FOR SIGHT

Annual Report 2023

Shiley Eye Institute

The Viterbi Family Department of Ophthalmology

UC San Diego Health

UC San Diego School of Medicine

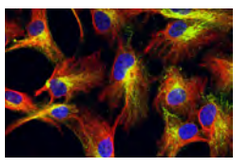
Contents

08
Viterbi Breaking Ground

12
Visionary Transformation

16
Award Winning Faculty

32
Blind Infant Receives Gift of Sight



On the Cover | Retinal Degeneration: *Immunocytochemistry on CRISPR-Cas9 edited hTERT-RPE1 cells. Cells were stained with vimentin (red) and acetylated a-tubulin (green) for visualization of cytoskeleton and cilia structure. This experiment was carried out in order to observe the effects of a putative disease-causing mutation on cilia and overall cell structure.*
Image Credit | *Radha Ayyagari, PhD and lab*

Letter from the Chair

Dear Friends,

Over the past year, the Shiley Eye Institute (SEI) and Viterbi Family Department of Ophthalmology reaffirmed its dedication to improving the vision and lives of patients. Each day, our dedicated team of staff, clinicians, researchers, and trainees demonstrates their passion for caring for patients, discovery, learning and community service. We are privileged to have a team of unique individuals contributing to our environment of excellence and innovation.

The Viterbi Family Vision Research Center broke ground, beginning the process of constructing our future 5-story 100,000-square-foot facility. This state-of-the-art center, encompassing laboratories, clinical trial operations, and educational space will further enhance our capabilities.

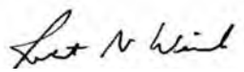
The Hanna and Mark Gleiberman Center for Glaucoma Research will be housed within the Viterbi Family Vision Research Center. This generous gift will allow SEI to intensify research on advanced glaucoma, with the objective of protecting and restoring the vision of those affected by the disease.

The visionary transformation and renovation of the Shiley Eye Center, supported by Darlene Shiley, began with the gutting of the second floor. Upon completion, this will provide additional clinical areas, dedicated ophthalmic procedure rooms, a laser center, and a specialized microsurgery training center.

You can read more about our notable accomplishments including new faculty, a new adult eyemobile, prestigious grant awards, personalized medicine with the addition of a genetic counselor as well as initiatives to advance diversity and inclusion at SEI.

Thanks to the engagement and support of our entire SEI team, we have celebrated a year filled with accomplishments and success. Together, we have taken groundbreaking steps towards creating a brighter future for our patients. Your continued support and partnership have been instrumental in our journey, and there is no limit to what we can achieve.

Sincerely,



Robert N. Weinreb, MD
Chair and Distinguished Professor, Ophthalmology
Director, Shiley Eye Institute

Letter from the Chancellor

Dear Friends,

We are pleased to share this report highlighting another remarkable year of excellence in education, clinical care, community service and collaborative research for the Shiley Eye Institute and Viterbi Family Department of Ophthalmology. Inside, you will find inspiring stories of groundbreaking research, innovative treatments and cures and patient experiences that demonstrate the transformative impact of this world-renowned center for ophthalmological research and care.

Our successes in research and clinical care will soon be enhanced with brand new, modern facilities complete with state-of-the-art equipment. Construction continues on new exam rooms and a laser center at the Shiley Eye Institute with completion estimated by early 2025. The Viterbi Family Vision Research Center is also well underway and an education center, space for clinical trials and wet and dry research labs are expected to be complete by early 2026. These upgrades will allow us to develop new programs, expand existing programs and provide new spaces for many patients with unmet vision care needs as part of our commitment to serve our community.

The Shiley Eye Institute's continued excellence has been made possible by our visionary namesake, Darlene Shiley. Together with her late husband Donald, the Shileys made a transformational gift to establish the Shiley Eye Institute at UC San Diego Health more than 30 years ago. Since then, Darlene's ongoing generosity has fueled the recent renovation of the institute's facilities and supported a multitude of initiatives across the UC San Diego campus. This year, it will be my distinct honor to recognize Darlene with the richly deserved Lifetime Legacy Award – the third awarded in university history – at the annual Chancellor's Medal Awards ceremony. Her steadfast support and commitment to improve lives has transformed patient care in the San Diego region and across the nation. We are so very grateful for Darlene's transformative support, which has indeed forged a lasting and impactful legacy.

Thank you to all of our generous donors, whose vision propels UC San Diego and the Shiley Eye Institute and Viterbi Family Department of Ophthalmology to continuously set the standard of excellence in ophthalmological care and train the next generation of leaders in ophthalmology. With this support, our talented faculty, physician-scientists, researchers and medical professionals develop new research, treatment and cures and deliver world-class care to our valued patients. When we work together, the next life-changing discoveries are just around the corner.

With kind regards,

Pradeep K. Khosla, PhD
Chancellor, UC San Diego
Joan and Irwin Jacobs Chancellor's Endowed Chair

Letter from the Vice Chancellor

Dear Friends,

When the Shiley Eye Center opened in 1991, the vision for what it could achieve was already clear: a convergence of outstanding clinical care and exceptional research and training—one that would leverage UC San Diego's unique strengths to offer an unparalleled experience for patients, scientists, physicians, and learners.

Today, that vision has only become bigger and bolder. The Shiley Eye Institute embraces both a personal and world view, a combination of superb, personalized patient care with a focus on addressing the great challenges to human health and sight, from glaucoma and diabetic retinopathy to the simple need for a good set of glasses.

Its members are driven by compassion and sustained by incomparable basic and translational research that sees beyond the easy or obvious, bringing together the world-class faculty in the Viterbi Family Department of Ophthalmology with their esteemed collaborators across campus at Halıcıoğlu Data Science Institute, Moores Cancer Center and from more than a dozen academic department at UC San Diego.

Its impact goes well beyond the San Diego region to multidisciplinary academic and clinical projects across the nation and around the world, made possible by highly competitive grants from the National Eye Institute, private foundations and, particularly, transformative gifts from some of our most generous philanthropic partners.

Shiley's distinguished reputation is a testament to the faculty, staff and friends who have worked to make its early vision a reality. The expansion of Shiley Eye Institute's clinical services and the imminent opening of Viterbi Family Vision Research Center signal an even brighter future, one that I expect will continue to benefit our community and beyond for many years to come.

John M. Carethers, MD
Vice Chancellor for Health Sciences
UC San Diego

Letter from the CEO

Dear Friends,

Delivering outstanding patient care through commitment to the community, groundbreaking research, and inspired teaching is our mission at UC San Diego Health. Achieving that mission requires expertise, collaboration, and vision from our renowned faculty, highly regarded researchers, and sought after clinical teams. Recent advancements include novel treatments for childhood eye disorders, the development of gene therapy to reduce retinal neuroinflammation for glaucoma patients, and exploring the power of AI to review data to help illuminate risk factors to optimize care.

The Shiley Eye Institute is Leading the Way to discovering new therapies, treatments, and cures while providing the very best patient care in the region. Demand for our world-class care continues to grow, and we are committed to expanding access. Construction continues on the expansion of clinical space at the Shiley Eye Institute thanks to funding from UC San Diego Health and a generous $10 million gift from longtime champion Darlene Shiley.

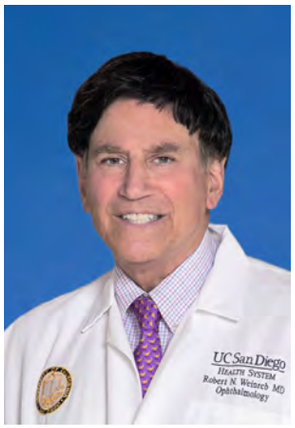
Darlene's support, and that of her late husband Donald, has been instrumental in so many key moments for UC San Diego Health. We are grateful for the opportunity to grow our patient care capacity thanks to Darlene's continued partnership. In recognition of her longstanding dedication to research, clinical care, and academic scholarship, Darlene will be honored this year with the UC San Diego Lifetime Legacy award.

The Shiley Eye Institute continues its legacy of impact. It inspired the creation of the Ratner Children's Eye Center, the Hamilton Glaucoma Center, and the Viterbi Family Department of Ophthalmology building—opening right next door in 2025. And soon, researchers will be closer to finding ways to reverse the effects of glaucoma thanks to the generosity of Hanna and Mark Gleiberman in establishing the Hanna and Mark Gleiberman Center for Glaucoma Research.

The Shiley Eye Institute's momentum wouldn't be possible without the vision and partnership of our generous donors. We thank you for helping us fulfill our promise to set the gold standard for vision care.

Patty Maysent, MPH, MBA
CEO, UC San Diego Health

Executive Committee



ROBERT N. WEINREB, MD
CHAIR

NATALIE A. AFSHARI, MD
VICE CHAIR, EDUCATION

DON O. KIKKAWA, MD
EXECUTIVE VICE CHAIR,
CLINICAL

WILLIAM FREEMAN, MD
VICE CHAIR

DAVID B. GRANET, MD
VICE CHAIR,
PEDIATRIC OPHTHALMOLOGY

SALLY BAXTER, MD, MSC
DIVISION CHIEF,
INFORMATICS AND DATA SCIENCE

LINDA ZANGWILL, PhD
INTERIM DIRECTOR, RESEARCH

CRAIG KISHABA, MBA
ADMINISTRATIVE VICE CHAIR

2023 Year in Review

173,933

CLINICAL VISITS

7,718

SURGERIES

102,228

PATIENT CALLS

7,132

TRIAGE/ SAME DAY APPTS

263,163

EYEMOBILE FOR CHILDREN
Total Children Screened Since 1999

Viterbi Family Vision Research Center Breaks Ground

(L to R): Robert N. Weinreb, MD, Tom Cerruti, Andrew Viterbi, PhD, Pradeep Khosla, PhD, Patty Maysent, MPH, MBA, and John M. Carethers, MD

Supporters, patients, friends and campus leadership came together on March 24, 2023 to celebrate the groundbreaking of the new Viterbi Family Vision Research Center at the Shiley Eye Institute where research will focus on treating and curing eye diseases and conditions causing vision loss.

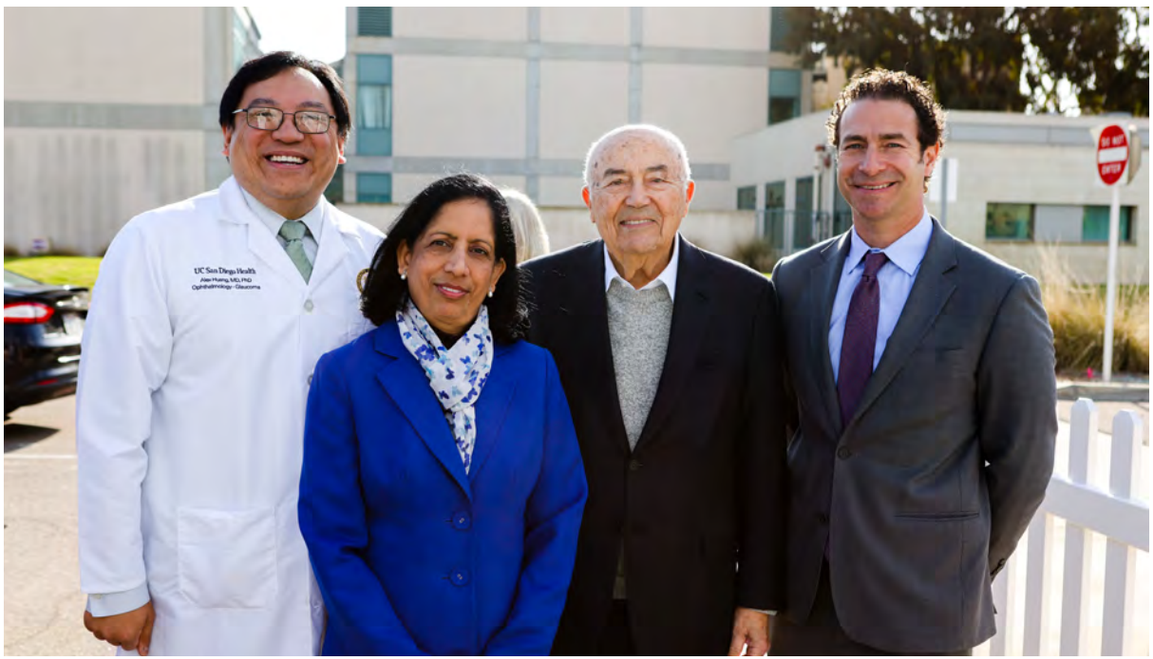
Supported by a $50 million gift made in 2018 by philanthropist Andrew J. Viterbi, PhD, the future 5-story, 100,000-square-foot facility will house laboratories, clinical trials operations, as well as administrative and educational spaces to support a variety of research efforts, including curing glaucoma blindness, restoring vision of patients blinded by macular degeneration and providing sight to individuals who have reversible vision loss due to cataracts or infections.

"UC San Diego's growth and expansion has been made possible by many people who believe in our ability to make a positive impact in the community and the world," said Chancellor Pradeep K. Khosla. "We are grateful to Dr. Andrew Viterbi for his transformational generosity. The Viterbi Family Vision Research Center will be a hub for interdisciplinary ophthalmology. With this investment, our leading-edge

researchers will be empowered to conduct groundbreaking research with the goal of finding new treatments and cures for vision loss and eye disease."

Robert N. Weinreb, MD, Chair and Distinguished Professor of Ophthalmology, director of the Shiley Eye Institute and holder of the Morris Gleich, MD, Chair in Glaucoma illustrated the real-world impact of the new center, introducing a patient in attendance who had flown in from India for continuing eye care. Weinreb shared that the patient had come to Shiley Eye Institute since he was a baby. "He could have gone anywhere in the world, but he came to UC San Diego," said Weinreb. "Today, he travels throughout the world making a difference as a diplomat for India."

Weinreb continued, "In this new building, there will be clinical trials for gene therapy, stem cell therapy and more. We are building bridges with other departments across the university, including neuroscience, data science, bioinformatics, engineering, bioengineering, stem cell biology and gene therapy. Our dream is the realization of the impossible. We are going to cure blinding eye diseases."



(L to R): Alex Huang, MD, PhD, Radha Ayyagari, PhD, Andrew Viterbi, PhD, and Eric Nudleman, MD, PhD

Viterbi's generous gift was inspired by his late father, Achille Viterbi, a celebrated ophthalmologist. The donation established the new center which is now under construction, as well as the Viterbi Family Department of Ophthalmology and six new endowed chairs to recruit top faculty to UC San Diego. In attendance at the event were the holders of the first three endowed chairs that have been filled: **Radha Ayyagari, PhD**; **Eric Nudleman, MD, PhD**; and **Alex Huang, MD, PhD**.

"I believe that the best way to contribute to society is to promote the people who are most able to make an impact," said Viterbi. "As part of my giving, I have emphasized the creation of endowed chairs, and I am proud that three researchers who hold the chairs I established are here today. These researchers need space to do their work, so this is going to be a tremendous facility that will serve that purpose. I believe it will be one of the best places in the U.S. – and in the world – for ophthalmology."

Vice Chancellor for Health Sciences John M. Carethers, MD thanked Viterbi and pointed out that the event attendees were sitting where the UC San Diego's newest research facility would soon be constructed. "Buildings are important to

Andrew Viterbi, PhD and Robert N. Weinreb, MD

grow our research impact, but we have to fill them with talented people, and I'd like to thank Dr. Viterbi for his support of six endowed chairs as part of his gift," said Carethers. "Bringing excellent researchers to campus is critical to furthering our tripartite mission, as it also strengthens our patient care and plays a key role in providing education to new generations of health professionals."

The facility will also be home to the newly established Hanna and Mark Gleiberman Center for Glaucoma Research, which was funded by a $20 million gift in 2022 from the Gleibermans.

Thanks to support from the Nixon Visions Foundation, led by UC San Diego alumnus Brandon Nixon '85, and his wife, Janine, research on inherited retinal degenerations, retinal conditions that can result in vision loss, and for which there currently is no cure, also will take place in the center.

"The Viterbi Family Vision Research Center, named in recognition of Dr. Viterbi's generosity, will support the world's foremost researchers as they pursue tomorrow's treatments and cures for blinding eye diseases," says Dr. Weinreb.

Currently, researchers within the Department of Ophthalmology are spread across different buildings in the School of Medicine and general campus. The new building will establish a shared home in a facility that, by its very design, encourages collaboration and crosscutting interdisciplinary projects. It will also house educational space where researchers, students and clinicians can come together to share ideas and inspire new ones.

RENDERING OF THE FUTURE
VITERBI FAMILY VISION RESEARCH CENTER

A Visionary Transformation

On December 4, 2023, distinguished guests, faculty, and staff celebrated progress on the second-floor renovation and the clinical expansion of the Donald P. and Darlene V. Shiley Eye Institute (SEI.) Benefactor Darlene Shiley, Vice Chancellor of UC San Diego Health Sciences John M. Carethers, MD, CEO of UC San Diego Health Patty Maysent and **Robert N. Weinreb, MD**, Director of the Shiley Eye Institute and Chair of the Viterbi Family Department of Ophthalmology were in attendance, and each signed the main structural beam.

This SEI transformation was made possible through the extraordinary generosity of Mrs. Shiley, who made a $10 million donation in partnership with UC San Diego Health. This endeavor represents her profound commitment to ensuring that SEI remains at the forefront of innovation, delivering exceptional care, and shaping the future of eye health for generations to come.

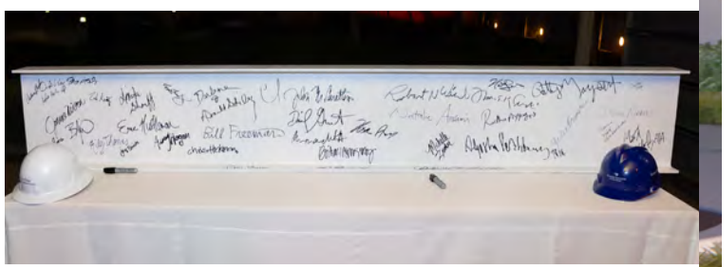
Mrs. Shiley's donation to support the expansion of the Shiley Eye Institute at UC San Diego Health carries with it a profound legacy. She and her late husband, Donald, who passed away in 2010, have contributed to funding for SEI clinical enhancements, state-of-the-art equipment, groundbreaking research initiatives, and an endowed chair. Their commitment to SEI and the field of eye health has been a driving force behind its evolution.

The current transformative journey of SEI's expansion commenced this past July 2023 with the demolition work on the second floor. The completion of this expansive project is on track, with a slated finish date set for late 2024, marking the dawn of a new era for SEI and the communities it serves. The upcoming renovation aims to expand patient capacity and comfort to serve the growing demand in the San Diego community and beyond.

The renovation and expansion of SEI promises a host of remarkable enhancements. There will be additional clinical areas, dedicated ophthalmic procedure rooms equipped with cutting-edge technology, a laser center, and the creation of a highly specialized microsurgery training center designed to support residents and fellows.

Patients, clinicians, staff and trainees at the Donald P. and Darlene V. Shiley Eye Institute and Viterbi Family Department of Ophthalmology are grateful for Mrs. Shiley's longstanding unwavering support!

Robert N. Weinreb, MD tours construction site with Shiley Foundation representatives and construction team



Main elevator beam signed by attendees

RENDERINGS OF THE NEWLY RENOVATED SHILEY EYE INSTITUTE

Gleiberman Celebration

(L to R): Chancellor Pradeep Khosla, Samantha Gleiberman, Jeff Gleiberman, Hanna Gleiberman, Mark Gleiberman, Robert N. Weinreb, MD and Vice Chancellor John Carethers, MD

Chancellor Pradeep Khosla and Thespine Kavoulakis hosted an intimate celebration at the Audrey Geisel University House on March 23, 2023, to thank Hanna and Mark Gleiberman for their generous gift establishing the Hanna and Mark Gleiberman Center for Glaucoma Research at the Shiley Eye Institute (SEI) and Viterbi Family Department of Ophthalmology.

