yu V, Kuo SZ, Zheng H, Xuan Y, Hinton A, Brumund KT, Lin JH, Wang-Rodriguez J, Ongkeko WM. Transcriptome Sequencing Uncovers Novel Long Non-Coding and Small Nucleolar Rnas Dysregulated in Head and Neck Squamous Cell Carcinoma. *RNA*. 2015;21:1122-34.

Kohl S, Zobor D, Chiang W, Weisschuh N, Staller J, Gonzalez Menendez I, Chang S, Beck SC, Garcia Garrido M, Sothilingam V, Seeliger MW, Stanzial F, Benedicenti F, Inzana F, Héon E, Vincent A, Beis J, Strom TM, Rudolph G, Roosing S, den Hollander AI, Cremers F, Lopez I, Ren H, Moore AT, Webster A, Michaelides M, Koenekoop RK, Zrenner E, Kaufman RJ, Tsang SH, Wissinger B, Lin JH. Mutations in the Unfolded Protein Response Regulator, ATF6, Cause the Cone Dysfunction Syndrome Achromatopsia. *Nat Genet*. 2015;47:757-65.

Kobalka PJ, Abboud JP, Liao X, Muller K, Korn BS, Kikkawa DO, Lin JH. 2015. p16INK4a Expression is Frequently Increased in Ocular Squamous Lesions. *Human Pathology*. In Review.

Chiang WC, Kroeger H, Sakami S, Messah C, Yasumura D, Matthes MT, Coppinger JA, Palczewski K, LaVail MM, Lin JH. Robust Endoplasmic Reticulum-Associated Degradation of Rhodopsin Precedes Retinal Degeneration. *Mol Neurobiol*. 2015;52:679-95.

Lee BW, Kumar UR, Lin JH, Amaro DE, Kikkawa DO, Alameddine RM, Lowe MC, Hilger PA, Vinetz JM, Korn BS. Cysticercosis with an Orbital Tropism in Jewish Twins. *Am J Trop Med Hyg*. In Press.

Westenskow PD, Bravo S, Kurihara T, Paris LP, Lin JH, Friedlander M. 2015. Results of a Two-Year Evaluation of the Behavior and Health of Rats Implanted with Ips-RPE. *Stem Cells Trans Med*. In Review.

Alavi MV, Chiang WC, Kroeger H, Yasumura D, Matthes MT, Iwawaki T, LaVail MM, Gould DB, Lin JH. 2015. In Vivo Visualization of Endoplasmic Reticulum Stress in the Retina Using the ERAI Transgenic Mouse Line. *IOVS*. In Press.

Kikkawa DO, Wu F, Lin JH, Korn BT. 2015. Fay & Dolman: Diseases and Disorders of the Orbit and Ocular Adnexa. In Press.

## PEDIATRIC OPHTHALMOLOGY

Fierson WM, Capone A (Granet DB). American Academy of Pediatrics Section on Ophthalmology, American Academy of Ophthalmology, American Association of Certified Orthoptists. Telemedicine for Evaluation of Retinopathy of Prematurity. *Pediatrics*. 2015 Jan;135(1):e238-254.

Cruz FC, Robbins SL, Kinori M, Acera EC, Granet DB. Z-Myotomy of the Inferior Oblique for Small Incomitant Hypertropias. *J AAPOS*, 2015 Apr;19(2):130-134.

Breidenstein BG, Robbins SL, Granet DB, Acera EC. Comparison of the Efficacy of Medical Rectus Recession and Lateral Rectus Resection for Treatment of Divergence Insufficiency. *J Pediatr Ophthalm Strabismus*. 2015 May-Jun;52(3):173-176.

dePaula CH, Vasconcelos GC, Nehemy MB, Granet D. Causes of Visual Impairment in Children Seen at a University-Based Hospital Low Vision Service In Brazil. *J AAPOS* 2015 Jun;19(3):252-256.

Granet DB. Anesthesia in Young Children. *J AAPOS* 2015 Jun;19(3):293.

Kinori M, Fabian ID, Spierer A, Wygnanski-Jaffe T, Robbins SL, Granet DB, Ben Zion I. Measurement of Axial Length in an Office Setting Versus under General Anesthesia in Infants and Toddlers: A Comparative Study. *J Pediatric Ophthalm Strabismus* 2015 July 1;52(4):226-230.

Kinori M, Miller KE, Cochran M, Mail PA, El Sahn M, Khayali S, Robbins SL, Hertle RW, Granet DB. Plication Augmentation of the Modified Hummelsheim Procedure for Treatment of Large-Angle Esotropia Due to Abducens Nerve Palsy and Type 1 Duane Syndrome. *J AAPOS* 2015 Jul 30. S1091-8531.

## RETINA

Kashani A, Learned D, Nudleman E, Drenser KA, Capone A, Trese MT. High Prevalence of Peripheral Retinal Vascular Anomalies in Family Members of Patients Presenting with Familial Exudative Vitreoretinopathy. *Ophthalmology*. 2014 Jan;121(1):262-8.

Learned D, Nudleman E, Robinson J, Chang E, Stec L, Faia LJ, Wolfe J, Williams G. Multimodal Imaging of Acute West Nile Virus Chorioretinitis. *Retina*. 2014 Nov;34(11):2269-74.

Nudleman E, Witmer M, Kiss S, Wolfe JD. Central Serous Chorioretinopathy associated with exogenous testosterone therapy. *Retina*. 2014 Oct;34(10):2128-32.

Nudleman E, Capone A. Management of Complicated Vitreoretinal Cases in Children, in Patelli F, Rizzo P (ed). *Management of Complicated Vitreoretinal Diseases*. Springer, 2014. Pp. 21-28.

