SPRING 2020 VOLUME 38 NUMBER 1

EYE

UCLA STEIN EYE INSTITUTE
VISION-SCIENCE CAMPUS

UCLA Stein Eye Institute | DOHENY EYE INSTITUTE

EYE MAGAZINE
is a publication of the
UCLA Stein Eye Institute
DIRECTOR
Bartly J. Mondino, MD

MANAGING EDITOR
Tina-Marie Gauthier
c/o Stein Eye Institute
100 Stein Plaza, UCLA
Los Angeles, California 90095-7000
Tina@EyeCiteEditing.com

PUBLICATION COMMITTEE
Anthony C. Arnold, MD
Kevin M. Miller, MD
Alapakkam P. Sampath, PhD
Alfredo A. Sadun, MD, PhD
M. Gail Summers

CONTRIBUTING STAFF
Kara Mondino

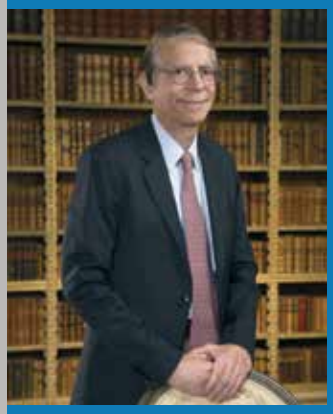
WRITERS
Dan Gordon
Harlan Lebo

PHOTOGRAPHY
Reed Hutchinson

DESIGN
Robin Weisz Design

The Stein Eye Institute is a proud affiliate of the Doheny Eye Institute.

LETTER FROM THE CHAIR



To have 20/20 vision is to see clearly, and for the UCLA Department of Ophthalmology, the year 2020 heralds in both a new decade and a focus on our mission to preserve sight and end avoidable blindness.

Research is core to this aim, and in this issue of *EYE Magazine*, we highlight basic scientists in the UCLA Stein Eye Institute's Vision Science Division who are studying the fundamental mechanisms of visual function and using that knowledge to define, identify, and ultimately cure eye disease.

Clinical research trials are also underway at Stein Eye and the Doheny Eye Centers UCLA, and include the first in-human trial of autologous cultivated limbal cell therapy to treat limbal stem cell deficiency, a blinding corneal disease; evaluation of an investigational medication to treat graft-versus-host disease, a potentially serious complication after transplant procedures; comparison of drug-delivery systems to determine which is most effective for treatment of diabetic macular edema; and analysis of regenerative strategies for treatment of age-related macular degeneration.

UCLA Department of Ophthalmology award-winning researchers conduct investigations of depth and magnitude, and the Department has taken a central role in transforming vision science as a powerful platform for discovery. I thank our faculty and staff for their sight-saving endeavors, and I thank you, our donors and friends, for supporting our scientific explorations.

Sincerely,

Bartly J. Mondino, MD

Bradley R. Straatsma, MD, Endowed Chair in Ophthalmology
Director, Stein Eye Institute
Chair, UCLA Department of Ophthalmology
Affiliation Chair, Doheny Eye Institute

SPRING 2020 VOLUME 38 NUMBER 1

EYE

UCLA STEIN EYE INSTITUTE
VISION-SCIENCE CAMPUS

FEATURES

A Journey into Discovery

Vision science at Stein Eye is advancing our ability to define, identify, and ultimately cure eye disease.

PAGE 2

CLINICAL FOCUS:

Exploring the Optic Nerve

Stein/Doheny Research Group Leads the Way in Neuro-Ophthalmology Clinical Trials.

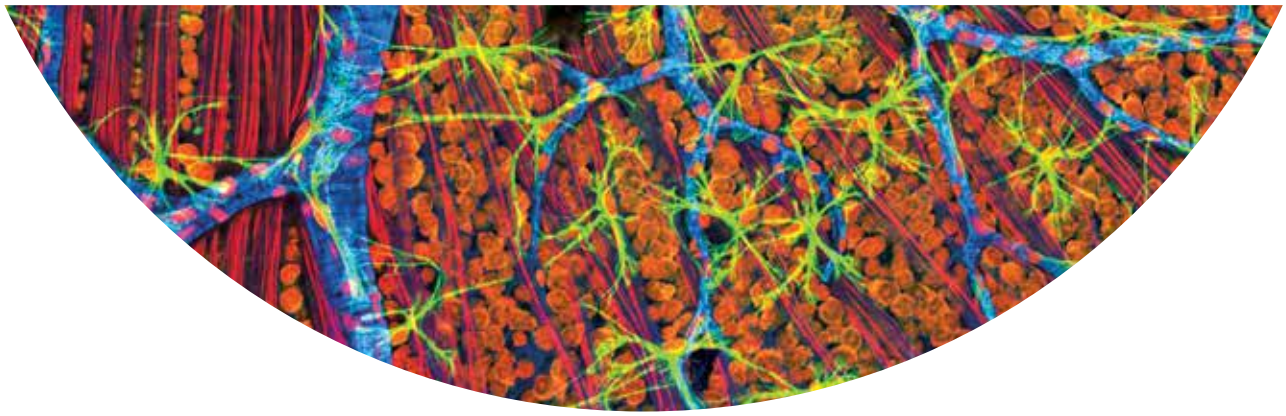
PAGE 14

FOCUS

On the cover: The life-sized statue entitled "The Kingdom is Within" stands in the lobby of the Doris Stein Building. Photo: Robin Weisz

A JOURNEY INTO DISCOVERY

VISION SCIENCE AT STEIN EYE



Fundamental research at the Stein Eye Institute's Vision Science Division is building knowledge about a broad range of issues involving the central processes in the eye—how it functions normally, and how it can fail—as UCLA Department of Ophthalmology scholars work to define, identify, and ultimately cure eye disease.

When Emily, a 15-year-old girl, complained of sensitivity to light and blurriness in the center of her vision, she was referred to the UCLA Stein Eye Institute by her family doctor, who suspected that the symptoms indicated more than routine issues with her sight.

Examination and testing at Stein Eye confirmed the problem: Emily had Stargardt disease, an inherited condition that eventually leads to progressive damage of the macula, the area in the middle of the retina. As a result, patients with Stargardt disease eventually lose their central eyesight, eliminating their ability to read, recognize faces, or perform other activities of daily life.

Stargardt disease is a genetic disorder, a condition caused by the defect in a single gene *(see related story)*. Although the cause of Stargardt disease is known and its progress can be slowed somewhat, no effective long-term treatment or cure yet exists.

Stargardt disease represents only one of many conditions that are the focus of basic research at the Institute on the most fundamental issues affecting the eye, and investigations at Stein Eye have produced significant progress in finding the key to Stargardt disease—work that may one day lead to a cure. Basic research at the Institute also builds understanding in a broad range of issues involving the central processes in the eye—how it functions normally, and how it can fail—as UCLA Department of Ophthalmology scholars work to define, identify, and ultimately cure eye disease.

"Studying the origins and progression of eye diseases such as Stargardt is at the core of our work in the basic sciences," says **Alapakkam P. Sampath, PhD**, associate director of the Stein Eye Institute and chief of the Vision Science Division.

"Our goal in the Division," says Dr. Sampath, "is to identify the fundamental mechanisms of visual function, use that knowledge to better understand specific diseases, and explore how to correct them."

Basic research in the Institute's Vision Science Division is conducted in 19 specialized laboratories involving Stein Eye faculty, graduate students, residents, and staff, often working in collaboration with other faculty from the David Geffen School of Medicine and throughout UCLA.