The trailblazing donation will expand SEI's research on advanced glaucoma with the ultimate goal of protecting and restoring the vision of those who suffer with the disease. In addition to establishing the center, their gift will create three new endowed chairs to support the recruitment of exceptional vision scientists to the research teams.

In his toast to the couple, **Robert N. Weinreb, MD** stated, "We are so grateful to Hanna and Mark Gleiberman for making this generous investment to accelerate laboratory discoveries in glaucoma."

The new Gleiberman Center for Glaucoma Research will be located in the Viterbi Family Vision Research Center which will be completed in 2025.

Accolades

Natalie A. Afshari, MD, Professor of Ophthalmology received the Medal Lecturer award from The International Society of Cornea, Stem Cells, and Ocular Surface for her lecture "Corneal transplants, flaps, lasers, bubbles: recent advances in cornea and refractive surgery," in Catania, Italy. UC San Diego Health Sciences also awarded her the Excellence in Mentoring Award.

Catherine Y. Liu, MD, PhD, Assistant Professor of Clinical Ophthalmology, was awarded the Lanna Cheng Innovation Award for Oculoplastics Research.

Christopher Toomey, MD, PhD, Assistant Professor of Clinical Ophthalmology, was awarded the Lanna Cheng Ophthalmology Innovation Award in recognition of outstanding Innovation in Research in Retina.

BREAKING NEWS

Sally Baxter, MD, MSc *has been named as the recipient of the 2024 Ludwig von Sallmann Clinician-Scientist Award from the Association for Research in Vision and Ophthalmology (ARVO) Foundation for Eye Research. She was selected for the award based on her accomplishments as a young clinician scientist. The ceremony will be on May 5, 2024 in Seattle, Washington.*

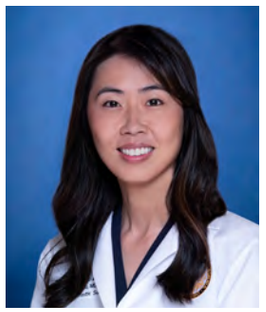
Shira L. Robbins, MD, Professor of Clinical Ophthalmology was elected President, Medical Staff UC San Diego Health System and Chair, Medical Staff Executive Committee. Also, she was appointed Section Editor for the Survey of Ophthalmology and Section Editor for the Clinical and Experimental Ophthalmology. She was listed on the 2023 San Diego Magazine's Exceptional Women in Medicine list and 2023 San Diego County Medical Society Top Doctors list. She won Best in Show Scientific Poster at the American Association for Pediatric Ophthalmology and Strabismus annual meeting.

In November 2023, **Napoleone Ferrara, MD** was awarded the 2023 Keio University Medical Science Prize in Tokyo Japan for "Molecular Basis of Angiogenesis and its Application." Keio University, Japan's oldest private university, annually awards the prize to recognize researchers who have made outstanding and creative contributions to the fields of medicine or life sciences. It aims to promote worldwide advances in medicine and life sciences, to encourage the expansion of researcher networks throughout the world and to contribute to the well-being of mankind.

Natalie A. Afshari, MD

Sally Baxter, MD, Msc

Napoleone Ferrara, MD



Catherine Y. Liu, MD, PhD

Shira L. Robbins, MD

Christopher Toomey, MD, PhD

Award Winning SEI Faculty

Robert N. Weinreb, MD, Chair and Distinguished Professor of Ophthalmology at the Viterbi Family Department of Ophthalmology and Director, Shiley Eye Institute at UC San Diego was the recipient of the World Glaucoma Association's highest honor, the Laureate Award, at the World Glaucoma Congress (WGC) on June 28, 2023 in Rome, Italy. Comprised of 91 international glaucoma societies with more than 14,000 members, the World Glaucoma Association is a global organization for glaucoma science and care whose core purpose is to eliminate glaucoma-related disability worldwide.

Only the third recipient of this prestigious award, it recognizes Weinreb's "seminal research, meritorious service, leadership and mentorship, innovation, international contributions, public service, translation of science to practice, and lifetime achievement." According to Neeru Gupta, MD, PhD, MBA, President, World Glaucoma Association, Professor and Chair, Department of Ophthalmology, University of British Columbia. "With unsurpassed clinical acumen and surgical excellence,

Robert N. Weinreb, MD and Neeru Gupta, MD, PhD, MBA, President of the World Glaucoma Association and Chair, University of British Columbia

as well transformative scientific contributions, Professor Weinreb indelibly impacts glaucoma care worldwide."

Weinreb also was named in 2023 as one of the top two most influential ophthalmologists in the world ("The Power List 100" by *The Ophthalmologist* (UK)). The Power List was selected by an international panel of 20 distinguished judges from a total of more than 200,000 eligible ophthalmologists and more than 150,000 others in eyecare and industry worldwide.

In addition, Weinreb was an inaugural inductee into *The Ophthalmologist* Hall of Fame. The Hall of Fame honors this prestigious group of ophthalmologists and scientists whose impact on the field of ophthalmology will last beyond their lifetimes and are considered the first ten irrefutable giants of ophthalmology. "I am honored and humbled to receive this award," said Weinreb.

Weinreb also is a Distinguished Professor of Bioengineering (affiliate), and holder of the Morris Gleich MD Chair of Glaucoma. A graduate of Harvard Medical School, Weinreb is a clinician, surgeon, scientist, mentor and educator. Patients from throughout the world seek his medical and surgical expertise. His clinical and research interests are diverse and range from the front to the back of the eye, including the diagnosis, as well as the medical and surgical treatment of glaucoma.

Weinreb has served as President of the Association for Research in Vision and Ophthalmology, World Glaucoma Association, American Glaucoma Society, American Glaucoma Society Foundation, and Latin American Glaucoma Society. He has trained and mentored more than 170 post-doctoral fellows including 25 department chairs, as well as numerous professors in the US, Canada, Asia, Europe, South America and Australia.

The recipient of numerous awards and prizes, Weinreb has had continuous NIH support throughout his career, currently as Principal Investigator of two R01 grants as well as a K12 grant for clinician-scientist career development. His h-factor for impact (148) is the world's highest in glaucoma. In 2023, he was ranked #1 in the world for the eighth consecutive year by Expertscape for glaucoma scholarship.

New EyeMobile Coming Soon!

While traveling through San Diego County, the Shiley EyeMobile for Children staff encountered both parents and grandparents bringing the children for their eye examinations. When asked, almost all of these individuals said that they had not had a recent eye exam – if ever. As fewer children went to school during the COVID-19 pandemic, the staff began screening and examining not only the children, but the parents and grandparents as well. The staff noticed a trend.

Upon researching the aging community in San Diego County, **Robert N. Weinreb, MD** saw a need for their care. The Shiley Eye Institute now hopes to meet that gap with a new adult EyeMobile for the underserved. The underserved seniors in San Diego are particularly affected by barriers such as cultural, language and comprehension of care issues, and transportation to doctors' appointments. Limited financial resources make it difficult for the aged individual to negotiate complex service systems, as well as access low or no cost health care, according to Weinreb.

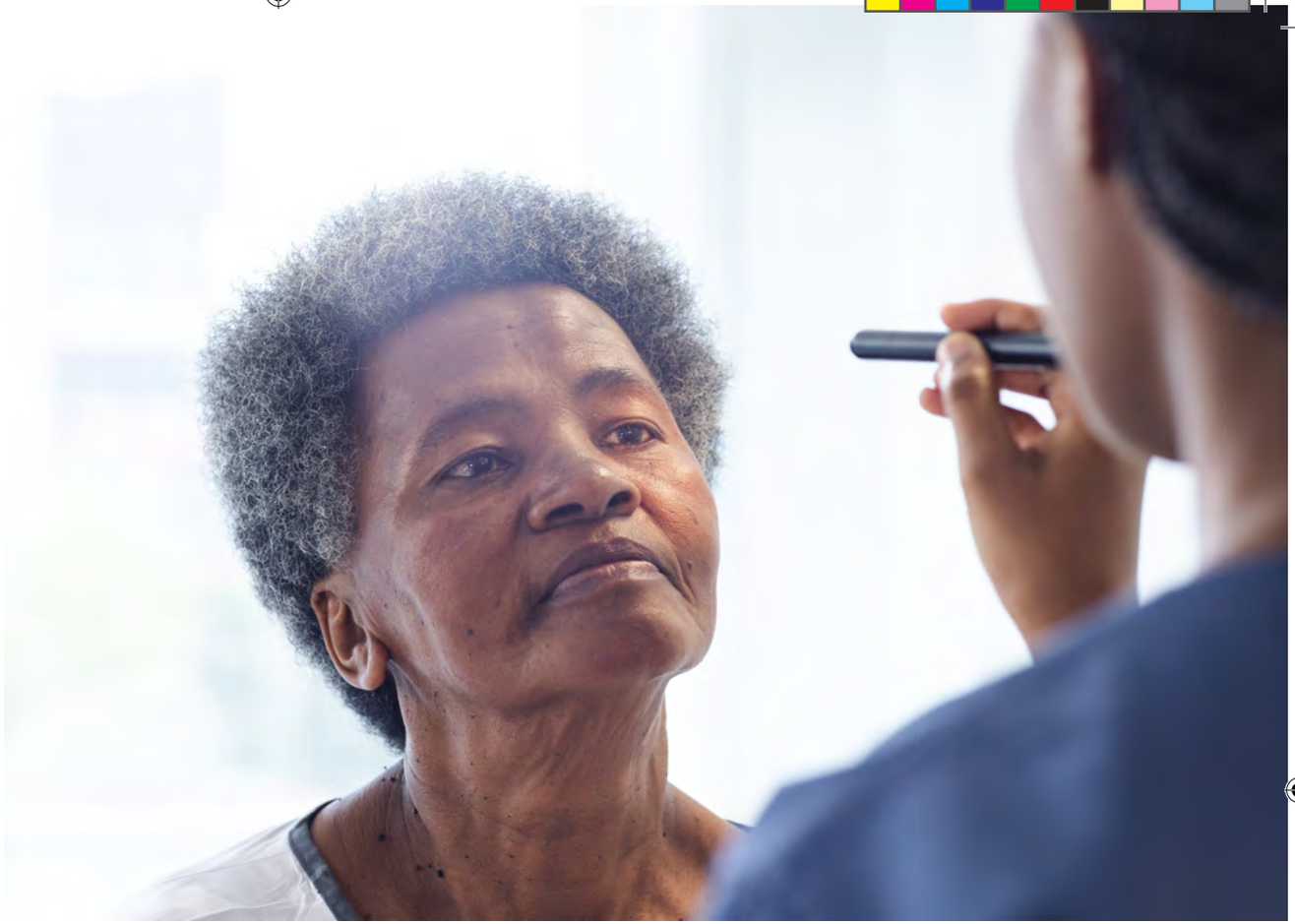
"For those patients who are unable to or cannot afford to come to the clinic, SEI will bring the clinic to them," says Weinreb.

With an estate gift from a generous patient, the funds were obtained for a new larger EyeMobile for Children.

This enabled the original 10-year-old EyeMobile to be repurposed. Dr. Bruce Lawrence, a longtime patient of Weinreb, and his wife Janet learned of this need and made a gift to retrofit it to accommodate first seniors, then adults including those with disabilities.

The new EyeMobile will have a full-size exam room and waiting area within the vehicle. The scope of work to make the vehicle ADA-compliant includes enlarging the outside door opening, adding handrails and a wheelchair lift, as well as installing new flooring. The program will have a full-time manager/driver/vision screener and an optometrist. Just as with the EyeMobile for Children, all care is provided at no cost to the patient. This new entity will partner with low-income and underserved senior services across San Diego County to bring quality eye care to vulnerable patients.

Evaluation, monitoring, and vision correction improves quality of life. The need for continued efforts to ensure that the underserved elderly have access to vision care services is imperative in San Diego County. The Shiley Eye Institute and Viterbi Department of Ophthalmology are dedicated to preserving the sight of the most vulnerable populations of children in San Diego County. We now wish to expand the outreach to care for underserved seniors and adults in San Diego County.



The refurbished vehicle will be completed and ready to serve the community in early 2024!

Faculty Spotlight

JEFFREY E. LEE, MD

Jeffrey E. Lee, MD is an Associate Professor of Clinical Ophthalmology at UC San Diego Shiley Eye Institute and Viterbi Family Department of Ophthalmology. He is also the Program Director for the Ophthalmology Residency Program and the Clinical Service Chief of Ophthalmology at UC San Diego's Hillcrest Hospital.

Lee earned his medical degree from UC San Diego and his undergraduate degrees in biology and economics from UC Berkeley. After a transitional internship in Internal Medicine, he continued on to complete his ophthalmology training at UC San Diego.

Lee maintains a broad and comprehensive clinical practice, including cataract surgery, and sees a diverse patient population. His chief academic interests include facial burns, orbital trauma, and ocular manifestations of HIV. Lee believes in utilizing the abundant resources of UC San Diego Health for the greatest benefit of his patients. One of his main research interests is improving the efficacy of hospital resources. To that end, he often engages in collaborative projects with other departments within the hospital.

During Lee's training years, he spent a significant amount of time caring for elderly and indigent patients at the San Diego VA Hospital and the UC San Diego Medical Center. Greatly impacted by these experiences, he endeavors to combine training with philanthropy, and is committed to programs that bring quality vision care to underserved patients.

In recognition of Lee's exceptional commitment to education as Residency Director, he has won several teaching awards.

WHY DID YOU GO INTO MEDICINE?

I was born and raised in Sacramento, California as the youngest of three. My parents were immigrants from Hong Kong in the 1970s and came over to provide better opportunities for their future generations. My biggest influence drawing me to medicine was my father's heart condition that required open heart surgery as I began college. Although I had academic interests in economics,

Jeffrey E. Lee, MD
Associate Professor of Clinical Ophthalmology
Comprehensive Ophthalmology
Program Director, Ophthalmology Residency

business, and science, my passion for medicine grew as I worked with my father's doctors throughout his medical journey. I was blessed to be able to make connections with various physicians through my college experience at UC Berkeley, and I began to see the significant impact physicians had on the lives of their patients and families. I began to desire a career in medicine as well, and am grateful for many of those physicians and mentors who helped guide my path.

EXPLAIN THE INTERSECTION OF YOUR CLINICAL PRACTICE AND RESIDENCY EDUCATION POSITION?

Upon graduating residency at UC San Diego, I was given the opportunity to help our residency program optimize our inpatient ophthalmology consultation service. It had become a challenge given the significant complexity of the cases and the limited resources allotted to a mostly trainee-dependent inpatient service, as was the standard across most residency programs. By bringing Post Graduate Year Two (PGY2) trainees onto this service under my consistent supervision and establishing a strong attending presence for the entire hospital's consult service, we were able to start one of the first attending-run inpatient ophthalmology services in the country.

We now have stronger relationships with other services, provide outstanding care for our patients, and residents have the tools necessary to optimally handle the most challenging cases even early in their training. This early empowerment for the residents brought about such a positive change in our patients, our residents, and our department. Furthermore, because I worked diligently with the residents in building this strong foundation for their training, I was nominated by our leadership and our trainees to take on the program director role.

In 2012, only three years after residency, I became one of the youngest program directors in the nation. Although I had less experience than most, my mentors guided and developed my leadership skills as well as encouraged me to continue empowering our residents earlier in their training. One area I wanted to improve in our residency was the surgical curriculum. I wanted to lessen the steep learning curve of our trainees in anterior segment surgery.

After training a handful of surgeons in my first few years as an attending, I found the surgical training timeline challenging as the majority of surgical skills were developed in the final year of training. It always seemed as though we were trying to compress their surgical learning into the last 12 months of residency and the first two years had very little hands-on surgical experience.

Thus, with strong support from our leadership and key faculty, we implemented a surgical curriculum in which the clinical skills and surgical skills would begin early in their PGY2 year. We established one of the first programs in the country to provide significant primary cataract surgeries for ophthalmology residents within a few months of initiating their training. This allowed trainees to focus on surgical skills refinement over their full three years of residency. In addition to building confidence in our trainees, we also saw improved patient outcomes in our longitudinal studies. The results were published in the Journal of Cataract and Refractive Surgery (Ellis EM et al 2018).

WHAT OPPORTUNITIES DO YOU SEE IN THE FUTURE AS RESIDENCY DIRECTOR?

Throughout my medical career, I have been blessed to be mentored by the best in Ophthalmology and guided by leaders in Medicine, Ophthalmology, and Ophthalmology education. These

relationships have allowed me to help build our residency into what it is today, shaping the future of Medicine and Ophthalmology trainees to be the best they can be. My primary passion for residency education has been to empower our trainees early with the tools to lessen the steep learning curve that comes with Ophthalmology residency. As our trainees are increasingly multi-talented, extremely successful individuals, and with a plethora of amazing opportunities in our field, it will be important to help our future trainees balance their talents and resources so as not to create physician burnout. I hope to enhance and implement future physician wellness programs to help each resident reach their greatest potential. I am thankful to my Chair, department leadership, faculty, fellow program directors, residents, and many others who have provided me with the support to do this job to the best of my abilities.

HOW DO COLLABORATIONS FIT INTO YOUR ROLES?

Recently, with the integration of the Post Graduate Year 1 (PGY1) internship training, UC San Diego has just begun our partnership with the internship program at Scripps Mercy. Bringing together leadership from these two large health institutions to form a program to enhance Ophthalmology resident education has been nearly a decade in the making. Although building these bridges was challenging, it was well worth the effort to bring the best education we can for our trainees. I am so thankful for the support of our leadership at UC San Diego, as well as our Scripps partners right next door. We look forward to a wonderful partnership for decades to come!

WHAT DO YOU DO IN YOUR FREE TIME?

I love spending time with my beautiful wife, who is a dermatologist, and 4 children (3 girls and a new baby boy). We love going for walks, swimming, and trying all the best Asian restaurants around San Diego! We also enjoy traveling. Some of our favorite places include Bora Bora, Budapest, Santorini, and Banff. Although recently, most of our travels have been to Disneyland!

Faculty Spotlight

DEREK WELSBIE, MD, PhD

Derek S. Welsbie, MD, PhD, is an Associate Professor of Ophthalmology at the UC San Diego Shiley Eye Institute and Viterbi Family Department of Ophthalmology. In his clinical practice, he cares for adolescents and adults with all stages of glaucoma. In addition, he oversees an extraordinary research laboratory, focusing on the optic nerve.

Welsbie studies how glaucoma leads to optic nerve injury, neurodegeneration and ultimately, vision loss. Specifically, he uses high-throughput genetic screening to comprehensively characterize the genes responsible for nerve cell death. His ultimate goal is to develop new medication and gene therapy-based neuroprotective strategies to interfere with these deleterious genes, prevent nerve cell death and improve outcomes for patients with glaucoma.

Prior to joining UC San Diego Health in 2016, Welsbie was a faculty member at the Johns Hopkins University Wilmer Eye Institute, where he won the Shafer Prize for innovative glaucoma research from the Glaucoma Research Foundation and was named Assistant Professor of the Year (2015).

In 2019, Welsbie's laboratory was selected for the Catalyst for a Cure Consortium by the Glaucoma Research Foundation. He has been awarded multiple resident teaching awards including the Whitehill Prize. He also served as the Stephen J. Ryan Assistant Chief of Service and continues to have an interest in resident and medical student education.

Welsbie completed a residency in Ophthalmology and fellowship training in Glaucoma at the Wilmer Eye Institute at Johns Hopkins University. He earned his medical degree and doctorate in molecular biology from the David Geffen School of Medicine at UCLA.

Derek S. Welsbie, MD, PhD
Associate Professor of Ophthalmology
Glaucoma

DESCRIBE THE INTERSECTION OF YOUR CLINICAL PRACTICE AND RESEARCH.

My clinical practice revolves almost exclusively around glaucoma. I care for patients, both surgically and medically, with all forms of the disease. On one end, I have patients who are simply at risk for glaucoma and on the other end, there are those who have struggled with the disease for years and might need their third or fourth surgery.