Nudleman E, Capone A. Stage V Retinopathy of Prematurity, in Kychenthal A, Dorta P (ed). *Retinopathy of Prematurity*. Springer, 2014.



Nudleman E, Trese MT. Remote Imaging and Smart Software for ROP Screening, in Kychenthal A, Dorta P (ed). Retinopathy of Prematurity. Springer, 2014.

Schmidt-Erfurth U, Kaiser PK...Sandbrink R....Freeman WR: Intravitreal Aflibercept Injection for Neovascular Age-related Macular Degeneration. 96-Week Results of VIEW Studies. *Ophthalmology*. 2014;121:193-201.

Nieto A, Hou H, Sailor MJ, Freeman WR and Cheng L: Tunable Sustained Intravitreal Drug Delivery System for Daunorubicin. *Journal of Controlled Release*. 2014;178:46-54.

Arevalo JF, Sánchez JG, Freeman WR. Vitrectomía Transconjuntival sin Sutura 25 Gauge para Biopsia Vítrea Retiniana y Corioidea. In: Alezzandrini A, Arévalo JF, Berrocal MH, Rodríguez FJ, Wu L, eds. *Cirugía Vitreoretinal Mínimamente Invasiva*. Panama, Republic de Panama: Jaypee-Highlights Medical Publishers, Inc. 2014. (271-289; Book chapter.)

Kozak I, Vaidya V, Van Natta ML, Pak JW, May KP, Thorne JE (Freeman WR). Studies of the Ocular Complications of AIDS Research Group: The Prevalence and Incidence of Epiretinal Membranes in Eyes with Inactive Extramacular CMV Retinitis. *Investigative Ophthalmology and Visual Science*. 2014;55(7):4304-4312.

Kempen JH, Sugar EA, Varma R, Dunn JP, Heinemann MH, Jabs DA, Lyon AT, Lewis RA....Freeman WR: For the Studies of Ocular Complications of AIDS Research Group: Risk of Cataract among Subjects with Acquired Immune Deficiency Syndrome Free of Ocular Opportunistic Infections. *Ophthalmology*. 2014;121:2317-2324.

Wang C, Hou H, Nan K, Sailor MJ, Freeman WR, Cheng L: Intravitreal Controlled Release of Dexamethasone from Engineered Microparticles of Porous Silicon Dioxide. *Experimental Eye Research*. 2014;129:74-82.

Multicenter Uveitis Steroid Treatment (MUST) Trial Research Group, Sugar EA, Holbrook JT, Kempen JH, Burke AE, Drye LT Thorne JE, Louis TA, Jabs DA, Altaweel MM, Frick KD ....Freeman WR: Cost-Effectiveness of Fluocinolone Acetonide Implant Versus Systemic Therapy for Noninfectious Intermediate, Posterior, and Panuveitis. *Ophthalmology*. 2014;121(10):1855-1862.

Boyer DS, Yoon YH, Belfort R Jr, Bandello F, Maturi RK, Augustin AJ, Li XY, Cuo H, Hashad Y, Whitcup SM....Freeman WR.... Ozurdex MEAD Study Group: Three-year Randomized, Sham-controlled Trial of Dexamethasone Intravitreal Implant in Patients with Diabetic Macular Edema. *Ophthalmology*. 2014;121(10):1904-1914.

Kozak I, El-Emam SY, Cheng L, Bartsch DU, Chhablani J, Freeman WR, Arevalo JF. Fluorescein Angiography versus Optical Coherence Tomography-Guided Planning for Macular Laser Photocoagulation in Diabetic Macular Edema. *Retina*. 2014 Aug;34(8):1600-5. doi: 10.1097/IAE.0000000000000120.

Nan K, Ma F, Hou H, Freeman WR, Sailor MJ, Cheng L. Porous Silicon Oxide-PLGA Composite Microspheres for Sustained Ocular Delivery of Daunorubicin. *Acta Biomater*. 2014 Aug;10(8):3505-12. doi: 10.1016/j.actbio.2014.04.024.

Wang F, Wang Y, Zhang B, Zhao L, Lyubasyuk V, Wang K, Xu M, Li Y, Wu F, Wen C, Bernstein PS, Lin D, Zhu S, Wang H, Zhang K, Chen R. A Missense Mutation in HK1 Leads to Autosomal Dominant Retinitis Pigmentosa. *Invest Ophthalmol Vis Sci*. 2014 Oct 14;55(11):7159-64. doi: 10.1167/iops.14-15520.

Jabs DA, Drye L, Van Natta ML. SOCA Research Group....Freeman WR: Incidence and Long-Term Outcomes of the HIV-Neuroretinal Disorder in Patients with AIDS. *Ophthalmology*. 2014;159(6):1115-1122.

Wang C, Hou H, Nan K, Sailor MJ, Freeman WR, Cheng L. Intravitreal Controlled Release of Dexamethasone from Engineered Microparticles of Porous Silicon Dioxide. *Exp*

*Eye Res*. 2014 Dec;129:74-82. doi: 10.1016/j.exer.2014.11.002.

Barteselli G, Amini P, Ezon IC, Nezgoda JT, Cheng L, Freeman WR. Impact on Intraocular Pressure after 20-Mg Decanted Triamcinolone Acetonide (Kenalog) Injection when Using Prophylactic Antiglaucoma Therapy. *Retina*. 2015 Jan;35(1):75-81. doi: 10.1097/IAE.0000000000000268.