"All faculty in the UCLA Department of Ophthalmology are involved in some aspects of vision research," says **Bartly J. Mondino, MD**, chair of the Department and director of the Stein Eye Institute. "For example, many of our faculty conduct clinical research, which looks at the range of issues that relate directly to human care, such as the effectiveness of drugs or procedures (*see related story*). But a core group of our scholars conducts basic research that explores the eye at its most fundamental level."

Looking at the principal mechanisms of vision

"Basic research in the Vision Science Division studies the central functions within the eye," says Dr. Sampath. "Studying how the eye works at its most primary levels opens opportunities to understand the molecular or genetic issues that can destroy sight, and how we can create therapies to recover vision."

"As scientists involved in core research," says Dr. Sampath, "we are asking how cells in the eye contribute to our visual experience: how do they work under natural conditions? What are the molecules that contribute to this function? And even more important, in patients that suffer from a variety of types of visual loss—how are those proteins malfunctioning?"

Progression from largest to smallest

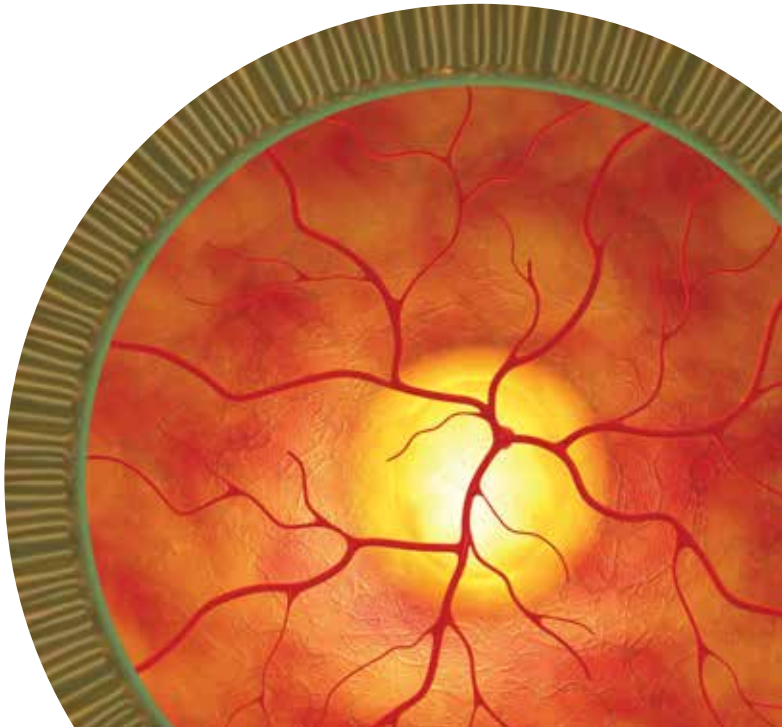
Within the Vision Science Division, ongoing research explores all of the major elements of sight. The eye deserves such close attention; what might appear to be a relatively simple orb is actually a profoundly complex organ unlike any other in the human body—a machine that in addition to its primary functions of capturing and recording visual information, manages itself with its own circulating chemicals, waste disposal, and nourishment.

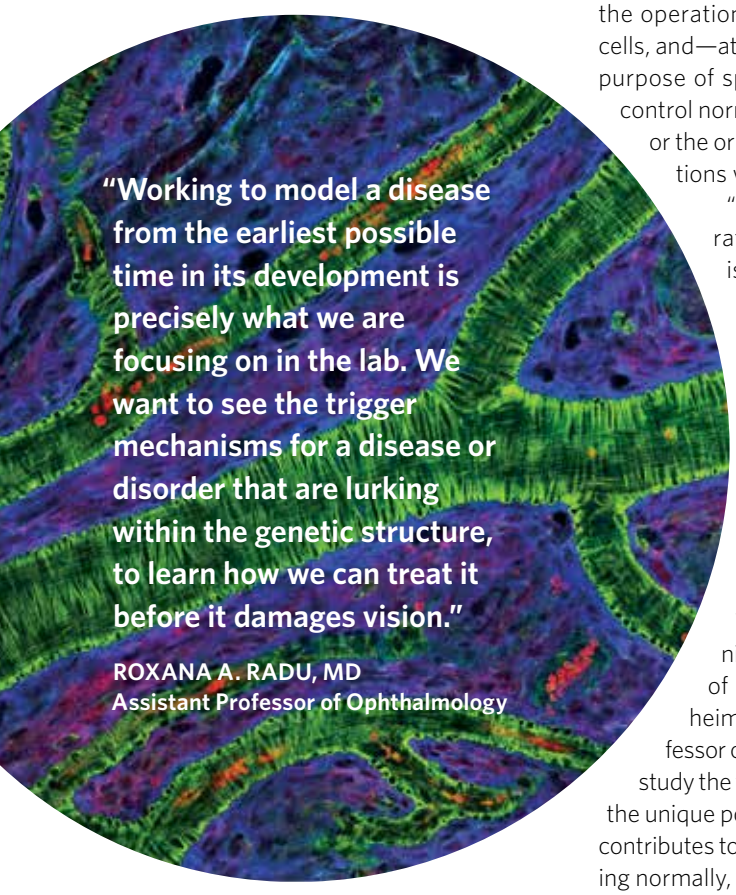
"Research in the Department crosses all levels of the eye, from the front of the lens to the back where the retina forms the optic nerve that continues into the brain," says **Gabriel H. Travis, MD**, Charles Kenneth Feldman Chair in Ophthalmology and professor of ophthalmology.

"The eye is an ideal model for core research on the human body," says Dr. Travis. "Humans are very visual animals; when something goes wrong in the eye, it's usually a big problem and we notice it immediately. And many elements of the workings of the eye can be closely observed in living patients."

"Our goal in the Division is to identify the fundamental mechanisms of visual function, use that knowledge to better understand specific diseases, and explore how to correct them."

ALAPAKKAM P. SAMPATH, PHD
Chief of the Vision Science Division





Stein Eye investigators pursue basic research on the eye at different scales, from the workings of tissues and cells, down to the operation of molecules within those cells, and—at the most fundamental—the purpose of specific genes and how they control normal functions within the eye, or the origins of defects and malfunctions when they fail.

"So what makes one laboratory different from another is two things: which part of the visual process are they working on, and what level of the eye they are exploring," says Dr. Sampath.

For instance, Dr. Sampath conducts research to understand the molecular mechanisms underlying visual processing—in particular, the processes involved in the sensitivity of night vision. In the laboratory of **Suraj P. Bhat, PhD**, Oppenheimer Brothers Chair* and professor of ophthalmology, researchers study the fiber cells of the lens, and how the unique position of each cell in the lens contributes to vision clarity when functioning normally, or promotes cataracts when malfunctioning.

But regardless of the level of basic research, a key issue is identifying the origins of a disease or defect before it expresses itself with symptoms or illness.

"Working to model a disease from the earliest possible time in its development is precisely what we are focusing on in the lab," says **Roxana A. Radu, MD**, assistant professor of ophthalmology. "We want to see the trigger mechanisms for a disease or disorder that are lurking within the genetic structure, to learn how we can treat it before it damages vision."

A "golden age" for basic vision research

Pursuing such ambitious goals in the Vision Science Division is possible in part because basic research has entered a "golden age" for studies at the genetic level—bringing with it a wealth of opportunities for progress in ophthalmic studies. In the 1980s and '90s, researchers in labs worldwide produced significant advances in identifying the mechanisms of the eye, especially how it reacts to light, and the role of photoreceptors in the retina.

"Then at about the same time, we saw a wave of discovery about the functions of genes, which was great for vision science," says Dr. Travis. "What came out of that period was the identification of about 200 different genes that can cause blindness or visual loss in humans."