Glaucoma is a neurodegenerative disease, defined by the loss of optic nerve cells, yet all of our treatments (i.e., laser, eye drops and surgery) focus on lowering eye pressure. My research lab has set out to identify the genes that are critical for this neurodegeneration as they represent potential novel drug targets. To do this, we use something called high-throughput perturbative genetics. Essentially, the first step is to develop a model of glaucoma-in-a-dish. We have used rodent optic nerve cells as well as human stem cell-derived optic nerve cells. The next step is to use a variety of genetic techniques, including molecular scissors known as CRISPRs, to interfere with the function of each gene in the genome. One by one, we "perturb" gene function and measure the effect on the neurodegeneration. Any gene whose inhibition increases the survival of the optic nerve cells, must be playing a role in the death process. The lab then works to validate these gene targets in animal models of glaucoma and to develop gene therapy, antibody and chemical-based therapeutics.

HAVE ANY OF YOUR PATIENTS AFFECTED YOU SIGNIFICANTLY?

The good news for glaucoma patients is that most will do great and retain useful vision throughout their life. I am most affected by the patients where that is not the case. Lowering eye pressure is not a perfect therapy. There are those patients where I've done multiple surgeries and despite having an eye pressure that would be considered "low," they continue to get worse. That is extremely frustrating for me and it must be terribly scary for them. Another situation is when patients have already lost vision from glaucoma, and they ask me what can be done to improve their vision. Unfortunately, despite places that will advertise electrical therapy and stem cell therapy, there really is no good option for these patients. I want to be able to tell them something different at the end of my career. These are the stories that motivate me to come to work every day.

HOW DO COLLABORATIONS AND PARTNERSHIPS FIT INTO YOUR ROLE AS A RESEARCHER?

Science is just too big to do everything yourself. I am very fortunate to have numerous collaborations at other top institutions like Johns Hopkins University, UC San Francisco, UC Davis and Stanford University. In fact, we are part of a group called the Catalyst for a Cure, funded by the Glaucoma Research Foundation, which is focused on collaborative research. I also have collaborations across UC San Diego in Pharmacology and within SEI, **Karl Wahlin, PhD**. He is an expert with stem cell-based models of the retina (i.e. organoids) and that allows

my team to work with human models of glaucoma (and not just rodents).

WHAT DO YOU SEE AS THE NEXT BIG ADVANCES IN YOUR FIELD?

It is very exciting to see developments in minimally invasive surgery. While this is safer, some specialists quip that these are also minimally effective surgeries. Work by my colleagues at SEI like **Alex Huang, MD, PhD** are showing how to potentially target the surgeries to get more bang for your buck.

We have just seen one of the first sustained delivery devices, giving us hope that we can do better than requiring patients to take eye drops. We are also seeing developments in measuring the structure and function of the optic nerve.

With the use of new visual field technology, new OCT techniques, combined with the explosion of machine learning, I'm hopeful that we will be able to assess disease activity on the order of months and not years.

More relevant to the work that we do in my lab, I think we will see the first therapies that can treat glaucoma that do not work by lowering eye pressure. These neuroprotectives will leverage our improved understanding of why optic nerve cells die and will directly prevent optic nerve cell degeneration. The identification of genes will make robust drug targets. There are around 20,000 genes in the genome and work by our group (and others) has helped to prioritize which ones give the most robust optic nerve survival. This unbiased and comprehensive platform drastically increases the chance that these therapies will work when eventually tested in human clinical trials.

WHAT DO YOU DO IN YOUR FREE TIME?

I have a wonderful family! My wife Kristi trained as a physical therapist and now devotes most of her time to volunteer work. My daughter Ariana is a sophomore at Washington University in St. Louis where she is studying the intersection of psychology, cognitive science and philosophy. I have two sons, Andrew and Asher, who are in 8th and 12th grades. When we moved to San Diego, we figured we should take up a hobby that is very San Diego. That meant I was either going to learn to surf or sail. Well, the first one wasn't going to happen so we learned to sail as a family!

Distinguished Alumnus

ARTHUR SIT, MD, MS

Arthur J. Sit, MD, MS has been a Professor of Ophthalmology, Research Chair, and Director of the Glaucoma Fellowship at the Mayo Clinic in Rochester, Minnesota since 2005.

While Sit trained as a glaucoma fellow at the UC San Diego Shiley Eye Institute in 2005, his decision to become a clinician-scientist was solidified. He saw and "experienced the joy of working at the cutting edge of glaucoma science and clinical ophthalmology" stated Sit, under the mentorship of **Robert N. Weinreb, MD**.

Sit, from Toronto, Canada, did not always picture himself with a career in medicine. He completed his undergraduate education in mechanical engineering at the University of Toronto. While attending college, he worked in a laboratory where they "put him in front of a set of bovine eyes for experimentation," stated Sit. "Luckily, I was introduced to how engineering principles could be applied to solving problems in medicine – specifically glaucoma." Following his undergraduate studies, he pursued engineering in the private sector for a few years.

Sit noted, "Feeling the pull of research and the desire to further explore what had intrigued me about biomedical engineering, I returned to school at the Massachusetts Institute of Technology (MIT), where I studied for a master's degree in mechanical engineering while performing research in modeling aqueous humor outflow. It was during this time I knew that I wanted to enter medicine and specifically ophthalmology. I realized that scientists and engineers can help provide the answers to problems, but it was clinician-scientists who asked the questions!"

Sit returned to the University of Toronto for medical school and ophthalmology residency. During the second half of his residency, he met Neeru Gupta, MD,

PhD, MBA, an SEI alumna in glaucoma fellowship and she became his mentor. "Following in Neeru's footsteps, I was thrilled to be accepted for a glaucoma fellowship by Dr. Weinreb, which was a truly life-changing experience. The environment at UC San Diego and the example set by Dr. Weinreb solidified my desire to become a clinician-scientist."

Sit describes the education he received at SEI as profound, as he was part of a world-leading research institution while receiving outstanding clinical training. "I saw how an academic and intellectual environment, where any question could be asked and any answer often led to new avenues of investigation, was critical for pushing the boundaries of research."

He went on to say, "I have taken inspiration from my time at UC San Diego, first seeking out a work environment that fostered a similar intellectual curiosity, and then building a glaucoma fellowship modeled after my own experience. Further, the importance of giving back through professional service is something that I learned during my fellowship and is a critical part of my career. Even now, when faced with a career dilemma, I will ask myself, "What would Dr. Weinreb do?"

Most of Sit's research is focused on aqueous humor dynamics and its application to understanding intraocular pressure (IOP) fluctuations and treatment mechanisms of action. His long-term research goal is to develop methods for modulating IOP fluctuations in glaucoma patients. Both research interests stemmed from work on intraocular pressure fluctuations which he performed at SEI with Dr. Weinreb and Professor **John H. K. Liu, PhD**. Sit stated, "Dr. Weinreb has continued to be a mentor and inspiration to me throughout my career."

Sit's research team developed an objective method based on image analysis of venous collapse from an externally applied pressure, combined with mathematical models from ideal tube laws. This method, combined with previously developed techniques for measuring aqueous humor flow rate and outflow facility has allowed his team to identify the mechanisms for IOP variations due to body position

and circadian rhythms. They have also investigated the mechanisms of action of new treatments and identified reduction of episcleral venous pressure as a novel option for controlling IOP. More recently, his team has begun to investigate the role of ocular biomechanical properties in glaucoma and their IOP functions.

Sit states, “Too many glaucoma patients continue to have progression of their disease despite IOP reduction. We are now on the cusp of having routine continuous monitoring. I believe that this technology will transform our understanding of glaucoma by providing data about IOP fluctuations that has never been possible in glaucoma patients. This will lead to a fundamental shift in how we manage glaucoma, as the stability of IOP becomes an important goal of treatment, similar to how stability of blood glucose is an important goal in diabetes management.”

Sit’s advice to future trainees is to “Take advantage of the opportunities that are open to you. Whether it is in clinical training, research, or professional development, you will encounter numerous opportunities to learn and grow. Especially early in your career, it is critical to seize these opportunities. Don’t let these opportunities pass without at least considering them.”

“Also, never stop learning or questioning the status quo. Every patient that you see, surgery that you perform, paper that you read or write, is an opportunity to learn and identify opportunities for change. Constantly being curious is what will keep your work interesting,” stated Sit. “And finally, take the time to pause and enjoy life. You have chosen a career that truly lets you do it all.”

Outside of work Sit spends time with his family, with whom he shares a passion for travel. He credits being an academic glaucoma specialist for providing numerous opportunities to travel around the world and explore new cities, countries, and cultures.

Distinguished International Alumnus

CHRIS LEUNG, MD, MSc

Christopher Leung, MD, MSc, 2007 glaucoma alumnus, is currently Chair, Department of Ophthalmology, The University of Hong Kong, Director, HKU Eye Centre, and Chief of Service, Department of Ophthalmology, Queen Mary Hospital in Hong Kong.

Leung is a clinician-scientist whose research focuses on glaucoma detection and diagnostic imaging of the optic nerve. He received a MSc in Molecular Medicine at Imperial College London and obtained his medical training (MB ChB) and doctoral education (MD) from the Chinese University of Hong Kong (CUHK). Awarded the Croucher Foundation Fellowship, he completed a clinical and research fellowship at the Hamilton Glaucoma Center, UC San Diego. The research team led by Leung has been playing a leading role in introducing key concepts and new technologies for early diagnosis of glaucoma and detection of its progression. His research group also investigates new treatment strategies for neuroprotection and neuroregeneration in glaucoma and optic neuropathies.

"I am profoundly thankful to my mentor **Robert N. Weinreb, MD**. His mentorship has been pivotal in my career progression, unlocking invaluable opportunities and enhancing my understanding of glaucoma. Our paths first crossed during the travel grant recipient reception at the inaugural World Glaucoma Congress in Vienna, Austria, stated Leung. "It was there that I was granted the extraordinary opportunity to spend 18 enriching months as a clinical and research fellow at UC San Diego under his tutelage. This fellowship experience was nothing short of transformative. Not only did I directly contribute to glaucoma research, but

I also had the chance to be part of an intellectually stimulating environment. The fellowship was an excellent platform for learning from some of the brightest minds in glaucoma. Undoubtedly, the time spent at UCSD under Professor Weinreb's mentorship not only opened doors for me but also cemented my passion and commitment to glaucoma research."

Leung believes that UC San Diego has successfully shaped the careers of hundreds of eye specialists and vision scientists across the globe.

A distinct advantage of receiving education and training at UC San Diego lies in the opportunity to tap into its robust international network. This network, thoughtfully cultivated over several decades, provides invaluable links to professionals, institutes, and resources, thereby fostering a vibrant environment for collaborative research and patient care. Leung notes, "Personally and professionally, I benefit from such connections which has not only enhanced the educational experience but also paved the way for partnerships, mutually beneficial collaborations, and the exchange of innovative ideas and practices in ophthalmology. This interconnectivity is an integral part of the UC San Diego experience, opening a world of possibilities for those who walk its corridors."

Leung's notable research contributions that he has published include the detection of focal retinal nerve fiber layer (RNFL) defects in early glaucoma and monitoring of progressive RNFL thinning in advanced glaucoma remains difficult from the assessment of topographic RNFL thickness. With retinal optical texture analysis (ROTA), the trajectorial details of individual axonal fiber bundles can be uncovered to allow intuitive visualization of RNFL defects that would otherwise be missed by conventional topographic RNFL thickness analysis and red-free photography. Contrary to the conventional belief that the fovea and macula are not affected until the late stages of glaucoma, ROTA demonstrated the axonal fiber bundles over the macula and fovea are commonly involved in early glaucoma with 70% of patients with early glaucoma had papillomacular and/or papillofoveal bundle defects. ROTA has provided an intuitive and reliable approach to discern different levels of optic nerve damage that may reset the paradigm in the diagnostic evaluation and management of glaucoma.

Leung believes that collaborations and partnerships create avenues for shared knowledge and a comprehensive understanding of clinical challenges, which then leads to the development of innovative solutions.

Leung states, "Working closely with other healthcare professionals, vision scientists and engineers helps me to translate innovations and deliver the best possible patient care." One recent example is the partnership with optical coherence tomography industrial partners, Orbis Hong Kong and Orbis International to implement their patented invention – retinal nerve fiber layer optical texture analysis (ROTA) – (*U.S. Patent 10,918,275; Leung CKS, Lam AKN, Weinreb RN, et al. Diagnostic assessment of glaucoma and non-glaucomatous optic neuropathies via optical texture analysis of the retinal nerve fiber layer. Nat Biomed Eng. 2022;6:593-604*) in a territory-wide glaucoma screening project in Hong Kong. The completion of the project will identify undiagnosed patients with glaucoma and inform the prevalence and risk factors of glaucoma in Hong Kong.

"I think the next big advances would likely reside in neuroprotective and neurodegenerative therapies for patients with glaucoma. We have heard exciting developments on using various nicotinamide adenine dinucleotide (NAD) augmentation strategies to restore NAD levels and optic nerve function in laboratory studies and clinical trials. Another potential neuroprotective treatment under active investigation involves intraocular implants that deliver a steady stream of ciliary neurotrophic factor, protecting against damage to the optic nerve in glaucoma. Initial studies have shown promising results, with the implants being safe, well-tolerated, and effective in preserving the optic nerve," Leung concluded.

Blind Infant Receives the Gift of Sight

Jose Maria Partida, MD, a San Diego primary care physician and patient of Shiley Eye Institute's (SEI) **Manuel Puig-Llano, MD**, brought a blind child, Nahomi, to his attention. She was born with cataracts in both eyes.

Partida met Nahomi and her mother, Katia, on one of his regular trips to feed impoverished individuals in Tijuana, Mexico. He and Puig-Llano worked hard to get Nahomi and her mother Katia travel visas to receive care at SEI. Once Nahomi and Katia received visas, Partida drove them back and forth from Tijuana while acting as Katia's interpreter during the appointments.

Puig-Llano reached out to **Chris W. Heichel, MD**, a cornea and cataract specialist at SEI, to assist with treating the child. Upon examining Nahomi, Heichel concluded that she needed surgery right away to remove her cataracts. However, there were obstacles relating to the cost of the surgery.

Puig-Llano and Heichel contacted Cathi Lyons, Director of Ophthalmology Services at SEI, seeking financial assistance to assist with the child's surgery costs. Through the coordination of Lyons and the For Sight For Children Fund at SEI, Nahomi and Katia were able to obtain care and the Department of Ophthalmology was able to help fund the surgery.

Heichel successfully performed the surgery to remove the infant's cataracts. Post-surgery Nahomi, for the first time, was able to see her mother's face! Now when she sees her mother's hands, she reaches out to grab them! Nahomi and Katia returned to Tijuana following her procedure but have since come back to SEI for post-operative appointments with Heichel and Puig-Llano.

In a letter from Partida following the surgery, he wrote, "Witnessing the successful outcome and giving this child the opportunity to see the world has filled our hearts with immense joy. We are profoundly grateful for the exceptional level of care and support you have extended to this family throughout this challenging journey."

Aida Haile, Jose Maria Partida, MD, Chris W. Heichel, MD, Manuel Puig-llano, MD with Katia (mom) and Nahomi (infant)

The For Sight For Children Fund was created to treat infants and children, who were born with or acquired complicated and potentially treatable eye diseases such as corneal opacities, glaucoma and retinal diseases that may result in blindness, by aiding families from all parts of the world that lack financial resources to undergo crucial eye surgery at the UC San Diego Shiley Eye Institute.

Reigniting Artist's Passion

San Diego native Raquel Alim developed a passion for art as a young child, but it became challenging when at age 12 she was diagnosed with retinitis pigmentosa (RP), a genetic eye disease causing gradual vision loss.

Alim was eventually declared legally blind and could no longer see the pencil marks on her sketch pad. She stopped creating art and lost hope in ever creating art again.

Later in life, things took a positive turn for Alim when she came to the Shiley Eye Institute (SEI) to see **Shyamanga Borooah, MBBS, PhD**. After having been evaluated by over ten retina specialists since the age of 12, Alim immediately noticed a difference with Borooah.

She stated, "Dr. Borooah did something for me that no physician had ever done before. He saw me as a person, asked about my mental health, and let me know about services that are out there."

Prior to meeting Borooah, Alim also developed cataracts and surgery was the only way to remove them. Needing surgery, Alim was referred to **Natalie A. Afshari, MD** at SEI.

While waiting in the pre-operative area in the SEI surgery suite right before her surgery, Afshari circled the eye that would be operated on with a marker. Instead of throwing this marker away after its use, Afshari offered it to Alim, and she accepted. Following Alim's surgery, she was able see and began to doodle with that same marker, rekindling her love of art!

Today, Alim is an artist producing paintings for her Unblurred Collection.

She donates a portion of the profit from her paintings to organizations like the San Diego Center for the Blind and Foundation Fighting Blindness. The encouragement and services facilitated at SEI by Borooah and Afshari were crucial in renewing her sense of hope and reigniting her passion for creating art.

Path to Vision

After spending many years in Los Angeles, San Diego native Barbra Caganich returned to her hometown and discovered she had cataracts. She turned to **Chris W. Heichel, MD** at the Shiley Eye Institute (SEI) for treatment. Driven by his expertise in managing patients who had undergone LASIK and Intacs procedures, which she herself had experienced, she underwent a successful cataract surgery, achieving 20/25 vision.

Following Caganich's procedure an unrelated retinal issue emerged, which was promptly identified, and addressed by **Shyamanga Borooah, MBBS, PhD**. After same-day surgery and follow-up appointments, she was given a clean bill of health in the spring of 2023. Grateful for the exceptional care provided by both Heichel and Borooah, she expressed her appreciation for their commitment that went "above and beyond."

In the fall of 2023, Caganich experienced a burning sensation in her eyes due to a rare allergic reaction to a new medication she was taking, resulting in a visit to the ER. In the ER she was diagnosed with uveitis by a SEI resident. Currently she is seeking specialized treatment from uveitis expert **Lingling Huang, MD, PhD** at SEI.

Throughout Caganich's vision journey, she has remained thankful to SEI. "Words cannot sufficiently express my deep gratitude for my doctors and the entire Shiley team," said Caganich.

Chris W. Heichel, MD, Barbra Caganich, Shyamanga Borooah, MBBS, PhD

Grateful Patient Letter

As an eight-year patient at Shiley it recently occurred to me that although I have said what follows to many doctors, nurses, and technicians, I have never directly addressed the people who first greet us and help us with our check-in and appointments and such. Your "greeters", if I may, have and continue to be, in close contact with very many patients - probably as much as if not more than the average clinician, and so the words of praise that follow are equally applicable to them as well.

For the past three years, no single segment of our society has been subjected to such constant stress as the members of our medical community. You have performed magnificently. You have continued to improve - indeed, save - lives while placing your own in harm's way. As an elder and beneficiary, I say "God bless you and thank you for your service."

Although all the people at both check-in areas have always been courteous and respectful, I have noticed over the course of these years, one person who consistently goes above and beyond the call of duty. I have seen Andrea Lloyd, Front Desk Supervisor, offer an arm to an elderly or handicapped patient or render a kind word of encouragement or a friendly wave to another. I doubt that these empathetic qualities are mentioned in Ms. Lloyd's formal job description, but I am sure they have brought an increased humaneness to many of us who are at times intimidated by aspects of the healthcare process.

Harvey
2023

Andrea Lloyd with Harvey

A Decade of Gratitude: The Journey that Began with Your Diagnosis

Dear Dr. Kikkawa,

I am James Zhao, MD, your former patient Yan Wang's husband, whose life you profoundly impacted with your exceptional medical insight. I write this letter not only in my capacity as a fellow physician but also as a deeply grateful husband.