Ma F, Nan K, Lee S, Beadle JR, Hou H, Freeman WR, Hostetler KY, Cheng L. Micelle Formulation of Hexadecyloxypropyl-Cidofovir (HDP-CDV) as an Intravitreal Long-Lasting Delivery System. *Eur J Pharm Biopharm*. 2015 Jan;89:271-9. doi: 10.1016/j.ejpb.2014.12.010.

Nieto A, Hou H, Moon SW, Sailor MJ, Freeman WR, Cheng L. Surface Engineering of Porous Silicon Microparticles for Intravitreal Sustained Delivery of Rapamycin. *Invest Ophthalmol Vis Sci*. 2015 Jan 22;56(2):1070-80. doi: 10.1167/iops.14-15997.

Shen L, Mao J, Sun S, Dong Y, Chen Y, Cheng L. Perioperative Pharmacological Management of Choroidal Detachment Associated with Rhegmatogenous Retinal Detachment. *Acta Ophthalmol*. 2015 Feb 23. doi: 10.1111/aos.12694.

Huu VA, Luo J, Zhu J, Zhu J, Patel S, Boone A, Mahmoud E, McFearin C, Olejniczak J, de Gracia Lux C, Lux J, Fomina N, Huynh M, Zhang K, Almutairi A. Light-Responsive Nanoparticle Depot to Control Release of a Small Molecule Angiogenesis Inhibitor in the Posterior Segment of the Eye. *J Control Release*. 2015 Feb 28;200:71-7. doi: 10.1016/j.jconrel.2015.01.001.

Shen L, Mao J, Chen Y, Sun S, Han Y, Cheng L. Transscleral Permeation of Subtenon Triamcinolone in Different Vitreoretinal Diseases. *Ophthalmology*. 2015 Mar;122(3):649-51. doi: 10.1016/j.optha.2014.09.027.

Camacho N, Barteselli G, Nezgoda JT, El-Emam S, Cheng L, Bartsch DU, Freeman WR.

Significance of the Hyperautofluorescent Ring Associated with Choroidal Neovascularisation in Eyes Undergoing Anti-VEGF Therapy for Wet Age-Related Macular Degeneration. *Br J Ophthalmol*. 2015 Mar 16. pii: bjophthalmol-2014-306226. doi: 10.1136/bjophthalmol-2014-306226.

Hou HY, Huffman K, Rios S, Freeman WR, Sailor MJ, Cheng L. A Novel Approach of Daunorubicin Application on Formation of Proliferative Retinopathy Using a Porous Silicon Controlled Delivery System: Pharmacodynamics. *Invest Ophthalmol Vis Sci*. 2015 Mar 31. pii: IOVS-15-16526. doi: 10.1167/iops.15-16526.

Dedania VS, Grob S, Zhang K, Bakri SJ. Pharmacogenomics of Response to Anti-VEGF Therapy in Exudative Age-Related Macular Degeneration. *Retina*. 2015 Mar;35(3):381-91. doi: 10.1097/IAE.0000000000000466.

Chen M, Li X, Liu J, Han Y, Cheng L. Safety and Pharmacodynamics of Suprachoroidal Injection of Triamcinolone Acetonide as a Controlled Ocular Drug Release Model. *J Control Release*. 2015 Apr 10;203:109-17. doi: 10.1016/j.jconrel.2015.02.021.

Nudleman E, Robinson J, Rao P, Drenser KA, Capone A, Trese MT. Long term Outcomes on Lens Clarity Following Lens Sparing Vitrectomy for Retinopathy of Prematurity. *Ophthalmology*. 2015 Apr;122(4):755-9.

Nezgoda JT, Tsai FF, Nudleman E. Tractional Retinal Detachments in Adults and Children. *Current Surgery Reports*. 2015 June;3(22).

Li G, Xu F, Zhu J, Krawczyk M, Zhang Y, Yuan J, Patel S, Wang Y, Lin Y, Zhang M, Cai H, Chen D, Zhang M, Cao G, Yeh E, Lin D, Su Q, Li WW, Sen GL, Afshari N, Chen S, Maas RL, Fu XD, Zhang K, Liu Y, Ouyang H. Transcription Factor Paired Box 6 Controls Limbal Stem Cell Lineage in Development and Disease. *J Biol Chem*. 2015 Jun 4. pii: jbc.M115.662940.



A Sustained Intravitreal Drug Delivery System with Remote Real Time Monitoring Capability. Hou H, Nieto A, Belghith A, Nan K, Li Y, Freeman WR, Sailor MJ, Cheng L. *Acta Biomater.* 2015 Jun 15. pii: S1742-7061(15)00278-0. doi: 10.1016/j.actbio.2015.06.012.

Salvo J, Lyubasyuk V, Xu M, Wang H, Wang F, Nguyen D, Wang K, Luo H, Wen C, Shi C, Lin D, Zhang K, Chen R. Next-Generation Sequencing and Novel Variant Determination in a Cohort Of 92 Familial Exudative Vitreoretinopathy Patients. *Invest Ophthalmol Vis Sci.* 2015; 56:1937-46.

Barteselli G, Amini P, Ezon IC, Nezgoda JT, Cheng L and Freeman WR: Impact on Intraocular Pressure after 20-Mg Decanted Triamcinolone Acetonide (Kenalog) When Utilizing Prophylactic Antiglaucoma Therapy. *Retina.* 2015;35(1):75-81.

Tsai FF, Freeman WR: Letter to the Editor. Correspondence on "Optical Coherence Tomography Predicts Visual Outcome in Acute Central Retinal Vein Occlusion." *Retina.* 2015;35(1):e10-11.