"So after this period of discovery at the genetic level," says Dr. Travis, "we were left with knowledge of many proteins and their genes, and we knew they were important, but we didn't really know their specific functions or how we can control them. Working to better understand those functions is what many of us are now doing. That's the way with basic research—many challenges and even more opportunities for building our core understanding of the eye."

A future of great promise

As the third decade of the century begins, the opportunities for basic research in ophthalmology are bright, the future filled with possibilities for advances.

"Over the last 20 years, we've made great progress in understanding the eye—at the level of cells, molecules, and genes," says Dr. Sampath, "and in the Vision Science Division we've laid a foundation for moving increasingly toward answering essential questions involving therapies for a variety of blinding diseases, such as corneal blindness, age-related macular degeneration, or other inherited retinal degenerations. I think this is our direction over the next 10 years—to be highly focused on translating our work from the lab to the bedside."

*Pending title

STARGARDT DISEASE AND BASIC RESEARCH:
Insights that are Opening Doors

Stargardt disease, an eye disease caused by the malfunction of a single gene, affects only a small percentage of people. But research on the disease in the Stein Eye Institute's Vision Science Division is also creating opportunities to learn about one of the most common causes of blindness.

Hold a penny six inches in front of your nose.

The area of vision blocked by the penny demonstrates the deterioration of sight in the mid-stages of Stargardt disease, a disorder that causes progressive degeneration of the macula, the oval region at the center of the retina.

Discovered in 1909 by German ophthalmologist Karl Stargardt, the disease often begins in childhood, growing progressively worse for adolescents and adults; that penny-size area can eventually grow to the size of a cell phone held at the same distance, thus destroying sharp, straight-ahead vision and leaving behind only the fringes of sight.

"Imagine trying to read a book that is visible only in the corner of your eye—you can't do it," says **Gabriel H. Travis, MD**, Charles Kenneth Feldman Chair in Ophthalmology. "It's tremendously frustrating to be able to see but not fully identify anything."

Stargardt disease is relatively rare, affecting about 1 in 10,000 Americans. But basic research in the Institute's Vision Science Division has not only led to significant advances in understanding the origins and progression of Stargardt disease, but is also moving to new directions in the study of even more common diseases of the macula that affect millions of new patients annually.

Vitamin A: a key culprit in genetically triggered macular degeneration

The cause of Stargardt disease is no mystery: it is an inherited disorder of the retina, caused by mutations in the *ABCA4* gene, and how the eye processes vitamin A. Any fourth-grader who has studied nutrition will tell you that vitamin A is important for healthy vision; vitamin A is a key component in the production of light-sensitive molecules inside the photoreceptors of the retina.

Stargardt disease is the most common inherited disease of the retina caused by a single gene; a defect in the *ABCA4* gene disrupts the creation of a protein that normally cleans the eye of toxic byproducts of vitamin A that are produced inside the photoreceptors.

"Without the proper function of the protein, a fatty substance called lipofuscin clumps in the cells in the macula," says **Alapakkam P. Sampath, PhD**, associate director of the Stein Eye Institute and chief of the Vision Science Division. "The lipofuscin causes the photoreceptors to die; the result is the dark region in the center of the eye that grows as the disease progresses."

Although Stargardt disease can be slowed through a diet low in Vitamin A and with protection from ultraviolet light, no full cure yet exists. However, study of Stargardt disease at the Institute has led to significant progress in understanding its progression—work that may also lead to new directions in research on even more common diseases of the macula that affect millions of new patients annually.

"We know what causes Stargardt disease, but why the malfunction in the gene occurs and how we can prevent it are still ahead of us," says Dr. Travis, whose lab focuses on how light-receiving molecules are regenerated inside the rods and cones of the retina.

But the Institute's work on Stargardt disease is also opening new opportunities to progress in understanding other eye diseases. In particular, researchers are focusing on age-related macular degeneration (AMD), which like Stargardt disease causes deterioration of the macula.

AMD affects more than 100 million people worldwide, is the third most common cause of adult blindness (after cataracts and glaucoma), and is the most frequent contributor to vision loss in Americans over age 50. But AMD is not a genetic condition; the disease is caused primarily by lifestyle —in particular smoking—but also by poor diet and high blood pressure.

So the issue addressed by Institute researchers is: what are the possible links between two diseases with vastly different causes but similar symptoms? Could AMD also be associated with a genetic mutation in addition to its other risk factors? Research on Stargardt and other genetic diseases of the eye may help form an answer.

"What can we learn about AMD—a disease with a variety of environmental causes that affects millions—from our study of Stargardt, a disease with a single genetic origin?" says **Roxana A. Radu, MD**, assistant professor of ophthalmology.

"There's every reason to think that a treatment for Stargardt disease will soon be within our grasp. But even more important than a cure is what we will continue to learn about the core functions of the eye. That's what basic research is all about—encountering the challenges and developing opportunities for building our core understanding of the functions of the eye."

GABRIEL H. TRAVIS, MD
Charles Kenneth Feldman Chair in Ophthalmology

In Dr. Radu's Retina Biochemistry and Clinical Disease Modeling Laboratory, researchers are working to understand the mechanisms of how photoreceptor cells degenerate, using experimental models of disease to investigate disruption of normal vision functioning at the levels of genes, molecules, and cells; and developing experimental treatments to prevent blindness.

"We are looking at the functions of the eye at their most fundamental," says Dr. Radu. "Stargardt disease is important, because not only are we progressing in finding treatments for this specific disease, but we are also learning how this type of genetic-based disease may be a gateway to understanding much more common disorders."

According to Dr. Travis, "There's every reason to think that a treatment for Stargardt disease will soon be within our grasp. But even more important than a cure is what we will continue to learn about the core functions of the eye. That's what basic research is all about—encountering the challenges and developing opportunities for building our core understanding of the functions of the eye."

Says Dr. Radu, "This type of basic research on the fundamental functions of the human cell is a meticulous process that can take years—or decades. But the work is tremendously gratifying because it can tell us so much about eye diseases and the potential for cures. I'm so happy I can make a difference."

The Stein Eye Institute's history with the National Eye Institute (NEI) can be traced to our founder, Dr. Jules Stein—a musician, ophthalmologist, entertainment magnate, and advocate for vision—whose multiyear campaign culminated in the establishment of the NEI in 1968.

In his appearance before the United States Congress (shown in the above illustration), Dr. Stein said, "I am here to express indignation that millions of our people are compelled to face the threat of visual loss without the benefit of sharp, pointed action."

New Grants Fund Vital Research

Research funding at UCLA from the National Institutes of Health (NIH) is increasing, and the Stein Eye Institute is a significant beneficiary of this support, which is funded through the National Eye Institute (NEI).

These seven new NIH grants awarded in 2019 total nearly $10 million† in funding and indicate the scope of basic research within Stein Eye on key questions affecting the eye.

†*Amounts shown are the total for all years of NIH funding.*

Ava K. Bittner, OD, PhD

Smotrich Family Optometric Clinician-Scientist Chair

Development of a Behavioral Intervention with Socially Assistive Robots to Enhance Magnification Device Use for Reading

This exploratory research project aims to customize and evaluate a socially assistive robot as a novel approach to motivate and encourage optimal use of new magnification devices for reading in individuals with vision loss. The goals are to promote patient acceptance, adherence, and skills reinforcement to achieve proficiency in the use of the magnifier in order to attempt to reduce visual disability while performing important daily activities, such as reading tasks. This is a high priority given the increasing prevalence of low vision, paucity of low vision rehabilitation providers, and barriers related to access to care, such as transportation and geography, all of which motivate the development of this complementary approach for the provision of additional support at home by the socially assistive robot.