You might remember Yan as your patient from eight years ago, when she was a postdoctoral researcher at Shiley Eye Center focusing on optic nerve regeneration. Her unique case presented as unilateral alacrima which you astutely recognized as an early sign of malignancy. Your diagnostic acumen, vigilance, and expertise set the course for timely treatment that has unquestionably saved Yan's life. At the time of your diagnosis of nasopharyngeal carcinoma, the tumor started to breach the skull base, which would have significantly altered the prognosis. Today, she stands eight years out of treatment, healthy and thriving. Moreover, she's the proud mother of our vibrant two-year-old.

It's not an overstatement to say that the ripple effects of your invaluable diagnosis extend far beyond the medical sphere. Not only did your intervention grant us the gift of time, it also catalyzed a profound shift in our professional pursuits. Following in your footsteps, I decided to specialize in Oculoplastics, aspiring to provide the same high level of care to my patients that you provided for Yan. Every day, I strive to emulate your meticulous attention to detail and patient-focused approach, hoping to change lives just as you changed ours.

Yan, on the other hand, has taken her battle with cancer as a springboard to contribute to the fight against this disease in her own unique way. Redirecting her research from neuroscience to oncology, she has dedicated her career to clinical research in head and neck cancer. Since her transition, she has served at the MD Anderson Cancer Center in Radiation Oncology Department and currently holds a leadership position in oncology clinical research at the University of Michigan.

Our family's story could have been dramatically different had it not been

for your keen diagnostic prowess and compassionate care. Today, as we look at our healthy child, cherish our family moments, and pursue our fulfilling careers, we are reminded of your crucial role in our journey. We wanted to take this moment to express our deepest gratitude and let you know the far-reaching impact of your work. Your dedication to your patients is inspiring and it certainly inspires us, every day, to be better in our chosen fields.

We hope to keep making a difference, just as you did for us, and hope to continue to honor your impact on our lives through our work.

With warmest regards,
Zhenyang (James) Zhao, MD
Kellogg Eye Center, University of Michigan

Personalized Medicine @ SEI

The Viterbi Family Department of Ophthalmology and the Shiley Eye Institute (SEI) welcomes Naomi Wagner, MS, CGC, as a Clinical and Research Genetic Counselor. Wagner specializes in inherited retinal dystrophies and ocular oncology. Genetic counselors are essential for patient understanding of genetic information which can have predictive family planning and therapeutic implications.

According to a 2023 "Professional Status Survey" from the National Society of Genetic Counselors, there are only 22 genetic counselors in the US and Canada that have Ophthalmology as their primary area of practice. Wagner stated, "It is quite rare to have an ophthalmic genetic counselor on site in a clinical setting. Based on the recent survey data, that is less than 1% of the total profession of genetic counselors in North America."

Wagner works in conjunction with SEI physician scientists **Shyamanga Borooah, MBBS, PhD**, on patients with retinal dystrophies and **Nathan Scott, MD, MPP**, on patients with cancer involving the eye (ocular oncology). She talks patients through genetic test results and helps them understand what their genetic findings mean for them and their families. All patients seen in the retinal dystrophy clinic who have a confirmed or expected diagnosis of inherited retinal dystrophy can pursue genetic testing and counseling with her.

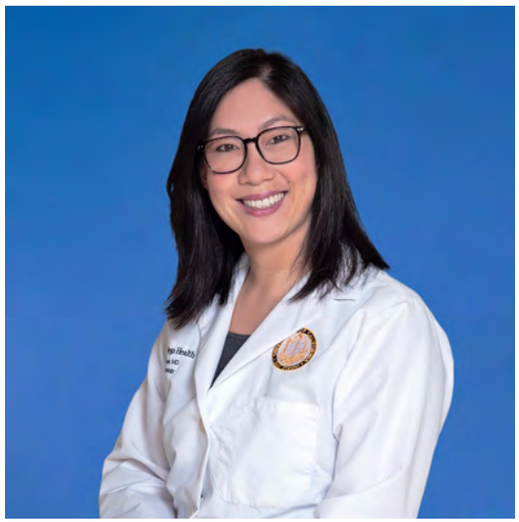
"I find profound joy in connecting with patients. It is a privilege to contribute to their care by unraveling the genetic intricacies that shape their ocular health," said Wagner.

Wagner earned her MS in Genetic Counseling at Boston University School of Medicine. Previous clinical roles include working as a telehealth genetic counselor at the genetic testing laboratory Invitae and as an ocular genetic counselor at Massachusetts Eye and Ear in Boston. Her research experience includes serving as a rare disease research assistant at Harvard Medical School, a clinical research assistant at the Hospital for Special Surgery, and a research scholar at Ludwig Maximilian University of Munich, Germany.

In addition, Wagner is a volunteer biocurator for multiple groups related to retinal conditions at the National Institutes of Health (NIH) and Clinical Genome Resource (ClinGen). At ClinGen, she evaluates clinical evidence and reviews the scientific literature to help determine which genes are causative of inherited eye conditions. Sometimes, SEI patients come back with test reports that show genes that she has personally consulted on, which helps with the interpretation of those patient results.

Advancing Diversity & Inclusion at SEI

We are committed to cultivating a welcoming, inclusive environment for all patients, employees, faculty, and trainees.



The UC San Diego Viterbi Family Department of Ophthalmology and Shiley Eye Institute (SEI) continues to promote diversity and inclusion in clinical activities, research, education, and community service. Leading most of these efforts is the Diversity, Equity, and Inclusion (DEI) committee, co-chaired by **Nathan Scott, MD, MPP**, and **Sally Baxter, MD, MSc**.

NIH Bridge2AI Grant

In 2022, SEI secured the prestigious trans-NIH Bridge2AI grant, supporting a yearlong internship program designed to train individuals from diverse backgrounds in artificial intelligence (AI), machine learning, and biomedical research. The inaugural cohort, which commenced in the summer of 2023, includes 50% underrepresented minorities (URM). Notably, DEI co-chair Baxter, and committee member **Linda Zangwill, PhD**, are leading the Skills and Workforce Development Module as co-Principal Investigators.

NIH T35 Grant

SEI was also granted a National Eye Institute (NIH) T35 short-term research training grant in May 2022. This initiative facilitated the recruitment of four URM medical students for the second consecutive year, providing them financial support to complete mentored research in ophthalmology and vision science at SEI over the summer.

This year's events promoting DEI for all SEI staff included a cultural potluck and a performing arts showcase. Additionally, the DEI committee created a cookbook

featuring recipes from the different cultures among SEI employees. Unique DEI committee shirts were designed during the year to further solidify a sense of belonging amongst the team.

Beyond internal efforts, SEI faculty, staff, and trainees engaged in local outreach activities. This included conducting seminars for students, providing care to underserved individuals through the UC San Diego Free Clinic and the Shiley EyeMobile for Children, as well as contributing to broader diversity-related initiatives at UC San Diego Health Sciences and the campus.

Recognizing these collective efforts, **Robert N. Weinreb, MD** nominated the Shiley DEI committee for a UC San Diego Inclusive Excellence Award. These awards commend individuals and groups for their leadership in advancing equity, diversity, and inclusion, aligning with the UC San Diego Principles of Community. The nomination reflects SEI's strong commitment to fostering a diverse and inclusive environment.

Welcome OR Nurse Manager

The Viterbi Family Department of Ophthalmology and the Shiley Eye Institute (SEI) welcomes Amanda Kuelz Kuczka, BSN, RN, MBA, CNOR as our new Operating Room Nurse Manager. She is responsible for ensuring high standards of patient care and safety, as well as the effective functioning of the operating room.

Before joining SEI, Kuczka was a member of the U.S. Navy for 21 years, retiring with the rank of Lieutenant Commander.

"The Navy Nurse Corps shaped me from an inexperienced ward nurse to a perioperative leader with diverse and rewarding life and career experience," stated Kuczka.

SEI Is Green Certified


UC San Diego Health
Sustainability

CERTIFICATE OF SUSTAINABILITY

GREEN CERTIFIED CLINIC

Certification Level: Gold

Ophthalmology Services (Shiley, 1st)

Green Clinic/Unit Certification Program | July 24, 2023

The UC San Diego Health Sustainability Department proudly presents this certificate for achievements in leadership and sustainability, supporting UC Sustainable Goals, and helping to make the connection between human health & the environment.

Brendan Kremer
Chief Operating Officer
UC San Diego Health

Barbara Hamilton
Director of Sustainability and Energy
UC San Diego Health

Shiley Eye Institute and the Viterbi Family Department of Ophthalmology at UC San Diego participated in a Green Clinic Certification audit for sustainability and achieved a GOLD status! SEI is the largest ambulatory clinic on the UC San Diego Health campus, and this is a great accomplishment for the ophthalmology faculty and staff working together. This is a voluntary audit in which our faculty and staff are committed to creating less trash, recycling all that we are able to and using less energy during clinic hours. Congratulations!

SEI @ UCSD Leadership Academy

Juan Arias, MBA, Assistant Director of Ophthalmology Services at the Shiley Eye Institute (SEI), was selected to participate in the 2023 UC San Diego Health Leadership Academy (HLA). As part of a team comprised of physicians and administrators, Arias contributed to a proposal aiming to improve mammography accessibility at UC San Diego, resulting in a secured $1 million funding commitment.

Arias's team project focused on optimizing operational hours at the UC San Diego Health Koman Family Outpatient Pavilion. Additionally, the team proposed implementing a mobile unit to address the impact of zip code demographics and clinic locations, aiming to bridge the gap and promote healthcare equality.

During the application process, Arias submitted an endorsement from **Robert N. Weinreb, MD**, outlining the expected benefits to the Health System through his participation in the program. Acceptance into the program was highly competitive, with only forty individuals admitted.

L to R: Jason Adams, Alexander Kim, Maureen Ries, Amy Markley, Alejandra Leonel Gaitan, Sophia Szeto, Carla Renata Alegre, Heather Conrad and Juan Arias

Welcome New Faculty

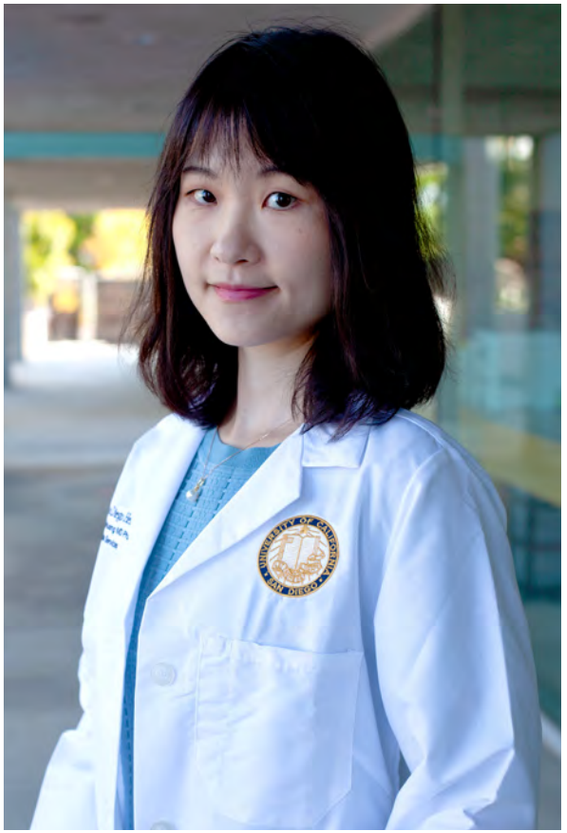
LINGLING HUANG, MD, PhD

The Viterbi Family Department of Ophthalmology and Shiley Eye Institute (SEI), UC San Diego welcomes **Lingling Huang, MD, PhD,** as an Assistant Professor of Ophthalmology. Huang is board-certified and specializes in treating both pediatric and adult patients with infectious or autoimmune uveitis.

Huang earned her PhD in Molecular Cancer Biology at Duke University, then earned her medical degree at Washington University School of Medicine in St. Louis. She completed her intern year at the Massachusetts General Hospital, and subsequently was an ophthalmology resident at UC San Diego where she was a Chief Resident. She then completed a Uveitis Fellowship at the Casey Eye Institute at Oregon Health & Science University.

As a physician-scientist, Huang's focus is on all forms of uveitis or inflammation.

In Huang's research at SEI, she is utilizing data from electronic health records and imaging tests to enhance and personalize clinical outcomes using artificial intelligence (AI) for patients with uveitis.



Lingling Huang, MD, PhD
Assistant Professor of Ophthalmology
Uveitis and Orbital Inflammatory Diseases

FACULTY

Every year, Shiley Eye Institute specialists are honored to be named as being “the best” by major national and local organizations.

The Ophthalmologist
Expertscape
Castle Connolly
San Diego Magazine
TOP Doctors
U.S. News & World Report
Best Doctors
SuperDoctors
Newsweek

Robert N. Weinreb, MD

Chair & Distinguished Professor, Viterbi Family Department of Ophthalmology

Director, Shiley Eye Institute

Director, Hamilton Glaucoma Center

Distinguished Professor of Bioengineering

Morris Gleich, MD Chair in Glaucoma

GLAUCOMA

Glaucoma surgery (conventional and minimally invasive), medical management of glaucoma; biology of aqueous outflow; mechanisms of optic nerve damage and neuroprotection in glaucoma; visual function; cataract surgery.

Natalie A. Afshari, MD, FACS

Professor of Ophthalmology

Vice Chair for Education, Department of Ophthalmology

Chief, Division of Cornea and Refractive Surgery

Stuart I. Brown MD Chair in Ophthalmology in Memory of Donald P. Shiley

CORNEA & REFRACTIVE

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.

Radha Ayyagari, PhD

Professor of Ophthalmology & Pathology

Chief of Ophthalmic Molecular Diagnostic Laboratory

Director of Downtown San Diego Lions Club BioBank for Vision

Viterbi Family Chair of Ophthalmic Genetics

GENETICS

Molecular genetics of macular and retinal dystrophy; biological mechanisms underlying retinal diseases; age-related macular degeneration; diabetic retinopathy; and glaucoma.

Dirk-Uwe Bartsch, PhD

Adjunct Professor of Ophthalmology

RETINA & VITREOUS

Retinal imaging; scanning laser imaging-confocal/non-confocal; optical coherence tomography (OCT); indocyanine green and fluorescein angiography; tomographic reconstruction of the posterior pole.

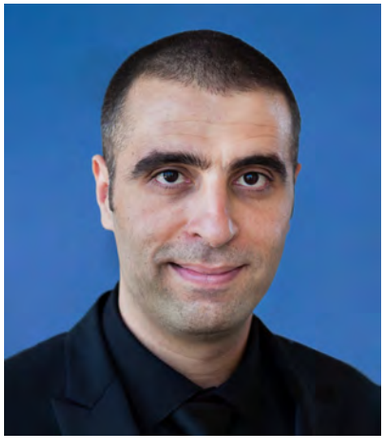
Sally L. Baxter, MD, MSc

Assistant Professor of Ophthalmology

Chief, Division of Ophthalmology Informatics and Data Science

COMPREHENSIVE OPHTHALMOLOGY

Comprehensive ophthalmology; cataract surgery; diabetic retinopathy screening; caring for underserved populations; digital health and informatics and data science.



Akram Belghith, PhD

Assistant Project Scientist of Ophthalmology

GLAUCOMA
Change detection and monitoring of glaucoma; image processing and machine l earning classifier analyses.

Shyamanga Borooah, MBBS, MRCP (UK), MRCSEd, FRCOphth, PhD

Assistant Professor of Clinical Ophthalmology

RETINA & VITREOUS
Adult and childhood inherited retinal degenerations; age-related macular degeneration; retinal vein occlusion; central serous retinopathy and diabetic eye disease.

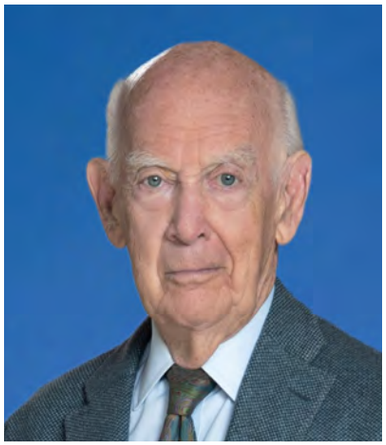
Christopher Bowd, PhD

Research Scientist of Ophthalmology

Director of the Hamilton Glaucoma Center-based Visual Field Assessment Center

Co-Director of the Hamilton Glaucoma Center-based Imaging Data Evaluation and Analysis (IDEA) Center

GLAUCOMA
Early detection and monitoring of glaucoma; machine learning classifier analyses of imaging and visual function measurements.



Stuart I. Brown, MD

Professor of Ophthalmology, Emeritus

CORNEA & REFRACTIVE
Corneal transplantations and cataract surgeries.

Andrew S. Camp, MD

Assistant Professor of Ophthalmology

Acting Chief of the Ophthalmology Section at the Veterans Administration Medical Center

GLAUCOMA

Adult and pediatric glaucoma.

Mark Christopher, PhD

Assistant Project Scientist of Ophthalmology

GLAUCOMA

Deep learning applications in imaging and visual function in glaucoma.

Jiun Do, MD, PhD

Assistant Professor of Ophthalmology

GLAUCOMA

Translational research; retinal and optic nerve regeneration; retinal ganglion cell replacement for glaucoma and other optic neuropathies; optic nerve relays; patient measured intraocular pressures and glaucoma progression.

Napoleone Ferrara, MD

Distinguished Professor of Ophthalmology and Pathology

Senior Deputy Director for Basic Sciences, UC San Diego Moores Cancer Center

Ben and Wanda Hildyard Chair for Diseases of the Eye

RETINAL VASCULAR

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

Henry A. Ferreyra, MD

Clinical Professor of Ophthalmology

RETINA & VITREOUS
Electrophysiology inherited disorders of the retina; age-related macular degeneration; diabetic retinopathy; retinopathy of prematurity.

William R. Freeman, MD

Distinguished Professor of Ophthalmology

Vice Chair, Department of Ophthalmology

Director, Jacobs Retina Center

Co-Director, Retina Division

RETINA & VITREOUS
Retinal detachment; diabetic retinopathy; macular holes & age-related macular degeneration.

Michael H. Goldbaum, MD

Professor of Ophthalmology in Residence, Emeritus

RETINA & VITREOUS
Surgical and medical treatment of the retina and vitreous; macular degeneration; pediatric retina; ocular tumors; glaucoma informatics.

David B. Granet, MD, MHCM, FACS, FAAO, FAAP

Professor of Clinical Ophthalmology and Pediatrics

Vice Chair, Department of Ophthalmology

Anne Ratner Chair of Pediatric Ophthalmology

Director, Anne F. & Abraham Ratner Children's Eye Center

Director, Division of Pediatric Ophthalmology & Eye Alignment

PEDIATRIC OPHTHALMOLOGY & ADULT EYE REALIGNMENT
Pediatric ophthalmology and strabismus, adult eye movement problems, strabismus surgery, childhood eye misalignments & disorders, and nystagmus.

Weldon W. Haw, MD

Clinical Professor of Ophthalmology

CORNEA & REFRACTIVE
Cataract surgery; dry eye/pterygium; cornea transplantation; refractive surgery/LASIK.

Chris W. Heichel, MD, FACS

Clinical Professor of Ophthalmology

CORNEA & REFRACTIVE
Corneal transplantations and keratoprostheses; challenging cataract and IOL surgeries; LASIK, Intacs, and Visian ICL advanced techniques in laser and refractive surgery; keratoconus ocular surface tumors; limbal stem cell transplantation.

Lauren Hennein, MD

Assistant Clinical Professor of Ophthalmology

PEDIATRIC OPHTHALMOLOGY & ADULT EYE REALIGNMENT
Comprehensive pediatric ophthalmology and strabismus including pediatric cataracts, strabismus/eye misalignment/double vision including adjustable suture strabismus surgery, amblyopia, nasolacrimal duct disorders (tearing problems), congenital eye syndromes, and systemic diseases affecting the eyes.

Alex A. Huang, MD, PhD

Associate Professor of Ophthalmology

Alfred Vogt Chair in Ophthalmology

GLAUCOMA
Glaucoma, cataracts, and ocular changes during space flight.