Arcinue CA, Ma F, Barteselli G, Sharpstein L, Gomez ML, Freeman WR: One-Year Outcomes of Aflibercept in Recurrent or Persistent Neovascular Age-Related Macular Degeneration. *American Journal of Ophthalmology.* 2015;159(3):426-436.

Ma F, Nan K, Lee S, Beadle JR, Hou H, Freeman WR, Hostetler KY and Cheng L: Micelle Formulation of Hexadecyloxypropyl-Cidofovir (HDP-CDV) as an Intravitreal Long-Lasting Delivery System. *European Journal of Pharmaceutics and Biopharmaceutics.* 2015;89:271-279.

Klingenstein AA, Schaumberger MM, Freeman WR, Folberg R, Schaller UC, Mueller AJ: MuSIC Report III: Tumor Microcirculation Patterns and Development of Metastasis in Long-term Follow-up of Melanocytic Uveal Tumors. *Acta Ophthalmologica.* 2015. In Press.

Nudleman E, Franklin MS, Wolfe JD, Williams GA, Ruby AJ. Resolution of Subretinal Fluid and Outer Retinal Changes in Patients Treated with Ocriplasmin. *Retina.* 2015 Sep 21. In Press.

## RETINAL VASCULAR DISEASES

Moriya J, Wu X, Zavala-Solorio J, Ross J, Liang X-H, Ferrara N. PDGF-C Promotes Revascularization in Ischemic Limbs of Diabetic Mice. *J. Vasc. Surg.* 2014;59:1402-1409, 2014.

Yang J, Wang X, Fuh G, Yu L, Wakshull E, Kosraviani M, Demeule B, Lium J, Shire SJ, Ferrara N, Yadav S. Comparison of Binding Characteristics and In Vitro Activities of Three Inhibitors of Vascular Endothelial Growth Factor A. *Mol. Pharmaceutics.* 2014;11:3421-3430.

Milgrom-Hoffman M, Michailovici I, Ferrara N, Zelzer E, Tzahor E. Endothelial Cells Regulate Neural Crest and Second Heart Field Morphogenesis. *Biol.* 2014; Open 3, 679-688.

Guerit S, Allain AE, Leon C, Cazenave W, Ferrara N, Branchereau P, Bikfalvi A. VEGF Modulates Synaptic Activity in the Developing Spinal Cord. *Dev. Neurobiol.* 2014; 74:1110-1122.

Eshkar-Oren I, Krief S, Ferrara N, Elliott AM, Zelzer E. Vascular Patterning Regulated Interdigital Cell Death By A ROS-Mediated Mechanism. *Development.* 2015 Feb 15; 142(4):672-80.

Moriya J, Ferrara N. Protein Kinase C- $\alpha$  Inhibits Angiogenesis Induced by Platelet-Derived Growth Factor C in Hyperglycemic Endothelial Cells. *Cardiovasc. Diabetol.* 2015 Feb 7;13:19.

Espina M, Arcinue CA, Ma F, Camacho N, Barteselli G, Medoza N, Ferrara N, Freeman WR. Outer Retinal Tubulations Response to Anti-VEGF Treatment. *Br J Oph.* 2015 Sept 30. Pii:bjophthalmol-2015-307141. In Press.

## LECTURES

### NATALIE A. AFSHARI, M.D.

"Presence of Silicon oil, No Prior Corneal Surgery and Postop Contact Lens Use", International Keratoprosthesis 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 Lane", Harvard Medical School Department of Ophthalmology and Massachusetts Eye and Ear Alumni Distinguished Speaker, Boston, MA, June 2014.

"New Horizons in Corneal Endothelium and Fuchs Dystrophy – Surgical Interventions, Cell Therapy & Genetics", Association of Proctor Fellows Meeting and Graduation Retreat, Richard O'Connor Lecture, UC San Francisco, San Francisco, CA, June 2014

"Corneal Transplants, Flaps, Lasers, Bubbles: Recent Advances in Cornea and Refractive Surgery", National Medical Association Ophthalmology Section, Claude L. Cowan, Sr. M.D. Lecturer, Honolulu, HI, August 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 Optics Basic Cataract Surgery Course, Santa Ana, CA, September 2014.

"Corneal Surgery", American Society of Ophthalmic Registered Nurses (ASORN), Chicago, IL, October 2014.

"Flap Complications", Section VII: Corneal Video Complications and "Endothelial Keratoplasty", Breakfast with the Experts, American Academy of Ophthalmology, Chicago, IL, October 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 Practicum, Baltimore, M.D., November 2014.

"IOL Calculation" and "Challenging Cataract Surgery Cases", CORE West Cataract Surgery Residents Course, Carlsbad, CA, December 2014.

"New Horizons in Corneal Endothelium and Fuchs Dystrophy: Surgical Interventions, Cell Therapy & Genetics" and "Practical IOL Calculations and Phacodynamics", Visiting Professor, Grand Rounds and Resident Lecture, University of Washington and Washington Academy of Eye Physicians and Surgeons, Seattle, WA, January 2015.

"Video Grand Rounds of Challenging Cases in Cataract and Corneal Surgeries" and "A Journey Through Cornea from A to Z", University of Washington and Washington Academy of Eye Physicians and Surgeons, Seattle, WA, January 2015.

"Challenging Cases: What would you do?" and "Corneal Collagen Crosslinking", *Ophthalmology Update* 2015, La Jolla, CA, February 2015.

"Genetics of Fuchs Dystrophy", Invited Lecturer and "Corneal Tissue Engineering, Physiology and Wound Healing", Invited Panelist, World Cornea Congress, San Diego, CA, April 2015.