$439,994

Jean-Pierre Hubschman, MD

Associate Professor of Ophthalmology

Intraocular Robotic Interventional and Surgical System for Automated Cataract Surgery

This project aims to reduce the risk of surgical complications and improve the surgical outcomes of cataract surgery by developing an automated, image-guided robotic surgical system for cataract extraction. The proposed surgical system (1) improves surgical safety through intraocular tissue stabilization and per-operative imaging during surgical tasks; (2) realizes complete visualization of the lens equator by incorporating an intraocular optical coherence tomography probe; and (3) improves refractive outcomes through accurate intraocular lens implant positioning. It is hypothesized that the proposed surgical system will decrease sight-threatening surgical complication rates, improve surgical outcomes, and abate costs related to surgical complications.

$2,305,000

Anna Matynia, PhD

Associate Research Ophthalmologist

Molecular, Cellular, Anatomical, and Neurobiological Investigation of Melanopsin-Expressing Corneal Innervation, and Its Role in Pain and Photophobia

Corneal pain is an important mechanism to detect injury or damage, leading to protective responses to limit injury if possible (eg, tearing to remove a foreign object), initiate healing, and protect the ocular surface required for clear vision. When maladaptive, corneal pain can be so debilitating as to limit daily function, dramatically reduce quality of life, and cause significant economic burden. The proposed research will elucidate the molecular, cellular, anatomical, and neurobiological mechanisms of ocular pain and hypersensitivity including photoallodynia by investigating corneal nerves and their responses in nonhuman disease models of corneal surface injury/dry eye, allergic eye disease, and migraine.

$1,950,000

Kouros Nouri-Mahdavi, MD, MSc

Associate Professor of Ophthalmology

Detection of Disease Progression in Advanced Glaucoma

Eyes with advanced glaucomatous damage have little residual reserve and small amounts of progression can have important consequences affecting a patient's visual function and quality of life. The investigation's purpose is to optimize the use of longitudinal optical coherence tomography macular data to confirm and predict functional progression. Results of the study should lead to the development of more effective methods for earlier detection of glaucoma progression and will allow clinicians to more aggressively treat deteriorating eyes resulting in decreased visual disability and reduced rates of blindness from glaucoma.

$1,951,500

Gabriel H. Travis, MD

Charles Kenneth Feldman Chair in Ophthalmology

Mechanisms for Light-Driven Chromophore Synthesis by Müller Cells to Regenerate Cone Opsin and Maintain Cone Sensitivity

The research purpose is to provide important new information about the functioning of cones under daylight conditions. Preliminary studies suggest that the regeneration of cone pigments is driven by light through a novel biochemical mechanism in Müller cells. Given the importance of cones to human vision, the proposed research is highly relevant to the National Eye Institute's mission. The gene for one of the proteins to be studied (RGR) is a susceptibility locus for retinitis pigmentosa, hence the project is also relevant to the broad National Institutes of Health mission that pertains to reducing illness and disability.

$2,271,848

Irena Tsui, MD

Assistant Professor of Ophthalmology

Retinal and Choroidal Vasculature Changes in Healthy and High-Risk Pregnancies

Pregnancy is a complex process that can lead to physiologic changes as well as complications such as preterm birth and preeclampsia. This study aims to use pictures of the retina to generate normative pregnancy curves as well as to predict which pregnancies will develop perinatal complications. Success of this endeavor will allow better prediction and monitoring of high-risk pregnancies.

$445,314

David S. Williams, PhD

Karl Kirchgessner Foundation Chair in Vision Science*

Exploring the Relationship of Water Flow Across the RPE and Mutant-MYO7A/Usher 1B

Patients with Usher syndrome type 1B frequently suffer from cystoid macular edema (CME), which causes fluid accumulation in the retina and impairs central vision in young patients. The proposed research will explore why mutant MYO7A, the genetic cause of Usher 1B, affects water flow across the retinal pigment epithelium (RPE). It will also test the efficacy of the drugs commonly prescribed for CME in promoting water flow across Usher 1B RPE, thus potentially identifying the most suitable pharmacological treatment for CME in Usher 1B.

$429,000

**Pending title*

RESEARCH LABORATORIES

Gaining Foundational Knowledge in Our Efforts to Protect Sight

Laboratory-based research, also called basic vision-science research, forms the foundation for the clinical research, education, and patient care that are the visible hallmarks of the UCLA Department of Ophthalmology.

Specially equipped laboratories at the Stein Eye Institute support vision-science investigations. Organized around the interests of the research faculty, these distinct laboratories offer unique opportunities for students, physicians, and fellows to become involved in nationally and internationally renowned scientific study.

Advanced Robotic Eye Surgery

Biology and Genetics of Retinal Disease

Cornea Biology Laboratory

Cornea Genetics

Developmental Neurobiology Laboratory

Glaucoma Advanced Imaging Laboratory

Lens Biophysics Laboratory

Molecular Biology of Retinal Ganglion Cells Laboratory

Ocular Motility Laboratory

Ophthalmic Biophysical Chemistry

Ophthalmic Pathology Laboratory

Photoreceptor Biochemistry Laboratory

Photoreceptor/RPE Cell Biology

Retina Biochemistry and Clinical Disease Modeling Laboratory

Retinal Biochemistry Laboratory

Retinal Cell Biology Laboratory

Retinal Neurophysiology Laboratory

Vision Molecular Biology Laboratory

Visual Physiology Laboratory

Clinical Research

Developing Medical Breakthroughs and New Approaches

Clinical research studies evaluate surgical and treatment interventions, as well as diagnostic testing, to determine if they are safe and effective for people. Clinical trials often represent the final stages of research before dissemination to the ophthalmology community for use with the general population.

Closely linked to our clinical and educational programs, the UCLA Department of Ophthalmology's clinical research studies offer patients an opportunity to participate in experimental treatment options and emerging therapies that have been reviewed and approved by the UCLA Human Subject Protection Committee and the Federal Drug Administration.

RECRUITING CLINICAL TRIALS

ADVISE

The ADVISE Trial is a randomized, parallel-treatment, comparative effectiveness clinical trial, comparing various immunosuppressive drugs for the treatment of different types of uveitis. Principal Investigator: Gary N. Holland, MD

ALK-001

The purpose of this study is to find out whether a new drug for Stargardt disease is safe and effective. There are currently no proven treatments for Stargardt disease, a disease that leads to blindness in almost all cases. Principal Investigator: Michael B. Gorin, MD, PhD

AR-13503-CS201

First-in-human study of the safety of AR-13503 sustained release intravitreal implant in subjects with neovascular age-related macular degeneration and subjects with diabetic macular edema. Principal Investigator: Michael Ip, MD

C-AM-2

The primary objective of this study is to establish the safety and efficacy of the Luminopia One therapeutic for the treatment of amblyopia in children. Principal Investigator: Stacy L. Pineles, MD

Clinical Trial for Limbal Stem Cell Deficiency (LSCD)

A phase I clinical trial to evaluate the use of cultivated autologous LSCs as a potentially better alternative to other procedures for LSCD. In this study a small amount of LSCs will be taken from the eye without LSCD or with less severe LSCD and grown into a sheet of cells that contain the stem cells that will then be transplanted into the eye with more severe LSCD. Principal Investigator: Sophie Deng, MD, PhD

Determining the Safety and Efficacy of Renexus in Macular Telangiectasia Type 2

This study is assessing the safety of the NT-501 implant in patients with macular telangiectasia type 2. The implant, a small capsule of cells that is placed inside the eye, allows a controlled, sustained release of ciliary neurotrophic factor (CNTF) directly to the retina. Principal Investigator: Jean-Pierre Hubschman, MD

Evaluation of Corneal Cross-Linking Keratoprosthesis Carrier Tissue

This clinical trial evaluates the safety and efficacy of corneal collagen cross-linking the keratoprosthesis carrier tissue in subjects who are candidates for high-risk keratoprosthesis implantation because of a history of corneal melts, sterile corneal ulcers, or autoimmune diseases. Principal Investigator: Anthony J. Aldave, MD

Hyaluronidase for the Prevention of Fibrosis in Thyroid Eye Disease

The purpose of this study is to determine the effect of peribulbar and retrobulbar injections of hyaluronidase on congestive signs, like proptosis and muscle restriction, symptom severity, and quality of life measures in thyroid eye disease. Principal Investigator: Daniel B. Rootman, MD, MS

GALLEGO

A phase III, randomized clinical trial to assess the safety and efficacy of intravitreal injections of an investigational drug in patients with geographic atrophy secondary to age-related macular degeneration. Principal Investigator: David Sarraf, MD

"All faculty in the UCLA Department of Ophthalmology are involved in some aspects of vision research. For example, many of our faculty conduct clinical research, which looks at the range of issues that relate directly to human care, such as the effectiveness of drugs or procedures. But a core group of our scholars conducts basic research that explores the eye at its most fundamental level."