Lingling Huang, MD, PhD

Assistant Professor of Ophthalmology

UVEITIS

Pediatric or adult onset uveitis, infectious uveitis, and autoimmune uveitis.

Won-Kyu "Daniel" Ju, PhD

Professor of Ophthalmology and Bioengineering

GLAUCOMA

Cellular and molecular mechanisms for neurodegeneration; neuro-inflammation, and neuroprotection in glaucoma and Alzheimer's disease; characterization of melanopsin-expressing retinal ganglion cell-mediated multiscale connectome in Alzheimer's disease.

Don O. Kikkawa, MD, FACS

Distinguished Professor of Clinical Ophthalmology and Plastic Surgery

Vice Chair for Clinical Services, Department of Ophthalmology

Chief, Division of Oculofacial Plastic and Reconstructive Surgery

Dr. Trude Kahn Hollander Chair in Ophthalmology

OPHTHALMIC PLASTIC & RECONSTRUCTIVE SURGERY

Oculofacial surgery; eyelid, lacrimal & orbital surgery; thyroid eye disease (orbital decompression & eyelid surgery); craniofacial disorders involving the eyelids & orbits; orbital & eyelid tumors; facial aesthetics - soft tissue fillers & injectables.

Lanning Kline, MD

Clinical Professor of Ophthalmology

NEURO-OPHTHALMOLOGY

Optic nerve disease; double vision; pupillary disorders; demyelinating diseases; visual abnormalities accompanying stroke.

Bobby S. Korn, MD, PhD, FACS

Professor of Clinical Ophthalmology and Plastic Surgery

OPHTHALMIC PLASTIC & RECONSTRUCTIVE SURGERY

Cosmetic and reconstructive surgery; blepharoplasty; ptosis surgery; congenital birth defects; endoscopic forehead lifting; thyroid eye disease management; optic nerve sheath fenestration/decompression; 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; facial fillers and skin rejuvenation.

Jeffrey E. Lee, MD

Associate Clinical Professor of Ophthalmology

Program Director, Ophthalmology Residency

COMPREHENSIVE OPHTHALMOLOGY

Facial burns; orbital trauma; ocular manifestations of HIV.

John H. K. Liu, PhD

Professor of Ophthalmology

Director, Glaucoma Sleep Laboratory

GLAUCOMA

Regulation of intraocular pressure and ocular blood flow; 24-hour sleep laboratory for studying glaucoma and other eye diseases.

Catherine Y. Liu, MD, PhD

Assistant Professor of Clinical Ophthalmology

OPHTHALMIC PLASTIC & RECONSTRUCTIVE SURGERY

Ptosis surgery; blepharoplasty; lacrimal disease and surgery; eyelid and orbital oncology; blepharospasm and hemifacial spasm; orbital fractures; craniofacial disorders involving the eyelid and orbit; pediatric oculoplastics; surgical and non-surgical facial rejuvenation.

Sasan Moghimi, MD

Professor of Ophthalmology

GLAUCOMA

Role of glaucoma imaging in early detection and monitoring of the disease; angle-closure glaucoma diagnosis and treatment.

Mansoor Movaghar, MD

Associate Clinical Professor of Ophthalmology

PEDIATRIC OPHTHALMOLOGY & ADULT EYE REALIGNMENT

Strabismus/eye misalignment/ double vision; adult eye movement problems; amblyopia; pediatric cataracts; nasolacrimal duct disorders; congenital eye syndromes; systemic diseases affecting the eyes.

Thao P. Nguyen, MD

Assistant Clinical Professor of Ophthalmology

COMPREHENSIVE OPHTHALMOLOGY

Cornea; anterior segment and cataract surgery.

Eric Nudleman, MD, PhD

Associate Professor of Clinical Ophthalmology

Co-Director, Retina Division

Viterbi Family Chair for Retinal Vascular Diseases

RETINA & VITREOUS

Adult & pediatric vitreoretinal diseases, including AMD, diabetic eye disease; retinal vein occlusions; retinal detachments; proliferative vitreoretinopathy, macular holes & epiretinal membranes; pediatric vitreoretinal diseases, retinopathy of prematurity, familial exudative vitreoretinopathy, Coats disease, fetal vascular syndrome, & intraocular trauma. developmental angiogenesis.

Manuel Puig-Llano, MD, FACS, FASRS

Clinical Professor of Ophthalmology

COMPREHENSIVE OPHTHALMOLOGY

Shira L. Robbins, MD, FAAO, FAAP

Professor of Clinical Ophthalmology

Educational Director of Pediatric Ophthalmology/Strabismus Division

President, Medical Staff UC San Diego Health System

PEDIATRIC OPHTHALMOLOGY & ADULT EYE REALIGNMENT
Strabismus/eye misalignment/ double vision; amblyopia; retinopathy of prematurity; pediatric glaucoma and cataracts; including intraocular lens placement; nasolacrimal duct disorders; congenital eye syndromes; craniofacial syndromes; systemic diseases affecting the eyes; nystagmus.

Jolene Rudell, MD, PhD

Assistant Professor of Clinical Ophthalmology

PEDIATRIC OPHTHALMOLOGY & ADULT EYE REALIGNMENT
Strabismus/eye misalignment/ double vision; amblyopia; pediatric cataracts; nasolacrimal duct disorders; congenital eye syndromes; systemic diseases affecting the eyes.

Peter J. Savino, MD

Professor of Ophthalmology & Neurosciences

NEURO-OPHTHALMOLOGY
Myasthenia gravis optic neuritis; atrophy and neuropathy brain and nervous system; tumors; visual field defects; degenerative, metabolic, inflammatory and demyelinating diseases; vascular disorders.

Nathan L. Scott, MD, MPP

Assistant Professor of Clinical Ophthalmology

Division Chief, Ocular Oncology

Associate Member, Solid Tumor Therapeutics, UC San Diego Health Moores Cancer Center

OCULAR ONCOLOGY

Ocular oncology; uveal melanoma; retinoblastoma; choroidal memangioma; ocular surface tumors (OSSN, conjunctival melanoma, lymphoma, etc.); ocular trauma; complicated retinal detachment; proliferative vitreoretinopathy; diabetic retinopathy; macular hole; age-related macular degeneration; retinal vascular occlusive disease; epiretinal membranes.

Peter Shaw, PhD

Associate Adjunct Professor of Ophthalmology

RETINA & VITREOUS

The impact of genetic and oxidative stress risk factors on ocular disease; development of molecular and gene therapy methods to treat eye diseases.

Doran B. Spencer, MD, PhD

Assistant Clinical Professor of Ophthalmology

UVEITIS

Uveitis and ocular inflammation.

Christopher B. Toomey, MD, PhD

Assistant Professor of Clinical Ophthalmology

RETINA & VITREOUS

Retina and vitreous; adult vitreoretinal disease, with specialization in age-related macular degeneration (AMD); diabetic retinopathy; retinal vein occlusions; retinal detachments; proliferative vitreoretinopathy; macular holes; and epiretinal membranes. Scientific interest in age-related macular degeneration with a focus on the early and intermediate "dry" stages of AMD.

Cristiana Vasile, MD, MAS

Associate Clinical Professor of Ophthalmology

GLAUCOMA
Glaucoma management, clinical research in glaucoma and optic nerve assessment.

Karl Wahlin, PhD

Associate Professor of Ophthalmology

Director, Richard C. Atkinson Laboratory for Regenerative Ophthalmology

REGENERATIVE OPHTHALMOLOGY
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.

Derek S. Welsbie, MD, PhD

Associate Professor of Ophthalmology

GLAUCOMA
Neuroprotection in glaucoma and other optic neuropathies; use of functional genomic technologies to identify novel mediators of axon injury signaling in neurons; development of dual leucine zipper kinase inhibitors; role of dual leucine zipper kinase in traumatic brain injury.

Linda M. Zangwill, PhD

Professor of Ophthalmology

Interim Director, Research

Director, Hamilton Glaucoma Center, Data Coordinating Center

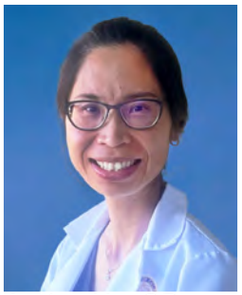
Richard K. Lansche, MD & Tatiana A. Lansche Chair in Ophthalmology

GLAUCOMA
Relationship between structural & functional change in the aging & glaucoma eye; developing computational & statistical techniques to improve glaucomatous change detection, reduce the number of visits & optimize the type of testing required; identify risk factors that can predict glaucomatous progression & rapidly progressing glaucoma.

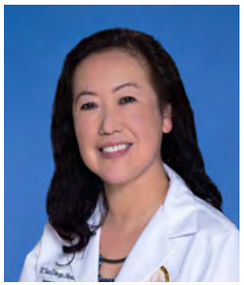
Optometry & Low Vision

John F. Kulischak, OD
OPTOMETRY SUPERVISOR

Maria Laura Gomez, MD, OD

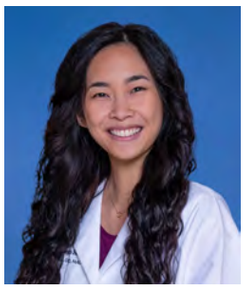


Amiee Ho, OD



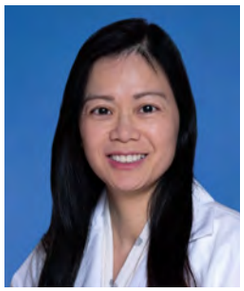
Pamela A. Hoo, OD

Lara D. Hustana, OD



Caitlin Jomoc, OD

Philip Kim, OD



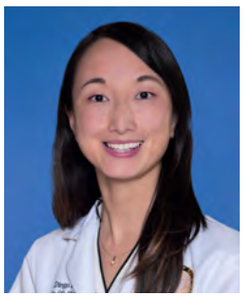
Anne B. Lam, OD

Esmeralda McClean, OD

Lianne Mizoguchi, OD

Tracy Moor, OD

Andrew Vo, OD



Carol Yu, OD

Residents

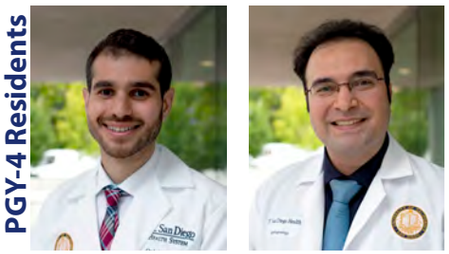
The UC San Diego ophthalmology residency training is a three-year program with 12 resident physicians (four per year of training).

Our highly selective residency program receives over 400 applications per year from throughout the country to fill four positions. The program is known for its outstanding clinical and surgical training, as well as the value placed on scholarships and compassionate patient care. Our residents are among the brightest and most motivated, and continue to be high achievers during and after their training.

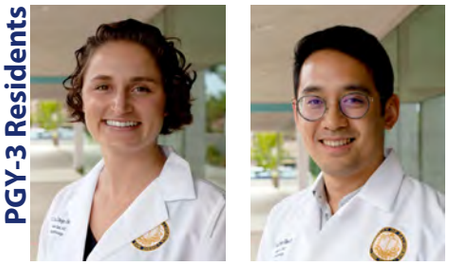
As a result, graduating residents are regularly chosen for competitive post-residency Fellowship training in various subspecialties of Ophthalmology, such as Cornea, Glaucoma, Ophthalmic Plastic and Reconstructive Surgery and Retina at the Shiley Eye Institute. Under the supervision of the renowned Shiley faculty, residents learn to care for patients, from common to very rare eye conditions.

With departmental support, residents also participate in the many cutting-edge research opportunities available in the UC San Diego Viterbi Family Department of Ophthalmology and present their work at 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.

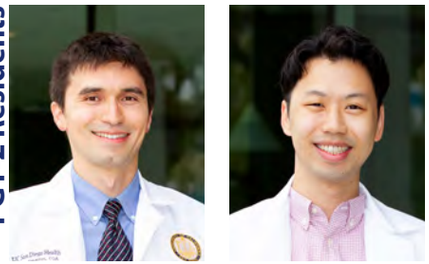
PGY-4 Residents



PGY-3 Residents



PGY-2 Residents



PGY-4 Residents
Justin Arnett, MD
Medi Eslani, MD
Jenny Hu, MD
Maya Yamane, MD

PGY-3 Residents
Helena Gali, MD
Andrew Lin, MD
Rafaella Penteado, MD
George Villatoro, MD

PGY-2 Residents
Jimmy S. Chen, MD
Michael Saheb Kashaf, MD, MSc
Rebecca Lian, MD
Alexander Svoronos, MD, PhD

Fellows

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

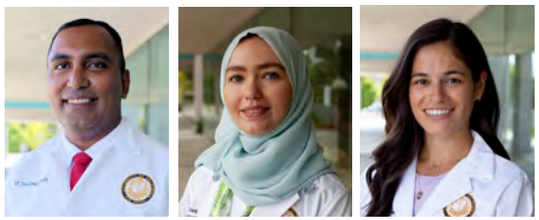
GLAUCOMA

GLAUCOMA

RETINA

RETINA

OCULOPLASTICS



CORNEA

INFORMATICS

PEDIATRICS

Glaucoma
Tonking Bastola, PhD
Seunghawn Choi, PhD
"Gopika" Gopikasree Gunasegaran, MD
Alireza Kamalipour, MD, MPH
Kareem Latif, BS
Golnoush Mahmoudi Nezhad, MD, MPH
Takashi Nishida, MD, PhD
Kamran Rahmatnejad, MD
Catherine Sheils, MD
Daniel Wanderer, DVM
Jo-Hsuan (Sandy) Wu, MD

Retina
Manisha Dagar, PhD
Daniel Deussen, MD, MSc
Carlo Garang, MD
Fritz Kalaw, MD
Zachary Koretz, MD
Etienne Schonbach, MD
Delu Song, MD
Alexandra Warter, MD
Danae Woodard, PhD
Shaden Handy Fathy Yassin, PhD

Oculoplastics
Mahmoud Abouletta, MBChB
Eman Al-Sharif, MBBS
Nicole Topilow, MD

Cornea
Elina Jin, MD
Charity Lee , MD, MPH

Informatics
Byoungyoung Gu, MD
Kiana Tavakoli, MD

Pediatrics
Nicole Jody, MD
Maggie Santana, MD

NOT PICTURED
Glaucoma
Maria Paula Garcia, MD
Clemens Strohmaier, MD, PhD

Retina
Shikha Pachauri, PhD

Graduation

GRADUATION OF RESIDENTS & FELLOWS

On June 15, 2023, the Viterbi Family Department of Ophthalmology and Shiley Eye Institute graduated outstanding residents and fellows with a virtual and in-person ceremony at the UC San Diego Moores Cancer Center Goldberg Auditorium.

Graduating Residents
Justin Arnett, MD (Administrative Chief Resident)
Medi Eslani, MD
Jenny Q. Hu, MD
Maya Yamane, MD (Academic Chief Resident)

Graduating Fellows
Man Li "Elina" Jin, MD (Cornea)
Charity Lee, MD, MPH (Cornea)

Alireza Kamalipour, MD, MPH (Glaucoma)
Takashi Nishida, MD, PhD (Glaucoma)
Kamran Rahmatnejad, MD (Glaucoma)
Catherine Sheils, MD (Glaucoma)

Nicole Topilow, MD (Oculoplastics)

Nicole Jody, MD (Pediatric Ophthalmology)

Carlo Galang, MD (Retina)
Etienne Schonbach, MD (Retina)
Delu Song, MD, PhD (Retina)

GRADUATION AWARDS

The tenth annual **Lamont Ericson, MD Award** for Outstanding Patient Care by a Resident was awarded to Maya Yamane, MD, by Residency Director **Jeffrey Lee, MD**. Dr. Ericson was an outstanding former resident in the department who passed away in 2007 at a young age. The department is grateful that Dr. Ericson's family has supported his memory in this special way.

The **Lanna Cheng Ophthalmology Innovation Award** in recognition of outstanding Innovation in Research in Retina, was given to **Christopher Toomey, MD, PhD**.

The **Lanna Cheng Ophthalmology Innovation Award** in recognition of outstanding Innovation in Research in Ophthalmic Reconstructive and Oculofacial Plastic Surgery, was given to **Catherine Liu, MD, PhD**.

The **Whitehill Teaching Award** from the UC San Diego Health Sciences Academy of Clinical Scholars was given to **Jiun Do, MD, PhD**. The recipient is chosen by the Chief Residents and given to an Assistant or Associate level faculty member who best exemplifies compassionate bedside manner for learners to emulate, serves as an advocate for trainees, and encourages and facilitates clinical, translation or basic science research projects.

Award for Outstanding Clinical Teaching by a Resident
Justin Arnett, MD

Ophthalmic Knowledge Assessment Program (OKAP) Teaching Award
Peter Savino, MD

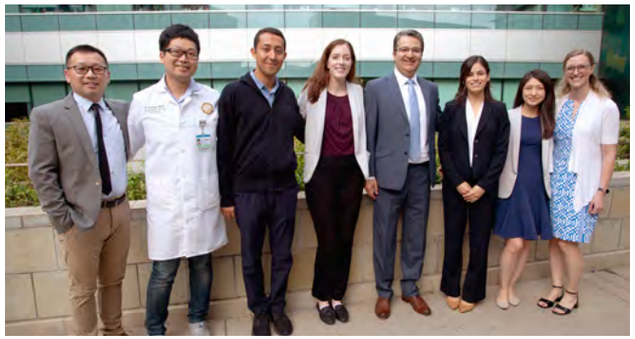
Outstanding Academic Achievement Award (OKAP)
Justin Arnett, MD

Outstanding Surgical Teaching
Weldon Haw, MD

Outstanding Clinical Teaching
Doran Spencer, MD, PhD

Award for Teaching by a Fellow
Delu Song, MD
Nicole Topilow, MD

Award for Outstanding Teaching
Scott McClatchey, MD

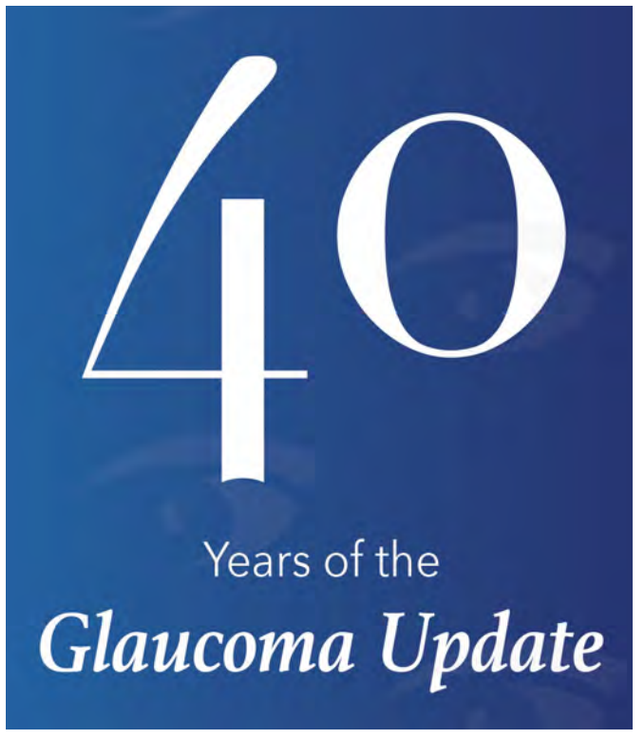


Education: Patients

2023 GLAUCOMA UPDATE

The fortieth annual Glaucoma Update was held in-person and virtually on October 26, 2023 at the UC San Diego Moores Cancer Center Goldberg Auditorium. A hybrid meeting, this was the first in-person Glaucoma Update since 2020 and was simultaneously delivered by Zoom to attendees throughout the world.

Robert N. Weinreb, MD presented the latest trends in glaucoma treatments and research from the Shiley Eye Institute, Hamilton Glaucoma Center, and around the world. Additional presenters included faculty: **Sally L. Baxter, MD, MSc**, **Alex A. Huang, MD, PhD**, and **Derek S. Welsbie, MD, PhD**.