"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.

"Fuchs Endothelial Corneal Dystrophy", Corneal Dystrophy Symposium, La Jolla, CA, May 2015.

"Diffuse Lamellar Keratitis" and "Corneal Collagen Crosslinking", Military Refractive Safety and Standard Symposium, Camp Pendleton, CA, June 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.

"Automated Segmentation of Anterior Lamina Cribrosa Surface: How the Lamina Cribrosa Responds to Intraocular Pressure Change in Glaucoma Eyes?", 2015 IEEE International Symposium on Biomedical Imaging: From Nano to Macro, Brooklyn, NY, April 2015.

"Measurement of the peripapillary retinal layer thickness in glaucoma and healthy eyes using San Diego automated layer segmentation algorithm", "Application of Leung-Malik filters for vessel delineation in retinal images" and "Predicting glaucomatous conversion from baseline RNFL thickness measurements in glaucoma suspect eyes using and AdaBoost classifier", Imaging in the Eye Conference, Association for Research in Vision and Ophthalmology 2015, Denver, CO, May 2015.

### **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, APAO (Asian Pacific Association of Ophthalmology) Congress Guangzhou, China, April 2015.

"Frontiers in Therapeutic and Diagnostic Delivery-2015 Seminar Series: Grand Medical Challenges", KACST-UCSD: Novel drug delivery strategies for refractory vitreoretinal diseases, La Jolla, CA, May 2015.

### **NAPOLEONE FERRARA, M.D.**

"From the Isolation and Cloning of VEGF-A to FDA Approval of Multiple VEGF Inhibitors for Cancer and Intraocular Diseases", New York Academy of Sciences Symposium "Targeting VEGF-mediated Tumor Angiogenesis in Cancer Therapy", New York, NY, June 2014.

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

Genentech, Inc., Seminar, July 2014.

"The Role of the Microenvironment in the Regulation of Tumor Angiogenesis", 6th Mayo Clinic Angiogenesis and Tumor Microenvironment Symposium: From Basic Science and Clinical Challenges to Patient

Care, Rochester, MN, August 2014.

Anti-Angiogenesis Symposium, Kyoto, Japan, September 2014.

Chugai Anti-Angiogenesis Forum, Tokyo, Japan, September 2014.

"The VEGF Story: From Basic Discoveries to Treating Cancer and Preventing Blindness", Gairdner Symposium, Toronto, Canada, October 2014.

"Therapeutic Applications of VEGF Inhibitors: Progress and Challenges", Chancellor's Lecture, Duke University, Durham, NC, November 2014.

"The VEGF Story: From Basic Discoveries to Treating Cancer and Preventing Blindness", Buck Research Institute on Aging, Novato, CA, December 2014.

"VEGF Inhibition in Cancer and Eye Disease", Gordon Research Conference on Vascular Cell Biology, Keynote talk, Ventura, CA, January 2015.

"Anti-angiogenic Therapy of Tumors: New Insights", OMRF Lecture, University of Oklahoma and Oklahoma Medical Research Foundation, Norman, OK, February 2015.

"Targeting Blood Vessels to Treat Cancer and Age Related Macular Degeneration", Danny Thomas Lecture, St. Jude Children's Research Hospital, Memphis, TN, February 2015.

"Tumor Heterogeneity and Microenvironment", IPSEN Foundation Cancer Science Meeting, Mysore, India, February 28-March 3, 2015.

American Association for Cancer Research Special Conference on Angiogenesis, Orlando, FL, March 2015.

EMBO/European Molecular Biology Laboratory Symposium "Frontiers in Stem Cells and Cancer", Heidelberg, Germany, March 2015.

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.

World Medicine Summit, Macau, People's Republic of China, July 2015.

### **HENRY FERREYRA, M.D.**

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

"Pros and Cons of Intra-vitreous Injections for Wet AMD", Ophthalmology Update 2015, La Jolla, CA, February 2015.

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

### **WILLIAM R. FREEMAN, M.D.**

"Surgical Considerations for UCSD Nano-engineered Artificial Retina Clinical Trial", American Society of Retinal Surgeons Update Meeting, San Diego, CA, August 2014.

"New Developments in Retinal Therapeutics and Imaging", Connecticut Society of Eye Physicians, Litchfield, CT, January 2015.

"Decanted Triamcinolone for Macular Edema in Non-vitreotomized and Vitrectomized Eyes", "High-dose Aflibercept 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



Daunorubicin Application on Formation of Proliferative Retinopathy Using a Porous Silicon Based, Controlled Delivery System", "Recalcitrant Cystoid Macular Edema after Pars Plana Vitrectomy", and "Scanning Laser Ophthalmoscope Imaging is a Diagnostic Predictor of Dry Eye", Association for Research in Vision and Ophthalmology Annual Meeting, Denver, CO, May 2015.

### **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.

"Graves Orbitopathy: Evaluation and Treatment", and "Brown Syndrome: my personal experience", Strabos Institute, San Paulo, Brazil, November 2014.

"Instrument-based pediatric vision screening: Is it ready for Prime Time?", "Approach to the Red Eye", and "Case studies in Pediatric Ophthalmology", 36th Annual Pediatric Update, American Academy of Pediatrics, Las Vegas, NV, November 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.

"Adjustable Sutures", "A day in the Clinic", "Special Surgical Procedures", "Video Potpourri", "Thyroid Ophthalmopathy", "Adult Strabismus", "Reading, Learning & Vision", "Brown Syndrome" and "Basics in Strabismus", Hong Kong Hospital Authority Commissioned Training Programme in Pediatric Ophthalmology, Hong Kong, February 2015.