BARTLY J. MONDINO, MD
Chair of the UCLA Department of Ophthalmology and
Director of the Stein Eye Institute

GUARD

A phase III clinical trial of repeated intravitreal injections comparing an investigational drug versus standard of care for the prevention of proliferative vitreoretinopathy. Principal Investigator: Colin McCannel, MD

MERIT

The MERIT Trial was designed to determine which intravitreal therapy offers the best balance of effectiveness and tolerability in treating persistent uveitic macular edema in eyes with controlled uveitis but persistent macular edema, specifically by comparing the relative efficacy and safety of intravitreal ranibizumab (Lucentis®) and intravitreal methotrexate to intravitreal dexamethasone implant (Ozurdex®). Principal Investigator: Gary N. Holland, MD

OAKS

A phase III study to evaluate the efficacy of APL-2 compared to sham injection in patients with geographic atrophy (GA) secondary to age-related macular degeneration assessed by change in the total area of GA lesions from baseline as measured by fundus autofluorescence imaging. Principal Investigator: Michael Ip, MD

OCU-300-301

A phase III randomized study of brimonidine tartrate nanoemulsion eye drops in patients with ocular graft versus host disease. Principal Investigator:
Olivia L. Lee, MD

PAGODA

The primary objective of this study is to evaluate the non-inferiority and equivalence in efficacy of ranibizumab delivered via the port delivery system Q24W with the 100mg/mL formulation compared with that of 10mg/mL Q4W intravitreal ranibizumab injections. Principal Investigators: Michael Ip, MD, and Colin A. McCannel, MD

RGN-ON-002

The primary study objective is to evaluate the efficacy and safety of twice-weekly subcutaneous administration of RPh201 over 26 weeks on visual function in participants with prior nonarteritic anterior ischemic optic neuropathy. Principal Investigator: Peter A. Quiros, MD

RVT-1401

The purpose of this study is to assess the efficacy and safety/tolerability of three dose regimens of RVT-1401 in the treatment of active, moderate to severe Graves' ophthalmopathy patients. In addition, the study is designed to characterize RVT-1401 exposure to reduction in anti-TSHR IgG. Principal Investigator: Daniel B. Rootman, MD, MS

STAR

The objective of this clinical trial is to evaluate the efficacy and safety of a single subretinal injection of an investigational gene therapy vector in patients with choroideremia. Principal Investigator:
Michael B. Gorin, MD, PhD

Zoster Eye Disease Study (ZEDS)

The purpose of this study is to find out whether one year of a low dose of valacyclovir reduces complications of shingles affecting the eye. The study will involve two groups of participants who have eye problems due to shingles. One group will receive daily valacyclovir medication and the other group will receive a placebo. Principal Investigator: Gary N. Holland, MD

RECRUITING NON-INTERVENTION CLINICAL STUDIES

ARIS

The primary objectives of the AMD Ryan Initiative Study (ARIS) are to enroll participants with early age-related macular degeneration (AMD) to assess the rate of change in drusen volume and progression rates to large drusen and associate these morphologic changes with psychophysical changes, including visual acuity and dark adaptation. Principal Investigators: Michael Gorin, MD, PhD, and SriniVas Sadda, MD

Arm-Mounted Heidelberg OCT-A for Noninvasive Vascular Zone Imaging in Infants with Retinopathy of Prematurity

This study evaluates optical coherence tomography angiography (OCT-A) imaging data on preterm infants who are screened and/or treated for retinopathy of prematurity, especially evaluating the potentially beneficial effects of anti-VEGF treatment on foveal development and visual outcomes. Principal Investigators: Alex Huang, MD, PhD, and Irena Tsui, MD

Biomechanical Analysis in Strabismus Surgery

This study aims to develop new diagnostic tests and computer models that will lead to improvements in strabismus surgery. Tests of binocular alignment and eye movements, as well as magnetic resonance imaging of the extraocular muscles, are being performed before and after strabismus surgery. To date, this research has fundamentally contributed to the knowledge of the functional anatomy of the extraocular muscles and connective tissues, and allowed discovery of causes of common strabismus and development of new types of surgeries. Principal Investigator:
Joseph L. Demer, MD, PhD

GABIE

This biomarker study evaluates patients with geographic atrophy secondary to age-related macular degeneration evaluating the use of microperimetry (ie, fundus-controlled perimetry) and swept-source optical coherence tomography in assessing changes in retinal sensitivity and anatomy over time. Principal Investigator: SriniVas Sadda, MD

INDY

The primary objective of this study is to collect optical coherence tomography scans in the mid and far periphery in order to evaluate their clinical usefulness using the P200TxE (Indy) device. Principal Investigator: SriniVas Sadda, MD

Natural History Study of Macular Telangiectasia

The primary study objective is to develop a registry of participants with MacTel Type 2 (as confirmed by the Reading Center) who may agree to be contacted for inclusion in future clinical trials. Principal Investigator: Jean-Pierre Hubschman, MD

Optical Coherence Tomography Angiography Images of Pregnant Women

This study aims to identify changes that occur in the retina as a result of gestational associated diseases (eg, gestational diabetes, high blood pressure, increased myopia) and unknown changes that may affect the eyes during gestation and in the two to three months following birth. Principal Investigator: Irena Tsui, MD

Optic Nerve in Amblyopia

Amblyopia is a major cause of childhood visual loss. This study uses high resolution, surface-coil magnetic resonance imaging to study optic nerve size in amblyopia. It tests the theory that the optic nerve is smaller than normal in amblyopia and that optic nerve size may be a limiting factor in restoration of vision by amblyopia treatment. Principal Investigator:
Joseph L. Demer, MD, PhD

Pediatric Cornea and Anterior Segment Diseases Registry

Pediatric cornea and anterior segment diseases are rarely encountered by ophthalmologists. As such, details on the causes, features, and optimal treatment for these conditions are inadequately described. The information on this registry would allow us to study these diseases. Principal Investigator: Simon Fung, MD

REALITY

An observational registry study of Leber hereditary optic neuropathy (LHON) affected patients. Principal Investigator: Alfredo A. Sadun, MD, PhD

SWAG/IMPACT

This study will utilize swept-source optical coherence tomography to better understand the progression of non-exudative age-related macular degeneration. Principal Investigator: SriniVas Sadda, MD

ONGOING CLINICAL STUDIES CLOSED TO RECRUITMENT

A Protocol to Follow-up with Patients on Emergency Administration of EPI-743 with Leber Hereditary Optic Neuropathy