Education: Patients

PRPH2 & ASSOCIATED RETINAL DISEASE WORKSHOP

The Shiley Eye Institute and Viterbi Family Department of Ophthalmology in partnership with the Nixon Visions Foundation and Foundation Fighting Blindness held a free in-person seminar entitled "PRPH2 and Associated Retinal Diseases Workshop" in late March 2023. **Shyamanga Borooah, MBBS, PhD** and **Radha Ayyagari, PhD** co-chaired the event with Claire Glefman, PhD, the Chief Science Officer of Foundation Fighting Blindness.

The goal of the workshop was to provide understanding of the current landscape surrounding PRPH2-associated diseases, review the science and potential treatment approaches, as well as to identify key knowledge gaps to inform future funding in the field. The workshop was a combination of didactic sessions, patient perspectives, and discussion sessions. PRPH2-affected individuals and their families, researchers, physicians, and potential industry partners from around the world attended.

Education:Physicians

GRAND ROUNDS

SEI faculty, ophthalmology trainees, medical students, and staff as well as SEI alumni and community ophthalmologists and optometrists are invited to the departmental weekly Grand Rounds on Monday evenings in person and via Zoom. The Grand Rounds consists of a featured lecture from a prominent physician scientist and case presentations with moderated discussion. Interesting eye diseases, treatment dilemmas, and surgical challenges are often the theme.

September 12, 2022
Moderated by Doran Spencer, MD, PhD

September 19, 2022
Moderated by William Freeman, MD
Guest Lecturer: Amani Fawzi, MD FARVO
Cyrus Tang and Lee Jampol Professor of Ophthalmology
Feinberg School of Medicine, Northwestern University
Title: "Vascular Imaging In Diabetic Retinopathy: What Have We Learned"

October 10, 2022
Moderated by Doran Spencer, MD, PhD
Guest Lecturer: James Walsh, MD, PhD
Instructor, Ophthalmology and Visual Sciences
Washington University
Title: "Posterior Uveitis: The Contribution of Local Immunity"

November 7, 2022
Moderated by Peter Savino, MD

November 14, 2022
Moderated by Nathan Scott, MD
Guest Lecturer: J. William Harbour, MD
Professor and Chairman
The David Bruton, Jr. Chair in Ophthalmology
Department of Ophthalmology
UT Southwestern Medical Center
Title: "Recent Breakthroughs in the Management of Uveal Melanoma"

January 9, 2023
Hosted by Robert N. Weinreb, MD
Moderated by Christopher B. Toomey, MD, PhD
Guest Lecturer: James Tahara Handa, MD
Robert Bond Welch Professor, Chief, The Retina Division, Johns Hopkins Medicine
Title: "Update on Treatment for Dry Age-related Macular Degeneration"

January 23, 2023
Hosted by Hosted by Robert N. Weinreb, MD
Moderated by Peter Savino, MD and Lanning Kline, MD

January 30, 2023
Hosted by Robert N. Weinreb, MD
Moderated by William Freeman, MD and Eric Nudleman, MD, PhD
Guest Lecturer: David J. Wilson, MD
Paul H. Casey Chair of Ophthalmology
Professor of Ophthalmology, School of Medicine Oregon Health & Science University
Title: "Pathological Surgery: What We All Should Know About the Surgery We Do"

February 6, 2023
Hosted by Robert N. Weinreb, MD
Moderated by Don O. Kikkawa, MD
Guest Lecturer: Timothy McCulley, MD
Professor and Chair of the Ruiz Department of Ophthalmology and Visual Science at McGovern Medical School, Houston, Texas, The University of Texas Health Science Center
Title: "Intracranial Pressure and the Eye"

February 13, 2023
Hosted and moderated by Robert N. Weinreb, MD

February 27, 2023
Hosted by Robert N. Weinreb, MD
Moderated by Natalie A. Afshari
Guest Lecturer: Kathryn A. Colby, MD, PhD
Elisabeth J. Cohen, MD Professor of Ophthalmology, Chair, Department of Ophthalmology at NYU Grossman School of Medicine
Title: "Innovation in Ophthalmology: The Evolution of Corneal Surgery"

March 13, 2023
Hosted by Robert N. Weinreb, MD
Guest Lecturer: Christopher Toomey, MD, PhD
Assistant Professor of Clinical Ophthalmology, Shiley Eye Institute, University of California, San Diego
Title: "Clinical Use of Pegcetacoplan (SYFOVRE) for Geographic Atrophy Secondary to AMD"

March 27, 2023
Hosted and moderated by Robert N. Weinreb, MD
Guest Lecturer: Angela R. Elam, MD
Assistant Professor, Department of Ophthalmology & Visual Sciences, Associate Chair for Diversity, Equity, and Inclusion, University of Michigan
Title: "Achieving Equity in Ophthalmology: Where Do We Go from Here?"

April 17, 2023
Hosted and moderated by Robert N. Weinreb, MD
Guest Lecturer: Michele C. Lim, MD
Professor of Ophthalmology, Vice Chair & Medical Director, UC Davis Health, Ernest E. Tschannen Eye Institute
Title: "Filling the Gap: Less Invasive Glaucoma Surgery for More Invasive Glaucoma Disease"

May 15, 2023
Moderated by Shira Robbins, MD
Introduction by David Granet, MD
Guest Lecturer: Stephen Christiansen, MD
Chairman, Professor of Ophthalmology and Pediatrics, Department of Ophthalmology, Boston Medical Center (BMC) and Boston University Chobanian & Avedisian School of Medicine
Title: "Strabismus when there's Hardware in the Eye (Glaucoma, Retina & More)"

Education: Physicians

VISION RESEARCH LECTURES

The Vision Research Lecture Series addresses the latest advances in vison science and clinical ophthalmology. Each Presentation features UC San Diego Department of Ophthalmology's faculty, as well as a selection of leading vision scientists from around the globe.

September 9, 2022
Hosted by Radha Ayyagari, PhD
Guest Lecturer: Patricia Becerra, PhD
Senior Investigator
National Institutes of Health
Title: "PEDF Deficiency Increases the Susceptibility to Retinal Degeneration and Induces Senescence in the RPE"

October 6, 2022
Hosted by Sasan Moghimi, MD
Guest Lecturer: Arsham Sheybani, MD
Associate Professor of Ophthalmology and Visual Sciences
Washington University, School of Medicine
Title: "UC San Diego and Washington U Joint Glaucoma Rounds"

November 10, 2022
Hosted by Sally L. Baxter, MD, MSc
Guest Lecturer: Michael V. Boland, MD, PhD
Associate Professor of Ophthalmology
Harvard Medical School
Site Director, Mass Eye and Ear, Lexington
Medical Director, Practice Innovation for Ophthalmology
Massachusetts Eye and Ear
Title: "Advancing Academic Ophthalmology with Information Technology"

November 17, 2022
Hosted by Radha Ayyagari, PhD
Guest Lecturer: Nawajes Mandal, PhD
Associate Professor
Department of Ophthalmology
Department of Anatomy and Neurobiology
Hamilton Eye Institute
University of Tennessee Health Science Center
Title: "Sphingolipids in the Pathobiology of Eye Diseases and their Translational Relevance"

December 8, 2022
Hosted by Radha Ayyagari, PhD
Guest Lecturer: Sheikh Amer Riazuddin, PhD, MS
Associate Professor of Ophthalmology
Wilmer Eye Institute, Johns Hopkins University School of Medicine
Title: "The promise of Molecular Genetics: Structure, Function, and Personalized Medicine"

December 13, 2022
Hosted by Sally L. Baxter, MD, MSc
Guest Lecturer: Alvin Liu, MD
Assistant Professor of Ophthalmology
Johns Hopkins University
Title: "Artificial Intelligence Initiatives at Johns Hopkins Medicine and the Wilmer Eye Institute"

January 12, 2023
Hosted by Sally L. Baxter, MD, MSc
Guest Lecturer: Lou Pasquale, MD
Professor of Ophthalmology
Mount Sinai Hospital and NYEE Eye and Vision Research Institute
Title: "Automating Clinical trial endpoints: Proof of principle in the Idiopathic Intracranial Hypertension Treatment Trial"

January 19, 2023
Hosted by Radha Ayyagari, PhD
Guest Lecturer: Sudha K Iyengar, PhD
Professor and Vice Chair for Research, Department of Population and Quantitative Health Sciences, Professor for the Department of Genetics and Genome Sciences, and Professor for the Department of Ophthalmology and Visual Sciences
Case Western Reserve University School of Medicine
Title: "Surveying Eye Health in Diverse Populations Through the Electronic Health Record and Genetic Looking Glass"

January 25, 2023
Hosted by Jiun Do, MD, PhD
Guest Lecturer: Benjamin Xu, MD, PhD
Assistant Professor of Ophthalmology and Director of Inpatient Ophthalmology Service
USC Roski Eye Institute
Title: "UC San Diego and USC Joint Glaucoma Rounds"

February 9, 2023
Hosted by Sally L. Baxter, MD, MSc
Guest Speaker: Durga Borkar, MD
Assistant Professor of Ophthalmology
Duke Eye Center/Duke University
Title: "Emerging Applications of Ophthalmology EHR Registries: the IRIS Registry as a Case Study"

February 10, 2023
Hosted by Derek S. Welsbie, MD, PhD
Guest Speaker: Kevin K. Park, PhD
Professor of Neurological Surgery and Director of Viral Vector Core at UM
University of Miami Miller School of Medicine
Title: "Mechanisms underlying Axonal Plasticity, Target Selection and Survival: Insights from Retinal Cells"

February 16, 2023
Hosted by Radha Ayyagari, PhD, Dirk-Uwe Bartsch, PhD, and Wonkyu "Daniel" Ju, PhD
Guest Speaker: Veronica Gomez Godinez, PhD
Associate Project Scientist
University of California, San Diego
Title: "Cellular Biophotonics Toolbox"

March 9, 2023
Hosted by Sally L. Baxter, MD, MSc
Guest Speaker: April Maa, MD
Associate Professor, Dept of Ophthalmology
Emory University
Title: "Ophthalmologic Telemedicine: See all the Possibilities"

April 6, 2023
Hosted by Robert N. Weinreb, MD
Guest Speaker: Bo Chen, PhD
Director of the Ocular Stem Cell Program
Associate Professor, Department of Ophthalmology, Cell, Developmental and Regenerative Biology, and Neuroscience
Icahn School of Medicine at Mount Sinai
Title: "Neuroprotective and Regenerative Strategies for Vision Restoration"

April 13, 2023
Hosted by Sally L. Baxter, MD, Msc
Guest Speaker: J. Peter Campbell, MD, MPH
Associate Professor of Ophthalmology
Oregon Health & Science University
Title: "Imaging and Informatics in ROP"

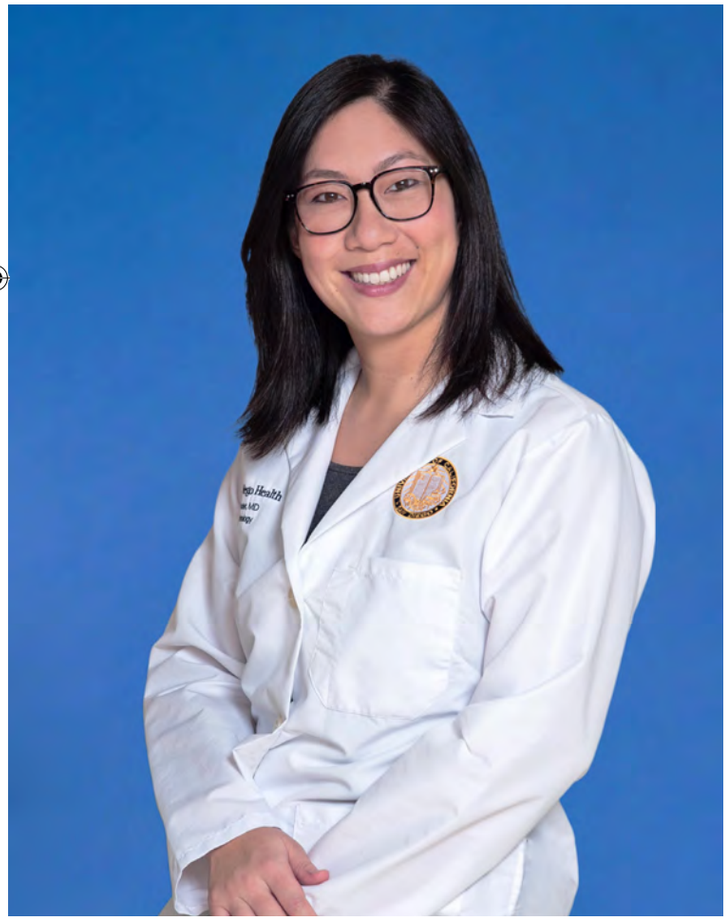
May 11, 2023
Hosted by Sally L. Baxter, MD, MSc
Guest Speaker: Jennifer K. Sun, MD, MPH
Associate Professor of Ophthalmology
Massachusetts Eye and Ear Infirmary
Title: "DRCR Retina Network Approach for Data Sharing and Management"

May 25, 2023
Hosted by Radha Ayyagari, PhD
Guest Speaker: Muayyad R. Al-Ubaidi, PhD
Moores Professor of Biomedical Engineering
University of Houston
Title: "Role of Flavins in Retinal Health and Disease"

Summer Student Research Symposium

The Shiley Eye Institute and Viterbi Family Department of Ophthalmology sponsored a student symposium on August 28, 2023, to showcase the research from our National Eye Institute funded T35 summer student research program (STRIVE) and our senior medical students applying to ophthalmology residency. The student presentations were as follows:

Sally Baxter, MD, MSc
Principal Investigator of the T35 Program



Kaela Acuff
University of California San Diego (UCSD)
Senior Medical Student

Title: "Associations between Socioeconomic Factors and Visit Adherence among Patients with Glaucoma in the All of Us Research Program"

Faculty on Project: **Robert N. Weinreb, MD** and **Sally L. Baxter, MD, MSc**

Acuff analyzed the association between socioeconomic factors and visit adherence among patients with glaucoma in the All of Us Research Program, finding that lower education levels and lower income levels were associated with lower odds of seeing an eye care provider in the last 12 months. Notably, race was not significantly associated with visit adherence, as has been reported in prior studies. These findings highlight an important health disparity and may inform subsequent interventions to promote improved adherence to clinical guidelines regarding eye care for glaucoma monitoring and management.

Ivan Copado
University of California San Diego (UCSD)
Senior Medical Student

Title: "Disparities in Vision and Eye Care Utilization among Refugee and Migrant Populations in San Diego County"

Faculty on Project: **Sally L. Baxter, MD, MSc**

The research presented investigated the vision and eye care utilization patterns of refugee and migrant individuals

compared to control subjects in San Diego County. Copado established eligibility criteria using electronic health records (EHR) from UC San Diego Health Medical Centers. They examined a cohort of 64 refugee/migrant participants alongside 95 controls matched by country of origin, sex, and age. The results revealed significant differences, with refugee/migrant participants demonstrating higher enrollment in government-sponsored insurance programs, predominantly Medicaid, when compared to controls, fewer eye care encounters but increased ophthalmologist visits and procedures, underscoring the need for targeted interventions to enhance access to comprehensive eye care, potentially involving improved insurance coverage and collaboration with community organizations.

Leo Meller
University of California
San Diego (UCSD)
UCSD Research Trainee

Title: "Association between Alcohol Use and Glaucoma using the National Institutes of Health All of Us Research Program"

Faculty on Project: **Sally L. Baxter, MD, MSc**

Meller utilized the National Institutes of Health All of Us Research Program to examine the association between alcohol use and glaucoma. His results indicated that alcohol use at least 2-3 times a week significantly increases the odds of glaucoma status. His research provides insight on another modifiable risk factor for glaucoma.

Karla Murillo
University of California
Los Angeles (UCLA)
UCSD Research Trainee

Title: "Visual Field Progression Rate and Laminar Depth in the African Descent and Glaucoma Evaluation Study (ADAGES)"

Faculty on Project: **Linda M. Zangwill, PhD** and **Nathan L. Scott, MD, MPP**

Murillo's objective was to determine the association between visual field progression rate and laminar depth in the ADAGES cohort. Preliminary analysis of 13,600 Spectralis Optical Coherence Tomography optic nerve head images showed statistically significant relationships between faster visual field progression rates with deeper laminar depth, older age, and higher intraocular pressure. The study shows that lamina cribrosa change is independently associated with decreasing visual field performance, which links posterior remodeling of lamina cribrosa to progressive functional loss.

Andrew Tran
University of California
San Diego (UCSD)
Senior Medical Student

Title: "Characterizing Retinal Fibrosis in a Novel Mouse Model of Ischemic Retinopathy"

Faculty on Project: **Eric Nudleman, MD, PhD** and Richard Daneman, PhD

Tran reported findings from his investigation of a novel mouse model of ischemic retinopathy using imaging and functional studies in vivo. Employing fundus photography, optical coherence

tomography, and electroretinogram, he discovered mice exposed to the experimental condition exhibited retinal hemorrhage, persistent preretinal fibrotic plaque, retinal atrophy, and vision loss. This discovery indicates this mouse model's usefulness in elucidating therapeutic targets and windows in the pathogenesis of fibrovascular change seen in diseases such as retinopathy of prematurity and diabetic retinopathy.

Luke Valmadrid
University of California San Diego (UCSD)
UCSD Research Trainee

Title: "Auto Regulation as a Biomarker for Diabetic Retinopathy: Retinal Imaging in Different Postures"

Faculty on Project: **Eric Nudleman, MD, PhD** and **John H.K. Liu, PhD**

Mentored by **Eric Nudleman, MD, PhD** through the STRIVE program, Valmadrid is working on a pilot phase of retinal imaging in different postures using the handheld Remidio Fundus on Phone camera to characterize autoregulation as a biomarker for diabetic retinopathy and to assess the ability to evaluate retinal vessel autoregulation using standard clinical retinal pictures. Core research team members include Malvika Arya, MD, PhD, Jimmy Chen MD, and **John H.K. Liu, PhD**.

Jason Zhou
University of Maryland School of Medicine
UCSD Research Trainee

Title: "Use of EHR to Extract Normative Eyelid Measurements"

Faculty on Project: **Don O. Kikkawa, MD, FACS**

A retrospective single-institution EHR extraction was done on all adult patients seen by SEI's Division of Oculoplastics. Zhou was primarily looking to identify and discriminate normative MRD1 measurements by age group, ethnicity, race, and sex; and secondarily comparing the data entry methods, Kaleidoscope, and progress notes. He found age group and race to be promising predictors of MRD and found a significant mean difference of 0.25mm between Kaleidoscope and progress notes.

New Educational Program @ SEI

Global Ophthalmology and Advanced Leadership Program (GOAL)

The Viterbi Family Department of Ophthalmology and the Division of Preventive Medicine in the Department of Family Medicine at UC San Diego and the Graduate School of Public Health at San Diego State University (SDSU) have partnered to form the Global Ophthalmology and Advanced Leadership Program (GOAL).

Originally conceived by Vice Chair and Professor **David B. Granet, MD**, after completing his own graduate degree from the Harvard Chan School of Public Health, the Ophthalmology faculty quickly supported the idea.

"We are proud to kick off this unique and innovative program that aligns with and extends the Shiley Eye Institute mission identifying, treating and preventing vision disorders," said **Robert N. Weinreb, MD**.

The objective of the program is to train individuals to contribute as future leaders in global and preventive ophthalmology as well as impacting the systemic biases that affect equity in ophthalmic research and healthcare.

After completing PGY1 (the internship part of residency), participants will enter a four-year program (PGY2 through PGY5), combining ophthalmology residency, preventive medicine residency, and course work for a Master's Degree in Public Health (MPH). Upon completion of the program, graduates will be eligible for dual boards in Ophthalmology and Preventive Medicine, as well as receive an MPH from SDSU.