"Convergence Insufficiency", A Hands-on symposium of the North American Neuro-ophthalmology Society (NANOS), San Diego, CA, February 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.

"Dealing with the Poorly Behaved Child" and "Strabismus Complications", American Eye Study Club Annual Meeting (AESC), Mackinac Island, MI, July 2015.

### **WELDON HAW, M.D.**

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

"Cornea, Cataract, & Refractive Surgery Session", Moderator, Ophthalmology Update 2014: New Approaches to Medical and Surgical Therapies, La Jolla, CA, February 2015.

"Cataract Surgery Premium Intraocular Lenses – Which Intraocular lens to take?", Ophthalmology Update 2015: New Approaches to Medical and Surgical Therapies, La Jolla, CA, February 2015.

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

"Advanced Cataract Surgery Techniques- A Case Based Interactive Discussion" and "Advanced Cataract Surgery- Improving Speed and Efficiency without Compromising Safety", Jobson Continuing Specialized Education (CSE) Advance Cataract Surgery Course, Phoenix, AZ, September 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.

"The SMILE Refractive Procedure", Ophthalmology Update, La Jolla, CA, February 2015.

### **DANIEL "WON-KYU" JU, PH.D.**

"Blocking excitotoxicity triggers mitochondrial biogenesis in glaucomatous optic nerve head astrocyte", Vision Research Lecture, Shiley Eye Institute, UC San Diego, La Jolla, March 2014.

"Mitochondrial dynamics and dysfunction and neuroprotection in glaucomatous neurodegeneration", Vision Research Lecture, KOLON Pharmaceuticals, Inc., Seoul, Korea, June 2015.

"Mitochondrial dynamics and dysfunction and neuroprotection in glaucomatous neurodegeneration", Vision Research Lecture, Department of Ophthalmology, Seoul National University, Seoul, Korea, June 2015.

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

"Orbital Decompression and Orbital Case Presentation", ITEDS Course, ASOPRS Spring Meeting, St. Thomas, USVI, May 2014.

"Oculoplastics Guide to Hollywood Plastic Surgery", "Extreme Makeover Face Edition" and "Battle of the Bulge – Thyroid Eye Disease", Thorny Goes to the Movies, Devers Eye Institute, Portland, OR, September 2014.

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

"Eyelid Surgery in Thyroid Eye Disease", 2nd Annual Meeting of the Japanese Society of Ophthalmic Plastic and Reconstructive Surgery, Kobe, Japan, December 2014.

"Evaluation and Management of Tearing" and "Endoscopic Brow Lifting", Chinese National Oculoplastics Training Course, Kunming, China January 2015.

"Lid lesions: biopsy or not", "Anatomy for injectables, neurotoxins, office procedures", Ophthalmology Update 2015, La Jolla, CA, February 2015.

"Oculofacial Surgery in the 21st Century", "Evaluation and Management of Tearing", "Eyelid Reconstruction", "Cases from the UCSD Oculoplastics Archives" and "Lower Lid Blepharoplasty Complications", Visiting Professor, University of Michigan, Kellogg Eye Center, Ann Arbor, MI, March 2015.

"Pearls of Blepharoplasty," "Lower lid complications," and "Oculoplastics Guide to Hollywood Plastic Surgery", Oculoplastics 2015: Innovations, Traditions, Myths and Legends 58th Annual Postgraduate Symposium, The Ohio State University Department of Ophthalmology, Columbus, OH, March 2015.

"Ten Minute Ptosis Repair", William H. Havener 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.

"Bony Orbital Decompression" and "Repeat Decompression", Singapore National Eye Center, 25th Anniversary Celebration, Singapore, May 2015.



"Endoscopic Brow Lift", "Midface Lifting" and "Endoscopic Brow Lifting Demonstration", OPRS Symposium and Cadaver Dissection, Singapore National Eye Center, Singapore, May 2015.

"Oculofacial Surgery in the 21st Century", Visiting Professor, USC Eye Institute, Los Angeles, CA, May 2015.

"Upper Lid Blepharoplasty", Anatomy and Cadaver Dissection Course, USC Eye Institute, Los Angeles, CA, May 2015.

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

"Challenging Cases in Ophthalmic Plastic and Reconstructive Surgery", Invited Speaker, Grand Rounds, UC San Diego Division of Plastic Surgery, La Jolla, CA, August 2014.

"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.

"Optimizing Success with Endoscopic DCR", Invited Speaker, 2nd Annual Meeting of the Japanese Society of Ophthalmic Plastic and Reconstructive Surgery, Kobe, Japan, December 2014.

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

"Ptosis Repair", "Soft Tissue Fillers" and "Complications of Injectables", Invited Speaker, Ophthalmology Update 2015, San Diego, CA, February 2015.

"Integrating ptosis repair with aesthetic blepharoplasty", "DCR in ten minutes", "Transcutaneous lower blepharoplasty with orbitomalar 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.

"Optimizing Outcomes for En-bloc DCR", Invited Speaker, 25th Anniversary Meeting of the Singapore National Eye Centre, Singapore, May 2015.

"Recognizing and managing complications in blepharoplasty", "Non-surgical rejuvenation" and "Surgical Management of thyroid eye disease", Invited Speaker, 23rd Annual Meeting of the Lebanese Ophthalmological Society, Beirut, Lebanon, May 2015.

"Endoscopic and eyebrow lifting", "Advanced Endoscopic Dacryocystorhinostomy", "Orbital Fracture Repair" and "Eyelid Retraction Repair", Invited Speaker, Master Techniques in Ophthalmic Plastic and Reconstructive Surgery, Bumrungrad International Hospital, Bangkok, Thailand, July 2015.