EPI-743, a form of vitamin E that has been changed to a new compound in the laboratory, is an experimental drug that may improve mitochondrial function. Mitochondrial disease manifestations appeared to improve when the EPI-743 was given to cells from a patient with Leber hereditary optic neuropathy that were grown in the laboratory. Principal Investigator: Alfredo A. Sadun, MD, PhD

ARCHWAY

The primary objective of this study is to evaluate the non-inferiority and equivalence in efficacy of ranibizumab delivered via the port delivery system (PDS) with intravitreal ranibizumab injections. Principal Investigator: Colin A. McCannel, MD

AURA

Primary objectives are to evaluate the safety of intravitreal administration of one of three dose levels and repeat dose regimens of light-activated AU-011 and one or two laser applications in the treatment of subjects with small to medium primary choroidal melanoma. Secondary objectives include evaluating the immunogenicity and effectiveness of AU-011. Principal Investigator: Tara A. McCannel, MD, PhD

Glaucoma Imaging Study

This study is evaluating different imaging techniques and their use in improving open-angle glaucoma detection. Principal Investigator: Kouros Nouri-Mahdavi, MD

IAI-OCTA Study

This study is utilizing a new, FDA approved, non-standard of care technology, the optical coherence tomography-angiography by Optovue, to image and evaluate the treatment outcomes of using standard of care intravitreal Aflibercept injections for their approved use in patients diagnosed with neovascular age-related macular degeneration who are naive to previous anti-VEGF therapies. Principal Investigator: David Sarraf, MD

INN-005

This study aims to assess the safety and efficacy of a microshunt when used to lower intraocular pressure (IOP) in subjects with primary open angle glaucoma whose IOP is not controlled when using maximum-tolerated glaucoma medications. Principal Investigator: Joseph Caprioli, MD

NIGHT

This study characterizes the visual function and retinal structural changes associated with X-linked choroideremia with the intention of determining the best means of measuring disease progression and the rate of natural progression for this condition. Principal Investigator: Michael B. Gorin, MD, PhD

RESCUE and REVERSE Long-term Follow-up

To assess the long-term safety of intravitreal GS010 administration up to five years post treatment in subjects who were treated in the RESCUE or REVERSE studies for Leber hereditary optic neuropathy. Principal Investigator: Alfredo A. Sadun, MD

REFLECT

This clinical trial is to assess the effectiveness of a gene therapy in improving the visual outcome in patients with Leber hereditary optic neuropathy due to a mitochondrial mutation. Principal Investigator: Alfredo A. Sadun, MD, PhD

Safety and Effectiveness of the CustomFlex Artificial Iris Prosthesis for the Treatment of Iris Defects

This study is being conducted to evaluate the safety and effectiveness of an artificial iris prosthesis for the treatment of full or partial aniridia resulting from congenital aniridia, acquired iris defects (including traumatic iris defects and mydriasis), or conditions associated with full or partial aniridia, such as ocular or oculocutaneous albinism and iridocorneal endothelial syndrome, and iris coloboma. Principal Investigator: Kevin M. Miller, MD

SPIES-005

This extended-use program is to provide elamipretide to patients with Leber hereditary optic neuropathy previously enrolled in the SPILH-201 clinical trial who are still benefitting from treatment per the discretion of the treating physician. Principal Investigator: Alfredo A. Sadun, MD

XOLARIS

This study is to characterize the visual function and retinal structural changes associated with X-linked retinitis pigmentosa to determine the best means of measuring disease progression and the rate of natural progression for this condition. Principal Investigator: Michael B. Gorin, MD, PhD

For more information about clinical research trials at the UCLA Stein Eye Institute and the Doheny Eye Center UCLA, contact Ellen Pascual, administrator of clinical research, at (310) 794-5592 or pascual@jsei.ucla.edu.

Exploring the Optic Nerve

Stein/Doheny Research Group Leads the Way in Neuro-Ophthalmology Clinical Trials

Medical visualization showing an overhead view of the human head. The optic nerve, which connects the eyes to the brain, is highlighted in blue.

A research team of neuro-ophthalmologists in the UCLA Department of Ophthalmology is attracting considerable interest from pharmaceutical companies for the group's expertise in optic nerve diseases. Although the diseases studied by **Alfredo A. Sadun, MD, PhD**, and his colleagues are rare, they are increasingly viewed as models for both ophthalmologic and non-ophthalmologic conditions that affect much larger populations, but are more complex and difficult to study.

Dr. Sadun, Flora L. Thornton Endowed Chair in Vision Research at Doheny and vice chair of ophthalmology, Doheny Eye Center UCLA, is part of six formal clinical trials in neuro-ophthalmology, making the UCLA Department of Ophthalmology group by far the most active neuro-ophthalmology research group in the country. Neuro-ophthalmology is a subspecialty focusing on how the brain works with the eye and processes visual information, as well as how the eye sends messages to the brain. From the beginning of his career, Dr. Sadun has been a leader in the latter, also known as the afferent pathway.

In particular, Dr. Sadun and his colleagues have concentrated on the optic nerve—the cable connecting the eye and the brain, composed of 1.2 million fibers, each representing a different pixel point on the brain's vision map. "It turns out that there are obvious and not-so-obvious diseases of the optic nerve," Dr. Sadun explains. "The optic nerve can suffer any disease the brain can—such as tumors, stroke, and multiple sclerosis—but there are also diseases that affect the optic nerve specifically, which is what I find to be the most compelling." Intriguingly, these conditions almost all involve injury in one way or another to mitochondria—the powerhouse of cells. "In these diseases, if the mitochondria become sick, the canary in the coal mine is the optic nerve," Dr. Sadun says.

Dr. Sadun is especially interested in Leber's hereditary optic neuropathy, a disease that affects only the genes of the mitochondria and can cause sudden and permanent blindness, usually among individuals in their teens or 20s. The genetics for Leber's are simple—when the mother has a genetic defect in her mitochondria, it will always be passed down to her children; Leber's cannot be passed by the father. "The genetic defect is necessary but not sufficient for blindness," Dr. Sadun notes. "Something else triggers the disease and makes carriers go blind, suddenly and dramatically."

Leber's hereditary optic neuropathy is extremely rare—so rare, in fact, that Dr. Sadun sees many of the patients from throughout the United States who are suspected of having the disease. But the central involvement of mitochondria in the disease also makes it of considerable interest as it becomes increasingly apparent that mitochondria are important in other, more common conditions. These include vision diseases such as macular degeneration and glaucoma, as well as neurological diseases such as Alzheimer's and Parkinson's. With three decades of experience determining the natural history of a pure mitochondrial disease, Dr. Sadun's group has emerged as a focal point for clinical trials of optic nerve conditions such as Leber's that could also prove effective in treating the more common conditions.

Of the six ongoing clinical trials headed by the UCLA Department of Ophthalmology team, four involve Leber's hereditary optic neuropathy; the other two are for patients who experience a type of stroke of the optic nerve, properly termed acute nonarteritic anterior ischemic optic neuropathy (NAION), in which a loss of blood flow to the nerve causes sudden vision loss in one eye. Three of the trials for Leber's use gene therapy—injecting a virus that delivers a "good" version of the mutated gene into the inner layer of the eye, where the cells that give birth to the optic nerve reside. The fourth Leber's-related study is the latest in a series of trials Dr. Sadun has led using

small molecules—in this case, in the form of a topical ophthalmic solution—designed to allow the affected cells to compensate for the genetic error.

As recently as 15 years ago, there were no neuro-ophthalmology clinical trials in the United States, Dr. Sadun notes, because of the perceived small size of the market for neuro-ophthalmologic drugs. That was before it became apparent that because the optic nerve is part of the brain, clinical trials involving diseases of the optic nerve could serve as testing grounds for more complex neurological diseases that affect far more people.