They will have the knowledge and leadership skills to design and implement population based and public health-focused research and interventions, as well as broader ophthalmologic research that are applicable on a local and global scale. During the PGY5 year, the program affords the opportunity to maintain clinical skills in ophthalmology as an attending physician and surgeon. **Rebecca Lian, MD**, who holds a Phi Beta Kappa undergraduate degree from UC Berkley in Public Health, will be the first Resident to enter the program.

David B. Granet, MD

Jeffrey Lee, MD

Rebecca Lian, MD

Christopher Toomey, MD, PhD Receives RPB Career Development Award

Christopher Toomey, MD, PhD, Assistant Professor of Ophthalmology, at the Shiley Eye Institute (SEI) and Viterbi Family Department of Ophthalmology has been awarded the Research to Prevent Blindness (RPB) Career Development Award. Toomey, a clinician-scientist, was nominated by **Robert N. Weinreb, MD**, Chair and Distinguished Professor, Viterbi Family Department of Ophthalmology. This award aims to support promising junior ophthalmology faculty who have demonstrated their potential for independent research.

Toomey expressed his appreciation saying, "The award is a great honor," and "Foundations like Research to Prevent Blindness address a big need for funding of the basic sciences."

The grant awarded to Toomey will support his ongoing research on age-related macular degeneration (AMD). It is a common condition and is a leading cause of vision loss for older adults. "About 20% of the population above the age of 70 has the disease," said Toomey.

Current AMD treatments are for patients who have vision loss and are in the late stages of their disease. The AMD research that Toomey is doing is focused on finding treatments to prevent the disease prior to the onset of vision loss. His goal is to treat people early on so they can be spared of all the complications associated with AMD. Toomey is a member of the Glycobiology Research and Training Center at UC San Diego. He works closely with Jeffrey Esko, PhD, Distinguished Professor, Department of Cellular and Molecular Medicine.

Toomey's research is focused on the role of glycans, "sugar-chains", that cause extracellular aggregates of cellular debris and lipids in patients with AMD. Toomey says that, "once we characterize the binding dynamics between the debris and the glycans, we can develop therapeutics to cleanse the eye of these aggregates early in the disease process." Notably, he was invited to present his research to Congress last year to emphasize the importance of preventative treatments.

Christopher Toomey, MD, PhD
Assistant Professor of Ophthalmology
Uveitis

The recent $350,000 RPB Career Development Award granted to Toomey adds to the over $5,000,000 that RPB has contributed to SEI since 1984. For over 63 years, RPB has supported researchers who were associated with nearly every breakthrough related to understanding the treatment of vision loss.

SEI Awarded UG3 Grant for Glaucoma Gene Therapy

Wonkyu "Daniel" Ju, PhD, Professor in the Viterbi Family Department of Ophthalmology, and the Shiley Eye Institute (SEI), was awarded $1,530,352 in UG3 grant funding by the National Institutes of Health (NIH) to support the development of novel gene therapy to reduce retinal neuroinflammation and provide effective neuroprotection to glaucoma patients.

Glaucoma remains a leading cause of global blindness by damaging the nerve in the back of the eye called the optic nerve. The symptoms start gradually so that they may not even be noticed. There is no cure for glaucoma, but early treatment can often stop the damage and protect sight. Therapies include eye drops, laser treatment or surgery.

Emerging evidence suggests that glia-neuroinflammation is a critical element that leads to retinal ganglion cell (optic nerve cell) death and optic nerve degeneration in the development of glaucoma. According to Ju, "These studies will develop a novel gene therapy to reduce retinal neuroinflammation and mitochondrial dysfunction as well as provide effective neuroprotection to glaucoma patients."

If successful, IND-enabling studies will be conducted at UC San Diego in order to obtain FDA approval for the first-in-human trial. Co-Investigator **Robert N. Weinreb, MD**, Distinguished Professor and Chair of the Department of Ophthalmology, notes that "This prestigious grant is a groundbreaking moment as it's the first time a glaucoma genetic therapeutic approach, spanning preclinical and clinical trials, has been awarded NIH funding."

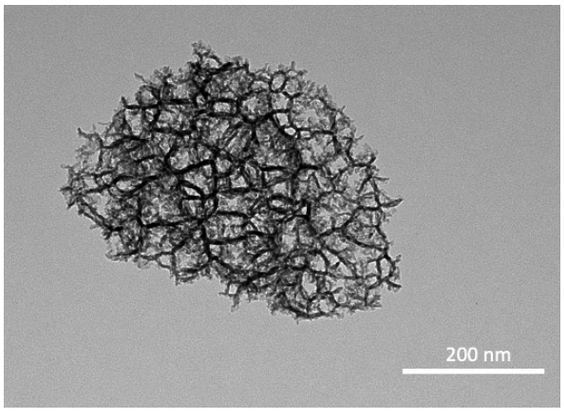
The project is a collaborative endeavor that draws upon the collective strengths and resources of UC San Diego, RAFT Pharmaceuticals, and the NIH Blueprint Neurotherapeutics Network – Biologic.

Wonkyu "Daniel" Ju, PhD
Professor
Glaucoma

New NIH Grant

William R. Freeman, MD, Distinguished Professor of Ophthalmology and Vice Chair, was awarded an R01 four-year research grant from the National Institutes of Health (NIH) to improve drug delivery directly into retinal cells.

As Director of the Irwin and Joan Jacobs Retina Center and Co-Director of the Retina Division, Freeman has been collaborating with Michael Sailor, PhD, Distinguished Professor of Chemistry and Biochemistry at UC San Diego, along with visiting scholar Joel Grondek, PhD. Freeman and Sailor have previously worked on ways to deliver drugs into the center of the eye using microparticles of porous oxidized silicon. The current grant takes this a step further by making particles even smaller (nano sized) and encapsulating drugs in these subcellular size sponges that cells absorb. This interaction alters the cellular metabolism to favorably affect a host of retinal diseases including diabetes and macular degeneration.



A porous silicon nanoparticle. The nanoparticle contains microscopic voids that can be loaded with drugs. The voids capture and then slowly release the drug, prolonging the beneficial effects of the drug. Photo Credit: Gabriella Stark, UCSD
Note that the scale bar of 200 nanometers is 1/5 of a micron ie 1/5 of a thousandth of a millimeter. Or 1/100 the size of the width of a human hair.

This new method of drug intake promises to be a long-acting therapy requiring less frequent injections to reduce new vessel growth and stop abnormal disease processes. By being able to place drugs in a nano sized drug carrier directly into retinal cells, the duration of action and efficacy of drugs for macular degeneration, diabetes and other retinal degenerations will be enhanced.

William Freeman, MD
Distinguished Professor of Ophthalmology
Retina & Vitreous

Congratulations

DaNae R. Woodard, PhD

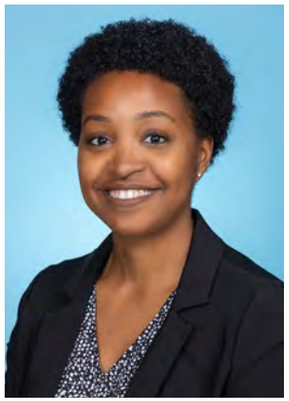
DaNae R. Woodard, PhD, is a post-doctoral fellow and Institutional Research and Academic Career Development Awardee (IRACDA) (K12) at the Shiley Eye Institute (SEI) in the **Radha Ayyagari, PhD** laboratory. In her research project "Investigating the role of MFRP in early-onset retinal degeneration" she has recognized that knocking out the Mfrp gene in mice leads to early-onset abnormalities in photoreceptors and RPE. Her research focuses on deciphering the mechanisms that lead to MFRP-associated retinal degeneration and the function of MFRP.

Woodard was awarded a prestigious travel grant to the International Symposium on Retinal Degeneration (RD) 2023 meeting in Spain. Her presentation was titled "Integrative single-nucleus multi-omic analysis of retinal cell types involved in early-onset retinal degeneration due to the loss of MFRP." This grant covered all travel related expenses and conference fees.

Anne Marie Berry

San Diego native Anne Marie Berry is a UC San Diego master's student researcher in the laboratory of **Radha Ayyagari, PhD** at the Shiley Eye Institute (SEI). Berry is a part of the Contiguous BS/MS Program at UC San Diego, which allowed her to immediately go into her master's program following her undergraduate degree.

Berry's research is centered on employing single-cell genomics to investigate retinal degeneration, with a particular emphasis on aging. Berry was awarded an esteemed travel grant enabling her to attend and give a presentation at the International Symposium on Retinal Degeneration (RD) 2023 meeting in Spain.



DaNae R. Woodard, PhD

Anne Marie Berry

Grants 2023

Division	Faculty	Title	Project Period	Funding Agency
Cornea	Afshari, Natalie, MD	Whole Exome Sequencing for Variant Discovery in Fuchs Endothelial Corneal Dystrophy	11/01/2021-10/31/2023	NIH/NEI
Cornea	Afshari, Natalie, MD	Application of RNA-targeting Cas9 to Fuchs Dystrophy	04/01/2018-03/31/2023	NIH
Glaucoma	Baxter, Sally, MD, MSc	Multi-modal Health Information Technology Innovations for Precision management of Glaucoma	09/10/2020-08/31/2025	NIH/NEI
Glaucoma	Baxter, Sally, MD, MSc	Supplemental Graduate Student Support for Multi-modal Health Information Technology Innovations Project	09/01/2021-08/31/2022	NIH/NEI
Glaucoma	Baxter, Sally, MD, MSc	Short-Term Research Training In Vision and Eye Health (STRIVE)	04/2022-03/2027	NIH/NEI
Glaucoma	Baxter, Sally, MD, MSc	Bridge2AI Salutogenesis Project	09/2022-08/2024	NIH Common Fund
Glaucoma	Baxter, Sally, MD, MSc	OT2 Bridge to Artificial Intelligence (Bridge2AI) Program - Skills Development	09/01/2022-08/31/2027	NIH/NEI
Glaucoma	Christopher, Mark, PhD	Deep Learning Approaches to Detect Glaucoma and Predict Progression from Spectral Domain Optical Coherence Tomography	08/01/2020-07/31/2022	NIH/NEI
Glaucoma	Christopher, Mark, PhD	AI-Based Identification of Rapid Glaucoma Progression to Guide Clinical management and Accelerate Clinical Trials	04/01/2023-03/31/2026	NIH/NEI R01
Glaucoma	Do, Jiun, MD, PhD	Development of Optic Nerve Relays to Restore Retinofugal Connections	09/01/2021-08/31/2024	NIH/NEI
Glaucoma	Do, Jiun, MD, PhD	Optic Nerve Relays for the Restoration of Visual Function	01/01/2021-03/15/2023	Glaucoma Research Foundation
Glaucoma	Do, Jiun, MD, PhD	Stem Cell-Derived Optic Nerve Relays to Restore Vision	03/01/2022-03/31/2024	America Glaucoma Foundation
Glaucoma	Huang, Alex, MD	Dynamic Variable Aqueous Humor Outflow and Glaucoma Therapies in the Human Eye	05/01/2020-04/30/2025	NIH/NEI
Glaucoma	Huang, Alex, MD	Exercise Countermeasure to Prevent Ocular Structural and Functional Changes in a Terrestrial Model of SANS	08/22/2022-08/21/2025	NASA
Glaucoma	Huang, Alex, MD	iSAFE (Investigating Structure and Function of the Eye)	08/26/2022-09/30/2035	NASA
Glaucoma	Huang, Alex, MD	Novel Ocular Imaging and Molecular Analysis of Anterior Eye Segment for Glaucoma	03/01/2023-02/29/2028	Northwestern University; NIH/NEI as Prime
Glaucoma	Ju, Wonkyu, PhD	Mitochondrial Protection in Glaucomatous Optic Neuropathy	09/01/2020-06/30/2024	NIH/NEI

Division	Faculty	Title	Project Period	Funding Agency
Glaucoma	Ju, Wonkyu, PhD	Mitochondrial Protection in Glaucomatous Optic Neuropathy (Seahorse Analyzer)	09/01/2022-08/31/2023	NIH/NEI
Glaucoma	Ju, Wonkyu, PhD	AAV-AIBP Therapy for Alzheimer's Disease	09/30/2022-05/31/2024	NIH/NEI
Glaucoma	Ju, Wonkyu, PhD	Neuroprotective Role of Sirt6 in Glaucoma	06/01/2020-05/31/2025	NIH/NEI
Glaucoma	Ju, Wonkyu, PhD	CXCR3-mediated Cell-cell Communication During Glaucoma	09/01/2022-07/31/2027	NIH/NEI
Glaucoma	Ju, Wonkyu, PhD	Reversing Microglial Inflammarafts and Mitochondrial Dysfunction in Alzheimer's	09/01/2022-08/31/2027	NIH/NEI
Glaucoma	Moghimi, Sasan, MD	Monitoring of Glaucoma Patients in Advanced Disease	09/01/2022-08/31/2027	NIH/NEI R01
Glaucoma	Weinreb, Robert, MD	Ophthalmology and Visual Sciences Career Development K12 Program	04/01/2015-07/31/2026	NIH/NEI K12
Glaucoma	Weinreb, Robert, MD	Unrestricted and Challenge Grant - Research to Prevent Blindness	01/01/2023-12/31/2027	Research to Prevent Blindness
Glaucoma	Weinreb, Robert, MD	Diagnosis and Monitoring of Glaucoma with Optical Coherence Tomography Angiography	05/01/2018-04/30/2025	NIH/NEI R01
Glaucoma	Weinreb, Robert, MD	A Randomized, single Center, Masked, Crossover Study Comparing the Effects of Latanoprostene Bunod and Timolol on Retinal Blood Vessel Density and Visual Acuity in Patients with Ocular Hypertension or Primary Open Angle Glaucoma	09/14/2018-08/31/2023	Bausch & Lomb
Glaucoma	Weinreb, Robert, MD	iGLAMOUR Study: Innovations in Glaucoma Adherence and Monitoring of Under-Represented Minorities	01/15/2021-12/31/2024	NIH/NIMDH R01
Glaucoma	Welsbie, Derek, MD, PhD	Kinase Multitargeting for Glaucoma Neuroprotection	07/01/2018-06/30/2023	NIH/NEI R01
Glaucoma	Welsbie, Derek, MD, PhD	High-Throughput Functional Genomic Screening in Retinal Ganglion Cells	02/01/2019-01/31/2025	Glaucoma Research Foundation
Glaucoma	Welsbie, Derek, MD, PhD	Developing an Optic Nerve Relay for Vision Restoration	01/01/2020-12/31/2022	Research to Prevent Blindness
Glaucoma	Welsbie, Derek, MD, PhD	Development of Small Molecule and Gene Therapy Approaches to Inhibit Dual Leucine Zipper Kinase and Accessory Pathways for Retinal Ganglion Cell Neuroprotection	08/01/2020-07/31/2024	Perceive Biotherapeutics
Glaucoma	Welsbie, Derek, MD, PhD	Kinase Multitargeting for Glaucoma Neuroprotection	09/01/2022-06/30/2023	NIH/NEI
Glaucoma	Zangwill, Linda, PhD	OT2 Bridge to Artificial Intelligence (Bridge2AI) Program - Data Generation Multimodal Artificial Intelligence to Predict Glaucomatous Progression and Surgical Intervention	09/01/2022-08/31/2027	NIH/NEI

GRANTS

Division	Faculty	Title	Project Period	Funding Agency
Glaucoma	Zangwill, Linda, PhD	Multimodal Artificial Intelligence to Predict Glaucomatous Progression and Surgical Intervention	09/01/2022-08/31/2026	NIH/NEI
Glaucoma	Zangwill, Linda, PhD	Diagnostic Innovations in Glaucoma Study (DIGS): High Myopia and Advanced Diseases	09/01/2022-08/31/2027	NIH/NEI
Glaucoma	Zangwill, Linda, PhD	Translational Vision Research Training at UCSD	04/01/2016-06/30/2026	NIH/NEI
Glaucoma	Zangwill, Linda, PhD	Personalized Forecasting of Disease Trajectory for Patients with Open Angle Glaucoma	09/01/2016-08/31/2022	NIH/NEI
Glaucoma	Zangwill, Linda, PhD	Dietary Interventions to Improve Vision	11/01/2016-10/31/2022	Krupp Endowment
Glaucoma	Zangwill, Linda, PhD	P30 NEI Center Core Grant for Vision Research	09/01/2023-04/30/2028	NIH/NEI
Glaucoma	Zangwill, Linda, PhD	A Randomized Clinical Trial Evaluating Fenofibrate for Prevention of Diabetic Retinopathy Worsening	10/01/2021-09/30/2026	NIH/DRCR
Glaucoma	Zangwill, Linda, PhD	Forecasting Disease Progression using Artificial Intelligence	01/01/2022-12/31/2024	Glaucoma Research Foundation
Glaucoma	Zangwill, Linda, PhD	Improve OCT Detection of Optic Nerve Head (ONH)	07/01/2020-12/31/2026	GMOPC
Glaucoma	Zangwill, Linda, PhD	Glaucoma Myopia Optical Coherence Tomography Phenotype Consortium	01/01/2022-12/31/2024	Heidelberg Engineering
Glaucoma	Zangwill, Linda, PhD	AI-Based Identification of Rapid Glaucoma Progression to Guide Clinical Management and Accelerate Clinical Trials	09/01/2022-08/31/2024	NEI/NIH
Pediatrics	Molina, Iliana, MS	City Heights Partnership Price Foundation and UCSD Eyemobile for Children	01/01/2022-12/31/2025	Price Foundation
Pediatrics	Rudell, Jolene, MD, PhD	The Effects of Bupivacaine on Extraocular Muscles as a Treatment for Strabismus	12/01/2022-11/30/2024	UCSD/ACTRI
Pediatrics	Rudell, Jolene, MD, PhD	Role of Fibroblast Growth Factor Signaling in a Genetic Model of Strabismus	12/01/2022-11/30/2024	Strabismus Research Foundation
Pediatrics	Rudell, Jolene, MD, PhD	Role of a Craniosynostosis Associated Fibroblast Growth Factor Receptor Mutation in Extraocular Muscles	06/01/2023-05/31/2028	NIH/NEI K08
Retina	Ayyagari, Radha, PhD	Identification of the Elusive Genetic Causality of Inherited Retinal Degenerations (IRDs)	12/01/2018-11/30/2023	The Foundation Fighting Blindness
Retina	Ayyagari, Radha, PhD	Molecular Mechanism Underlying Late-onset Retinal/ Macular Degeneration	09/01/2020-06/30/2024	NIH/NEI
Retina	Ayyagari, Radha, PhD	Unraveling the Molecular Pathology of Retinal Degeneration through Single Cell Genomics	06/01/2021-05/31/2026	NIH/NEI
Retina	Ayyagari, Radha, PhD	Expert Curation of Clinically Significant Variants in Genes for Early Onset Retinal Degeneration	07/01/2022-05/31/2023	UCSF; NIH/NEI as Prime
Retina	Borooah, Shyamanga, MD,PhD	Combining the Utility of Human Induced Pluripotent Stem Cell Modeling and CRISPR-Cas9 Gene Editing with Adenoassociated Virus Vector Gene Delivery to Develop and Optimize Novel Gene Editing in Inherited RPE Disease	09/01/2018-08/31/2023	The Foundation Fighting Blindness