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

International Society for Eye Research, ER and oxidative stress in ocular diseases Mini-symposium, Invited speaker, San Francisco, CA, July 2014.

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.

"Biology and Chemistry of Vision" Conference, Invited speaker, Federation of American Societies for Experimental Biology, Big Sky, MT, June 2015.

### **JOHN H.K. LIU, PH.D.**

"Contact lens sensor for monitoring 24-hour intraocular pressure", The 19th Congress of Chinese Ophthalmological Society, Xian, China, September 2014.

"24-hour efficacy of glaucoma medication", 17th Afro-Asian Congress of Ophthalmology, Xian, China, September 2014.

"Daily rhythm of eye pressure in animals", National Chiao Tung University, Department of Electrical Engineering, Hsinchu, Taiwan, October 2014.

"Lessons from clinical trial of contact lens sensor", National Chiao Tung University, Department of Electrical Engineering, Hsinchu, Taiwan, June 2015.

"Diurnal IOP fluctuation", 6th World Glaucoma Congress, Recent understanding of IOP fluctuation in Glaucoma Course, Hong Kong, June 2015.

"Experience from the sleep laboratory in clinical practice", 6th World Glaucoma Congress, The road ahead to 24-h IOP monitoring Course, Hong Kong, June 2015.

"Lessons from the sleep laboratory on glaucoma medications", China Medical University Hospital, Department of Ophthalmology, Taichung, Taiwan, June 2015.

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

"New Paradigms for Assessing Functional Impairment in Glaucoma" and "Combining Structure and Function to Improve Detection of Progression", XVII University of Sao Paulo Annual Meeting, Sao Paulo, Brazil, November 2014.

"Changing Perspectives in Glaucoma: New Ways of Looking at Old Problems", David Worthen Memorial Lecture, Johns Hopkins University, Baltimore, M.D., December 2014.

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

"Functional Impairment in Glaucoma", Keynote Lecture, Federal University of Sao Paulo Ophthalmology Meeting 2015, February 2015.

"Structural Parameters to Measure Rates of Change", American Glaucoma Society Annual Meeting, San Diego, CA, March 2015.

"Combining Structure and Function", American Society of Cataract and Refractive Surgery, Glaucoma Subspecialty Day, April 2015.

"Biomarkers in Glaucoma", "Target IOP in Glaucoma" and "Challenges in Glaucoma Clinical Research", Brazilian Glaucoma Society, Goiania, Brazil, May 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.**

"Inherited Retinal Dystrophies: Progress in vision restoration", Foundation for Fighting Blindness Kick-Off, San Diego, CA, July 2014.

"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.

"Everything You Wanted to Know About Pediatric Ophthalmology But Were Afraid to Ask: Cases from the AAP Challenging Case Series", American Academy of Pediatrics Annual NCE Meeting, San Diego, CA, October 2014.

"Spotlight on Pediatric Ophthalmology: Front Line and First Steps-Management Of Strabismus for the Comprehensive Ophthalmologist-Thyroid Induced Strabismus", Speaker and Panelist, American Academy of Ophthalmology In Conjunction with the European Society of Ophthalmology, Chicago, IL, October 2014.

"Pediatric Eye Emergencies You Don't Want to Miss! Subtopics: Herpes and Orbital Vascular Lesions", Speaker and Panelist, American Academy of Ophthalmology, Chicago, IL, October 2014.

Amblyopia Overview Resident Specialty Conferences, UC San Diego, La Jolla, CA, October 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.

Hands-on workshop utilizing the prism cover test and prism therapeutics for the diplopic patient, NANOS-North American Neuro-Ophthalmology Society Annual Meeting, Coronado, 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.

"Difficult Conversations in Pediatric Ophthalmology and Strabismus", Video Presentation, American Association of Pediatric Ophthalmology and Strabismus Meeting, New Orleans, LA, March 2015.

"Vision Screening in Young Children", Child Health and Disability Prevention Program, Bi-Annual Workshop, San Diego, CA, May 2015.

**PETER J. SAVINO, M.D.**

Research Study Club of Los Angeles, 83rd Midwinter Conference, Invited Guest Speaker, Los Angeles, CA, February 2015.

Review of Ophthalmology, Invited Guest Speaker, La Jolla, CA, February 2015.

Frank Walsh Society Meeting, Invited Participant, Coronado, CA, February 2015.

Combined North American Neuro-ophthalmology Society/ American Glaucoma Society Meetings, Invited Participant, Coronado, CA, February 2015.

Wills Eye Institute Review Course, Invited Guest Speaker, Philadelphia, Pennsylvania, March 2015.

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

The 30th Asia-Pacific Academy of Ophthalmology Congress, Invited Neuro-ophthalmologic Coordinator, Guangzhou, China, April 2015.

**ROBERT N. WEINREB, M.D.**

"What is Next for Glaucoma?", Opening Keynote Lecture – 19th Congress of Chinese Ophthalmological Society, Xi'an, China, August 2014.

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

"Glaucoma Neuroprotection in 2014: A Reality Check", American Academy of Ophthalmology Subspecialty Day, Chicago, IL, October 2014.

"What is Next for Glaucoma?", 68th Annual Congress of Japan, Clinical Ophthalmology, Kobe, Japan, November 2014.

"We Should Eliminate the Normal Tension in Glaucoma", North American Neuro-Ophthalmology Society Annual Meeting, Coronado, CA, February 2015.

"SDOCT Imaging to Diagnose Glaucoma", ASCRS Glaucoma Day, San Diego, CA April 2015.