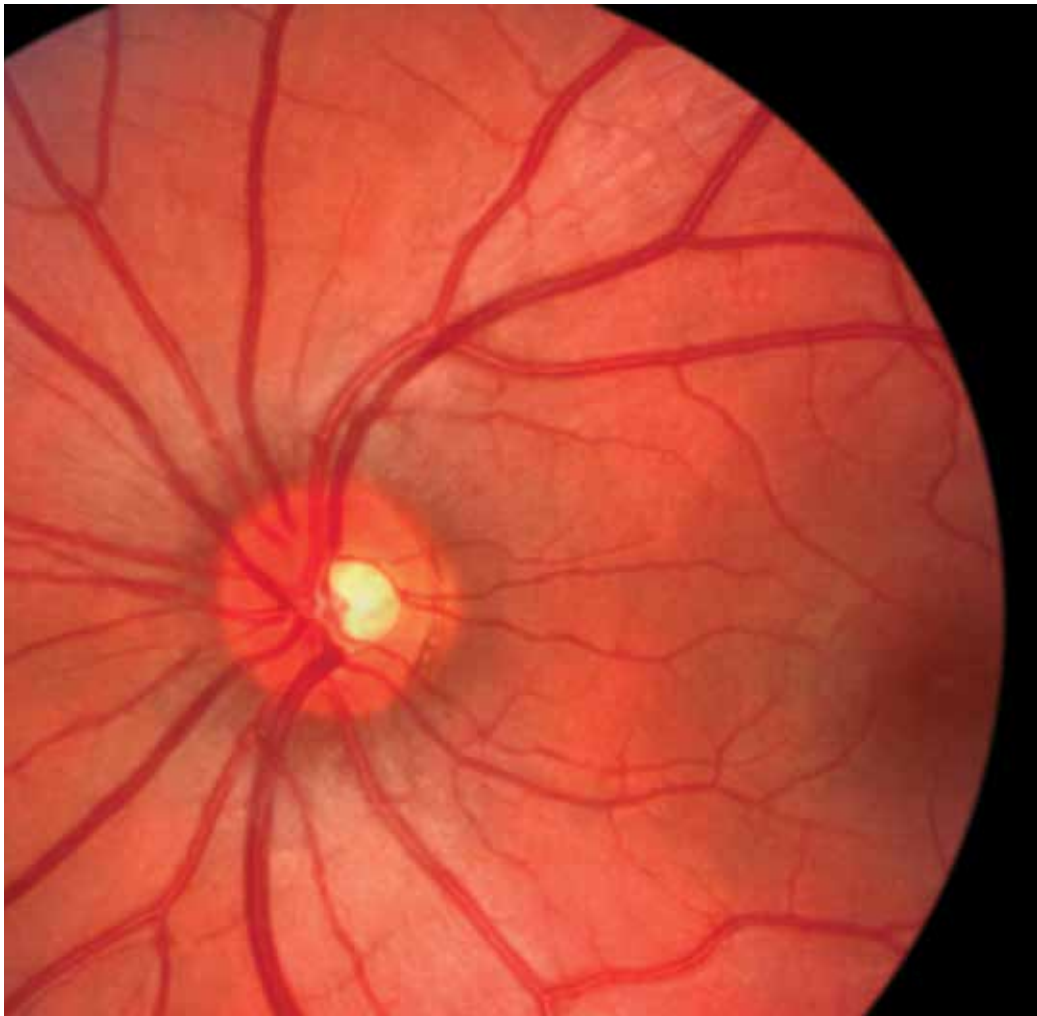
Dr. Sadun made that point early in his career with a study he published in the mid-1980s showing that the optic nerve is also damaged in Alzheimer's disease. "The reason I chose that approach was that I figured one quick measurement of visual function such as color vision was substantially easier than subjecting people to a few days of psychometric examinations," Dr. Sadun explains. "We have much better ways of measuring signs and symptoms for the eye."

Ever since, he has consistently made the case that the accessibility of the optic nerve—through both vision testing and the ability to image the eye as a transparent organ—renders it a powerful model for gaining insight into a host of neurological diseases. "There is much less 'noise' in studies of the optic nerve than there would be for something like Alzheimer's disease, where there are so many variations that could potential influence the results," Dr. Sadun says. "Any disease of the brain also affects the optic nerve, but whereas the brain is diffuse, complicated, and hard to measure, in the optic nerve these diseases are very precise. We know the starting point is 1.2 million fibers, we know their size and location, and any damage can be assessed accurately through a variety of tests. In addition, when we have a patient complaining of a black spot or blurred vision, that's much more specific than when an Alzheimer's patient complains of not being able to think right."

Using the optic nerve as a model for neurological studies, results in less "noise," which means it takes fewer patients to prove the efficacy of a treatment, Dr. Sadun notes. The hope is that once that proof of principle is established for patients with optic nerve conditions, the same therapy could be tested in patients with the more common neurological diseases, using the already established information about dosing and side effects. That potential to benefit large numbers of patients is what makes the neuro-ophthalmology research at the UCLA Department of Ophthalmology of such great interest to the pharmaceutical industry.

"The optic nerve can suffer any disease the brain can—such as tumors, stroke, and multiple sclerosis—but there are also diseases that affect the optic nerve specifically, which is what I find to be the most compelling."

ALFREDO A. SADUN, MD, PHD
Vice Chair of Ophthalmology,
Doheny Eye Center UCLA



Increasing Accessibility to Vision Care

In 2019, the UCLA Mobile Eye Clinic (UMEC) collaborated with influential organizations including the Los Angeles Dodgers where they attended eight events and served over 230 patients. Based on the success of these vision-screening events, UMEC will be returning to the Los Angeles Dodgers events in spring and summer 2020 to continue performing eye health screenings for underserved and undertreated Angelenos.

Continuing to find ways to increase accessibility to vision care, in November 2019, UMEC partnered with Care Harbor, a mega-clinic event that focuses on grassroots healthcare solutions and has served over 26,000 patients in the last 10 years. At Care Harbor, UMEC's team addressed the needs of patients who had preexisting eye health conditions including diabetes and high blood pressure to provide them with further examinations and referrals to specialists as needed. At the three-day event, UMEC's diverse staff of multilingual ophthalmologists, ophthalmic technicians, volunteers, and interns provided care for 262 patients with 105 referrals for follow-up care.

Additionally, in recognition for their impact on the Los Angeles community, UMEC received a grant of $75,000 from The Nicholas Endowment to support their efforts to alleviate visual healthcare disparities. These funds will be used to fully maximize the potential of the two mobile eye clinics in the UMEC Fleet. The grant will allow UMEC to leverage the two buses so they can operate concurrently, one conducting the pre-school and student eye evaluation programs, while the other serves the homeless population.

During the holiday season, UMEC staff and volunteers continued to foster the community and provide vision care services to underserved Angelenos by returning to volunteer at the Westside Thanksgiving Dinner and Celebration, an event that provides medical, dental, and vision services to community members. UCLA Department of Ophthalmology doctors, technicians and staff volunteered to provide free health screenings at the event.

Since fall 2019, UMEC's Student Leadership Club (UMEC SLC) has earned over $13,000 to support UMEC, which has been used to buy and distribute over 500 pairs of free reading glasses. Additionally, UMEC SLC was allocated funding for BruinCars to facilitate transportation for volunteers and interns to participate in health fairs and clinics to assist the UMEC staff with screenings and exams. Displaying their determination to maximize their impact on the community, UMEC SLC is also spearheading a compliance call research project to assess pediatric adherence to eyeglasses to improve the current eye-care model. UMEC SLC's co-president, **Winnie Liu**, was also awarded the esteemed True Bruin Distinguished Senior Award for her dedication to UMEC and for exemplifying the True Bruin values of Integrity, Excellence, Accountability, Respect, and Service.