Division	Faculty	Title	Project Period	Funding Agency
Retina	Ferrara, Napoleone, MD	Long Novel-Acting Inhibitors of Vascular Endothelial Growth Factor (VEGF) for Treatment of Intraocular Vascular Disorders; Co-I: Eric Nudleman, MD, PhD	04/01/2020-03/31/2025	NIH/NEI R01
Retina	Freeman, William MD	Intracellular RNA Nanoparticle Therapeutics to Treat Retinal Neovascularization	09/01/2023-05/31/2027	NIH/NEI R01
Retina	Freeman, William MD [CO-PI]	SCH: Multimodal Retina Image Alignment and Applications	09/01/2021-08/31/2025	NIH/NEI R01
Retina	Nudleman, Eric, MD, PhD	Cellular and Molecular Mechanisms of Retinal Fibrosis	06/01/2023-05/31/2024	NIH/NEI
Retina	Nudleman, Eric, MD, PhD	RPB Stein Innovation Award	01/01/2022-12/31/2024	Research to Prevent Blindness
Retina	Oesch, Nicholas, PhD	Computing Luminance and Contrast in Prosthetically Driven Retina	09/30/2018-06/30/2024	NIH/NEI
Retina	Toomey, Christopher, MD, PhD	RPB Career Development Award	07/01/2023-12/31/2027	Research to Prevent Blindness
Retina	Toomey, Christopher, MD, PhD	Robert Machemer MD and International Retinal Research Foundation Fellowship	10/01/2022-10/31/2023	Robert Machemer Foundation
Stem Cell	Wahlin, Karl, PhD	Endogenous Generation of Cone Photoreceptors to Increase Light Responses in Foveal Hypoplasia	07/01/2020-06/30/2024	Vision of Children
Stem Cell	Wahlin, Karl, PhD	Pluripotent Stem Cell Derived 3D Retinas for Studies of Early Onset Retinal Degeneration	04/01/2020-03/31/2025	NIH/NEI R01
Stem Cell	Wahlin, Karl, PhD	Correlating Genomic AMD Risk Variants with Lipid Composition and Phagocytic Function of Patient-Derived Induced Pluripotent Stem Cell (iPSC)-derived Retinal Pigment Epithelium (RPE)	09/30/2022-08/31/2025	UCI; NIH/NEI as Prime
Stem Cell	Wahlin, Karl, PhD	Endogenous Repair in a Human 3D Retinal Organoid Model of Leber Congenital Amaurosis	07/01/2022-06/30/2025	The Foundation Fighting Blindness

Clinical Trials 2023

Division	Principal Investigator	Title	Project Period	Funding Agency
Cornea	Afshari, Natalie, MD	Phase 1 Safety Run-In and Phase 2 Randomized Clinical Trial of Anetumab Ravtansine and MK-3475 (Pembrolizumab) Compared to MK-3475 (Pembrolizumab) alone for Mesothelin-Positive Malignant Pleural Mesothelioma	07/09/2019-03/01/2023	National Cancer Institute (NCI)
Cornea	Heichel, Christopher, MD	A Thirteen-year Study of the Indications and Visual Outcomes of Capsular Tension Ring Implantation in Cataract Surgery 2016	07/01/2016-06/30/2029	
Cornea	Haw, Weldon, MD	A Phase 3, Multi-Center, Randomized, Paralel, Double Masked, Placebo-Controlled Clinical Study to Assess the Safety and Efficacy of 0.1% RGN-259 Ophthalmic Solution for the Treatment of Neurotrophic Keratopathy (SEER-2)	2023	ReGen Tree
Cornea	Haw, Weldon, MD	Multicenter, Double-Masked, Randomized, Vehicle-controlled 12-Month (with a 12 Month, Double Masked Extension) Paralel Comparison of the Safety and Efficacy of XX and XX, Dosed Twice-Daily, in Patients with Pterygium	2022	UCSD School of Medicine
Glaucoma	Camp, Andrew, MD	The Efficacy and Safety of Bimatoprost SR in Patients with Open-angle Glaucoma or Ocular Hypertension	04/01/2020-03/31/2023	Allergan
Glaucoma	Camp, Andrew, MD	An Extension Trial to Evaluate the Long-term Safety and Efficacy of Bimatoprost SR in Patients with Open Angle Glaucoma or Ocular Hypertension	09/08/2017-01/23/2024	Allergan
Glaucoma	Weinreb, Robert, MD	Evaluate Clinical Big Data Provided by TOPCON and Derived from OCT Devices	07/01/2022-06/30/2026	TOPCON
Glaucoma	Zangwill, Linda, PhD	Multi-center Study for a Reference Database of Optic Nerve Head, Retinal Nerve Fiber Layer, and Macula Parameters Measured with the Heidelberg Spectralis OCT within a Hispanic Population	02/27/2018-01/31/2023	Heidelberg Engineering
Glaucoma	Zangwill, Linda, PhD	Multi-center Study for a Reference Database of Optic Nerve Head, Retinal Nerve Fiber Layer, and Macula Parameters Measured with the Heidelberg Spectralis OCT within an African-American Population	02/27/2018-01/31/2023	Heidelberg Engineering
Glaucoma	Zangwill, Linda, PhD	Grading the Ocular Images and Datasets for the B-2018-4 Study	06/15/2019-06/14/2023	Heidelberg Engineering
Oculoplastics	Liu, Catherine, MD, PhD	A Phase 4, Randomized, Double-masked, Placebo-controlled, Multicenter Trial to Evaluate the Efficacy and Safety of TEPEZZA in Treating Patients with Chronic (Inactive) Thyroid Eye Disease	03/23/2021-03/22/2031	Horizon Therapeutics USA, Inc.

Division	Principal Investigator	Title	Project Period	Funding Agency
Pediatrics	Robbins, Shira, MD	A Multi-center, Double-masked, Randomized, Placebo-controlled Phase 3 Study of the Safety and Efficacy of Atropine 0.1% and 0.01% Ophthalmic Solutions Administered with a Microdose Dispenser for the Reduction of Pediatric Myopia Progression	04/01/2020-12/31/2025	Eyenovia, Inc.
Retina	Borooah, Shyamanga, MD, PhD	Natural History Study of Patients with X-linked Retinal Dystrophy Associated with Mutations in Retinitis Pigmentosa GTPase Regulator (RPGR)	03/03/2021-09/20/2025	Meiragtx UK II Limited
Retina	Borooah, Shyamanga, MD, PhD	Phenotyping and Genotyping Patients with Achromatopsia in Preparation for Gene Therapy Trials	03/03/2021-03/02/2023	Meiragtx UK II Limited
Retina	Borooah, Shyamanga, MD, PhD	A Phase 2 Randomized Placebo-controlled Double-masked Study to Assess Safety & Efficacy of Multiple Doses of IONIS-FB-LRX an Antisense Inhibitor of Complement FactorB in Patients w/GA 2nd to AMD	12/17/2019-12/31/2032	Ionis Pharmaceuticals, Inc.
Retina	Borooah, Shyamanga, MD, PhD	Open-label, Single Ascending Dose Study to Evaluate the Safety, Tolerability, and Efficacy of EDIT-101 in Adult and Pediatric Participants with Leber Congenital Amaurosis Type 10 (LCA10), with Centrosomal Protein 290 (CEP290)-Related Retinal Degeneration Caused by a Compound Heterozygous or Homozygous Mutation Involving c.2991+1655A>G in Intron 26 (IVS26) of the CEP290 Gene ("LCA10-IVS26")	01/21/2021-01/20/2026	Editas Medicine, Inc.
Retina	Borooah, Shyamanga, MD, PhD	Phase 3 Randomized, Controlled Study of AAV5-hRKp.RPGR for the Treatment of Xlinked Retinitis Pigmentosa Associated with Variants in the RPGR Gene	07/30/2021-07/29/2031	Meiragtx UK II Limited
Retina	Borooah, Shyamanga, MD, PhD	Phase 3 Follow-up Study of AAV5-hRKp.RPGR for the Treatment of X-linked Retinitis Pigmentosa Associated with Variants in the RPGR Gene	08/10/2021-08/09/2031	Meiragtx UK II Limited
Retina	Borooah, Shyamanga, MD, PhD	A Phase 1/2 Study To Assess the Safety and Efficacy of Ocu400 For Retinitis Pigmentosa Associated with Nr2e3 and Rho Mutations	10/18/2022-10/18/2032	Ocugen, Inc.
Retina	Borooah, Shyamanga, MD, PhD	A Double-masked, Randomized, Controlled, Multiple-dose Study to Evaluate the Efficacy, Safety and Tolerability of QR-421a in Subjects with Retinitis Pigmentosa (RP) due to Mutations in Exon 13 of the USH2A Gene with Advanced Vision Loss	06/06/2022-07/05/2032	PROQR THERAPEUTICS IV B.V.
Retina	Borooah, Shyamanga, MD, PhD	GOLDEN STUDY: A Study to Assess Safety and Efficacy of Multiple Doses of IONIS-FB-LRx in Participants with Geographic Atrophy Secondary to Age-Related Macular Degeneration (AMD)	11/2020-	Ionis Pharmaceuticals, Inc.
Retina	Freeman, William, MD	A Multicenter, Open-label, Extension Study to Evaluate the Long-Term Safety and Tolerability of the Port Delivery System with Ranibizumab in Patients with Neovascular AMD [PORTAL]	02/14/2019-06/30/2024	Genentech, Inc.
Retina	Freeman, William, MD	A Phase 2, Prospective, Randomized, Double-masked, Active Comparator-controlled, Multi-center Study to Investigate the Efficacy and Safety of Repeated Intravitreal Administration of KSI-301 in Subjects with Neovascular (Wet) Age-related Macular Degeneration [DAZZLE]	01/30/2020-12/31/2022	Kodiak Sciences, Inc.

CLINICAL TRIALS

Division	Principal Investigator	Title	Project Period	Funding Agency
Retina	Freeman, William, MD	A Phase 3 Multicenter, Randomized, Double-masked, Sham-controlled Clinical Trial to assess the Safety and Efficacy of Intravitreal Administration of ZIMURA™ (Complement C5 Inhibitor) in Patients with Geographic Atrophy Seondary to Dry Age-Related Macular Dengeneration [GATHER2]	06/18/2020-12/31/2023	IVERIC Biosciences
Retina	Freeman, William, MD	A Randomized, Double-masked, Phase 3 Study of ABP 938 Efficacy and Safety Compared to Aflibercept (Eylea®) in Subjects with Neovascular Age-related Macular Degeneration	08/10/2020-12/31/2023	AMGEN Pharmaceuticals
Retina	Freeman, William, MD	Randomized, Double-masked, Active-controlled, Phase 3 Study of the Efficacy and Safety of High Dose Aflibercept in Patients with Neovascular Age-Related Macular Degeneration [PULSAR]	11/17/2020-12/31/2024	BAYER AG
Retina	Freeman, William, MD	A Phase 2, Double-masked, Placebo-controlled, Dose Range Finding Study of Danicopan (ALXN2040) in Patients with Geographic Atrophy (GA) Secondary to Age-related Macular Degeneration (AMD)	05/01/2022-12/31/2023	Alexion Pharma
Retina	Freeman, William, MD	A Prospective, Randomized, Double-masked, Active Comparator-controlled, Multi-center, Two-arm, Phase 3 Study to Evaluate the Efficacy and Safety of Intravitreal KSI-301 Compared with Intravitreal Aflibercept in Participants with Visual Impairment Due to Treatment-naïve Macular Edema Secondary to Retinal Vein Occlusion [BEACON]	03/19/2021-06/30/2022	Kodiak Sciences, Inc.
Retina	Freeman, William, MD	A Prospective, Randomized, Double-masked, Active Comparator-controlled, Multi-center, Two-arm, Phase 3 Study to Evaluate the Efficacy and Safety of Intravitreal KSI-301 Compared with Intravitreal Aflibercept in Participants with Visual Impairment Secondary to Treatment-naïve Diabetic Macular Edema [GLEAM]	04/02/2021-06/30/2022	Kodiak Sciences, Inc.
Retina	Freeman, William, MD	A Phase 3, Open-label, Multicenter, Extension Study to Evaluate the Long-Term Safety and Efficacy of PEGCETACOPLAN in subjects with Geographic Atrophy 2nd to AMD [GALE]	07/01/2021-12/31/2025	Apellis Pharmaceuticals
Retina	Freeman, William, MD	An Open-label Extension Phase 3 Trial to Assess the Safety of Intravitreal Administration of Avacincaptad Pegol (complement C5 Inhibitor) in Patients with Geographic Atrophy who Previously Completed Phase 3 Study ISEE2008 [ISEE2009]	04/26/2023-12/31/2025	IVERIC Biosciences
Retina	Freeman, William, MD	An Open-label Extension Phase 3 Trial to Assess the Safety of Intravitreal Administration of Avacincaptad Pegol (Complement C5 Inhibitor) in Patients with Geographic Atrophy who Previously Completed Phase 3 Study ISEE2008 [ISEE2009]	07/28/2023-12/31/2026	Janssen Research & Development LLC
Retina	Nudleman, Eric, MD, PhD	A 2-year, Three-arm, Multicenter, Randomized, Double-masked, Multicenter, Phase III Study Assessing the Efficacy and Saferty of Brolucizumab vs Aflibercept in Adult Patients with Visual Impairment due to Diabetic Macular Edema [KESTREL]	11/01/2018-06/30/2023	Novartis Pharmaceuticals

Division	Principal Investigator	Title	Project Period	Funding Agency
Retina	Nudleman, Eric, MD, PhD	A Randomized, Controlled, Multi-center Study to Assess the Efficacy, Safety, and Tolerability of Intravitreal Aflibercept Compared to Laser Photocoagulation in Patients with Retinopathy of Prematurity [ROP]	05/06/2020-12/31/2022	Regeneron Pharmaceuticals
Retina	Nudleman, Eric, MD, PhD	An Extension Study to Evaluate the Long-term Outcomes of Patients who Received Treatment for Retinopathy of Prematurity in the VGFTE-ROP-1920 Study [BUTTERFLEYE]	04/20/2021-12/31/2026	Regeneron Pharmaceuticals
Retina	Nudleman, Eric, MD, PhD	Testing Collagen Probes and Bispecific VEGF/Ang-2 Suppression	04/01/2022-04/30/2025	F. Hoffmann-La Roche LTD
Retina	Nudleman, Eric, MD, PhD	A Randomized, Partially Masked, Controlled, Phase 3 Clinical Study to Evaluate the Efficacy and Safety of RGX-314 Gene Therapy in Participants with nAMD [ASCENT]	05/10/2022-12/31/2026	RegenxBio Inc.
Retina	Spencer, Doran, MD, PhD	A Phase III, Multicenter, Randomized, Double-masked, Active Comparator-controlled Study to Evaluate the Efficacy and Safety of Faricimab in Patients with Neovascular Age-related Macular Degeneration [TENAYA]	06/07/2019-06/30/2023	Genentech, Inc.
Retina	Spencer, Doran, MD, PhD	A Phase 3 Randomized, Active-controlled, Double-masked Study to Evaluate the Safety and Efficacy of TRS01 Eye Drops in the Treatment of Subjects with Active Non-infectious Anterior Uveitis including Subjects with Uveitic Glaucoma	12/01/2022-11/30/2024	Tarsier Pharma

Giving Opportunities

For 33 years, the philanthropic support from generous individuals, foundations and corporations has provided the Shiley Eye Institute (SEI) and the Viterbi Family Department of Ophthalmology with valuable resources for patient care, research, education and community service. As a friend of the Department of Ophthalmology, there are several giving options for those who wish to contribute to our tradition of excellence.

Outright Gifts – *Immediate Impact*

Your support in the form of cash, check, credit cards, stocks, marketable securities, wires or property provides immediate impact to our faculty and facility at SEI. 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:

UC San Diego Shiley Eye Institute
9415 Campus Point Drive, MC0946
La Jolla, CA, 92093-0946
(Attention: Karen Anisko Ryan)

Annual Gifts – *Circle of Sight*

Established in 1996, the Circle of Sight is the Shiley Eye Institute's program recognizing donors contributing $250 or more annually to support the Department's crucial needs. Members enjoy exclusive events like Vision Research Lectures, receptions, and opportunities to connect with faculty. Serving as ambassadors in the San Diego community, Circle of Sight members play a vital role in driving our successful initiatives.

Planned/Estate Gifts – *Your Vision for Tomorrow*

Please consider a charitable bequest in your estate plan to contribute to the future of the Shiley Eye Institute and provide direct support to the Viterbi Family Department of Ophthalmology. We are happy to assist you, your attorney, accountant, or tax advisor with the specific bequest language for your will, trust, or retirement account beneficiary designation. This can help reduce the tax impact on your heirs or provide assurance that your assets will benefit those you care about.

Tribute Gifts – *Acknowledge Someone Special*

Contributions can be made in memory, honor or in celebration of a loved one or to mark a special occasion. Consider honoring a particular physician who played a significant role in your eye health. This thoughtful gift not only creates a lasting legacy but also directly supports the Department.

Matching Gifts – *Double your Gift*

Your donations can have an even greater impact as many employers have a matching gift program. Simply obtain a Matching Gift Form from your employer..

Endowments – *Gifts in Perpetuity*

A gift of endowment shows your lasting dedication to the Department of Ophthalmology, as the fund is maintained in perpetuity. This contribution can fund programs, lectures, awards, fellowships, and Chairs. Endowments create a lasting legacy, often carrying the name of the donor or a loved one.

Gifts of Real Estate

Donating real estate is a generous and financially beneficial way to support the Shiley Eye Institute. If you have residential rental units, vacation homes, or other properties that no longer meet your needs, they can be used to support Shiley's programs. Whether it's an outright gift, bargain sale, retained life estate, charitable gift annuity, or charitable remainder trust, real estate offers creative ways to unlock financial security and provide immediate tax benefits while supporting the programs that matter to you at the Shiley Eye Institute.

Each donation directly impacts our patients, faculty, researchers, residents, fellows, and staff, as well as the field of Ophthalmology. We value the partnership with our generous community members who invest in us. Naming opportunities for gifts, such as endowed chairs, laboratories, specialized clinics, and research initiatives, are available. We'd be happy to have a confidential conversation with you to understand how you want your gift to be used.

For further information about donating, please contact:
Karen Anisko Ryan
Phone: 858-534-8017
Email: kanisko@health.ucsd.edu

2024 UPDATED INFORMATION

Your support of SEI can save you money too!

The gift options below offer a few ideas to help you achieve your philanthropic goals along with providing you with financial benefits.

Stocks and Securities: A gift of appreciated securities owned longer than one year can be deducted at fair market value and you will avoid paying capital gains tax on the appreciation.

Qualified Charitable Distributions (QCD): Whether or not you itemize, if you are at least 70½, you can make a QCD from your IRA to support the Shiley Eye Institute. A QCD is not included in your reportable taxable income and, if you take required minimum distributions, a QCD will count toward some or all of that amount. Note that a QCD this year can help you manage your financial situation next year, including your annual Medicare contributions.

Charitable Gift Annuity (CGA): If you are looking to increase your financial security in retirement, consider creating a CGA to provide a guaranteed lifetime income stream and immediate tax benefits. CGA annuity rates are at their highest level in years and now you can make a one-time transfer of up to $53,000 (in 2024) from an IRA to a CGA (with certain restrictions).

Donor Advised Fund (DAF): Contribute to a DAF and enjoy a tax savings when you itemize. You can then recommend a grant (or recurring grant) to the Shiley Eye Institute and Viterbi Family Department of Ophthalmology at UC San Diego.

9415 Campus Point Drive, MC 0946
La Jolla, CA 92093-0946

ADDRESS SERVICE REQUESTED

NONPROFIT ORG.
U.S. POSTAGE
PAID
SAN DIEGO, CA
PERMIT NO. 1909

Contributors
Karen Anisko Ryan, MS
Lilian Gischler
David B. Granet, MD, MHCM
Jade Griffin
Craig Kishaba, MBA
Naomi Kleinschmit
Bob B. Lee
Riley Thomas, MBA

Editors
Karen Anisko Ryan, MS
Robert N. Weinreb, MD

Creative
Grace Chang

Photography
Robyn Austin
Grace Chang
Naomi Kleinschmit
Bob Ross
Karen Anisko Ryan, MS

Printing
Tu's Printing & Graphics

CONNECT WITH US ONLINE

https://ShileyEye.UCSD.Edu

And on Social Media!

@ShileyEye

Instagram @ShileyEye

facebook UCSDShileyEye

yelp Shiley Eye Institute