"Angle Surgery for Glaucoma", USC Department of Ophthalmology 40th Year Anniversary Symposium, Los Angeles, CA, June 2015.

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

**SIAMAK YOUSEFI, PH.D.**

"Glaucomatous 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.

"Unsupervised machine learning to recognize glaucoma defect patterns and detect progression in RNFL thickness measurements" Annual Meeting of Association of Research in Vision and Ophthalmology (ARVO), Poster, Denver, May 2015.

"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.**

"The Rate of Structural Change in Glaucoma: A Better Outcome Measure?", Keynote Speaker, Imaging and Perimetric Society Annual Meeting, New York, NY, September 2014.

"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.**

"Stem Cell Based 3D Bioprinting for Treatment of Blinding Eye Diseases", Frontiers in Medical Research Seminars, University of Arizona, Tucson, AZ, February 2015.

"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 APAO 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  
PI: Robert N. Weinreb, M.D.  
NIH, 04/01/2015-03/31/2020

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

### **CORNEA**

Limbic Stem Cell Fate and Corneal Specific Enhancers  
PI: Kang Zhang, M.D., Ph.D.  
NIH/NEI, 4/1/2015-3/31/2020

Integrative Genetic Analyses in Fuchs Endothelial Corneal Dystrophy  
PI: Natalie Afshari, M.D.  
NIH/NEI, 03/01/2013-02/28/2016

### **GLAUCOMA**

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

Diagnostic Innovations in Glaucoma: Functional Impairment  
PI: 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  
PI: Felipe A. Medeiros, M.D., Ph.D.  
NIH, 08/01/2015-07/31/2017

Brain-based Method for Assessment of Functional Loss  
PI: 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 (STARFISH)  
PI: Robert N. Weinreb, M.D.  
Genentech, 08/31/2011-12/31/2016

Phase IIA Double-masked Randomized Shamcontrolled Trial of QPI-1007  
PI: Robert N. Weinreb, M.D.  
Quark, 12/01/2013-11/30/2016

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

Continuous and Direct Intraocular Pressure Monitoring via Fluid-sensitive 3D Photonic Crystal Implants  
Co-I: Robert N. Weinreb, M.D.  
UCSD CTRI Galvanizing Engineering in Medicine Award, 07/1/15-12/31/16

Ocular Hypertension Treatment Study (OHTS – Clinical Center)  
PI: Robert N. Weinreb, M.D.  
NIH, 07/01/15 – 06/30/17

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

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

Ocular Hypertension Treatment Study (OHTS – Reading Center)  
PI: Linda Zangwill, Ph.D. (subcontract)  
NIH, 07/01/2015 – 6/30/2020

Genetics Determinants of Optic Nerve Head Structure  
PI: Zangwill, Linda (subcontract)  
NIH, 04/01/2013-03/31/2016

### **OPHTHALMOLOGIC PATHOLOGY**

Protein Homeostasis and Proteotoxicity Mechanisms  
PI: Jonathan Lin, M.D.  
NIH/NINDS, 02/01/15-01/31/20

### **PEDIATRIC OPHTHALMOLOGY**

Study of Binocular Computer Activities for Treatment of Amblyopia (ATS 18)  
PI: 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  
PI: Shira L. Robbins, M.D.  
The Hartwell Foundation, 04/01/2015 – 03/31/2018

Omega-3 Nutrition and Retinopathy of Prematurity  
PI: Shira L. Robbins, M.D.  
UC San Diego Center for Translational Research Institute, Catalyst Grant, 04/2014 – 03/2015

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

### **RETINA**

Molecular Basis of Hereditary Retinal Degenerations  
PI: Radha Ayyagari, Ph.D.  
NIH/NEI, 09/01/2011-08/31/2016



Genetics of Hereditary Retinal Degenerations  
PI: Radha 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 (LORMD)  
PI: Radha Ayyagari, Ph.D.  
Thorne Memorial Foundation, 12/31/2011-12/30/2016

Molecular Pathology Underlying Retinal Degeneration Due to the Involvement of CTRP5/C1QTNF5 and MFRP Genes  
PI: Radha Ayyagari, Ph.D.  
Foundation Fighting Blindness, 06/30/2015-06/29/2018

Mechanistic-Based, Non-Invasive Assessment of Retinal Damage in the HAART Era  
PI: Dirk-Uwe Bartsch, Ph.D.  
NIH/NEI, 09/30/11-08/31/2015

Porous Silicon Particles for Sustained Intravitreal Drug Delivery  
PI: Lingyun Cheng, M.D.  
NIH/NEI, 11/01/2011 – 8/31/2016

Micropower Integrated Nano-engineered Retinal Interface  
Co-I: William R. Freeman, M.D.  
Co-I: Gabriel A. Silva, Ph.D.  
UCSD CTRI Galvanizing Engineering in Medicine Award, 07/1/15-12/31/16

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

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

Regeneration of Retinal Neurons by Chemically Induced Reprogramming of Muller Glia  
PI: Kang Zhang, M.D., Ph.D.  
NIH, 9/30/2010-8/31/2015

Generation of Fibroblast Cell Lines in Patients with Common Blinding Eye Diseases  
PI: 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-PI: Kang Zhang, M.D., Ph.D.  
NIH/NEI, 2/1/2014-1/31/2017

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

Non-coding Variants Predisposing at Age Related Macular Degeneration.  
PI: Kang Zhang, M.D., Ph.D.  
NIH/NEI, 8/24/2015-6/30/2018

## 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

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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, 92093-0946.

#### **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**

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#### **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  
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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*

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."







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