At Care Harbor and other events, the UCLA Mobile Eye Clinic team of ophthalmologists, ophthalmic technicians, volunteers, and interns performs eye health screenings for underserved and undertreated Angelenos, providing further examinations and referrals to specialists as needed.

Hindsight is overrated.

When you establish a UCLA charitable gift annuity, you can support top-rated vision care and research in vision preservation and restoration while receiving lifetime income and significant tax benefits.

1. Receive fixed income for life that is not tied to market fluctuation and that you cannot outlive. Annuity payments can start right away or be deferred for a period of time.

   The payout rate varies according to the donor's age.

AGE	RATE FOR 1 ANNUITANT
Age 65	4.7%
Age 68	4.9%
Age 70	5.1%
Age 75	5.8%
Age 80	6.9%
Age 85	8.0%

2. Immediate tax benefits: Enjoy a charitable income tax deduction. If you fund your gift with appreciated securities, you can also reduce capital gains tax.

3. Long-term tax advantages: A portion of your annuity payment is tax-free for a number of years.

Please contact us about payout rates for other ages or for two annuitants.

For more information, please contact UCLA's team of gift planning professionals

UCLA OFFICE OF GIFT PLANNING

Phone: **800-737-UCLA (8252)**

Email: **giftplanning@support.ucla.edu**

Visit: **www.legacy.ucla.edu**

UCLA does not provide tax or legal advice. Our gift planning professionals are happy to provide you and your legal or financial advisors with personalized illustrations of the tax and income benefits that a UCLA charitable gift annuity offers. Conversations with the university's gift planning team are always confidential and never imply obligation.

Foresight supports the future of vision care. With a UCLA charitable gift annuity, you can, too.

The CENTENNIAL Campaign for UCLA

New Clinic Focused on Treating Dry Eye

Dry eye occurs when the glands around the eye cease to produce enough tears to keep the surface of the eye moist. It can cause a scratchy or sandy feeling in the eye, stinging or burning, secretion of mucus, redness, bouts of excessive tearing (due to reduced lipid and mucin layers of the tear film), and difficulty wearing contact lenses.

Though it may be a natural function of aging for some, dry eye can also be associated with diabetes, autoimmune diseases such as rheumatoid arthritis and Sjögren syndrome, the taking of certain medications, and dry climates. As such, a generic "one size fits all" approach is not the most beneficial way to treat dry eye.

In recognition that everybody's dry eye is unique and usually multifactorial, the UCLA Stein Eye Institute's newest clinic focuses solely on treating the condition. "The clinic implements a full diagnostic workup looking at all the different parts of the ocular surface that can contribute to dry eye. This then helps us to tailor a specialized treatment focused on each patient's individual needs," says **Vivian Shibayama, OD**, clinical instructor in ophthalmology, who runs the clinic with **Saba Al-Hashimi, MD**, health sciences assistant clinical professor of ophthalmology. "These same diagnostic tests can then be used to determine if the therapy is effective."

The clinic, located in the Jules Stein Building at the Stein Eye Institute vision-science campus in Westwood, also offers in-office procedures not typically available at eye centers, such as **BlephEx**, a deep cleaning of the lid margin; **LipiFlow** to remove blockages from the meibomian glands; **intense pulsed light (IPL) therapy** to treat inflammation on the lid margin; **scleral lenses**, saline-filled contact lenses that encase the cornea in fluid; **amniotic membrane therapy**, which promotes healing with drops or in a contact lens form; and **autologous serum tears**, customized drops derived from the patient's own blood that are rich with nutrients and growth factors that can help with certain types of dry eye.

The ophthalmologists and optometrists in the clinic also work with other UCLA medical divisions, such as rheumatology and immunology, if necessary, as well as neurology if systemic disease is suspected to be correlated with the eye condition.

To make an appointment at the UCLA Stein Eye Institute Dry Eye clinic, call: (310) 206-6351.

American Academy of Ophthalmology Honorees

Congratulations to UCLA Department of Ophthalmology faculty and alumni who were recognized for their leadership in our field at the October 12–15, 2019, American Academy of Ophthalmology (AAO) annual meeting in San Francisco, California.

AAO Award Recipients

Life Achievement Honor Award

Don O. Kikkawa, MD, alumnus

Senior Achievement Award

Simon K. Law, MD, PharmD, faculty
Todd P. Margolis, MD, PhD, alumnus
Alfred M. Solish, MD, alumnus

Achievement Award

Michael B. Gorin, MD, PhD, faculty
David A. Hollander, MD, alumnus
David K. Isaacs, MD, alumnus
John T. Mandeville, MD, PhD, alumnus
Scott C. Oliver, MD, alumnus
Ehsan Rahimy, MD, alumnus
Tina Rutar, MD, alumnus

Secretariat Award

Simon K. Law, MD, faculty
Kouros Nouri-Mahdavi, MD, faculty
SriniVas R. Sadda, MD, faculty

Faculty Honors at the AAO Annual Meeting

Anthony J. Aldave, MD, Walton Li Chair in Cornea and Uveitis, presented the Dr. Allan Jensen and Claire Jensen Lecture in Professionalism and Ethics titled "Ethical Aspects of Global Ophthalmic Practice" on October 14, 2019.

Anne L. Coleman, MD, PhD, The Fran and Ray Stark Foundation Chair in Ophthalmology, was inducted as president-elect of the American Academy of Ophthalmology and presented the Academy President-Elect's Address at the opening ceremony on October 13, 2019.

Sophie X. Deng, MD, PhD, Joan and Jerome Snyder Chair in Cornea Diseases,* served as program director for the AAO Subspecialty Day: Cornea.

We salute our faculty colleague, **Anne L. Coleman, MD, PhD,** president-elect of the AAO, for working tirelessly with the Academy and its members to protect sight and empower lives.

JoAnn A. Giaconi, MD, health sciences associate clinical professor of ophthalmology, served as program director for the AAO Subspecialty Day: Glaucoma.

Lynn K. Gordon, MD, PhD, Vernon O. Underwood Family Chair in Ophthalmology, was recognized at the AAO Opening Ceremony by David W. Parke II, MD, chief executive officer of the AAO. Dr. Gordon was thanked for her "leadership and dedication to the Council, and in honor of her distinguished service" upon finishing her term as chair of the AAO Council in December 2019.

Kevin M. Miller, MD, Kolokotrones Chair in Ophthalmology, presented the Charles D. Kelman Lecture on "Artificial Iris Implantation" on October 14, 2019.

Peter A. Quiros, MD, health sciences associate clinical professor of ophthalmology, served as program director for the AAO Subspecialty Day: Neuro-Ophthalmology.

SriniVas R. Sadda, MD, professor of ophthalmology, served as a member of the planning group for the AAO Subspecialty Day: Retina.

Edmund Tsui, MD, assistant professor, was awarded Best Original Paper (Uveitis) for "One-Year Outcomes of Uveitic Macular Edema in the First-Line Antimetabolites as Steroid-Sparing Treatment (FAST) Uveitis Trial" on October 14, 2019.

**Pending title*

Faculty Honors

Anne L. Coleman, MD, PhD, The Fran and Ray Stark Foundation Chair in Ophthalmology, and a member of the Association for Research in Vision and Ophthalmology (ARVO) Gold Fellow Class of 2019, was honored with the designation of FARVO at the 2019 ARVO Meeting on April 28, 2019, in Vancouver, Canada. The title is in recognition of Dr. Coleman's accomplishments, leadership, and contributions to the Association.

In addition, Dr. Coleman received the Bonnie Strickland Champion for Children's Vision Award *(see above photo)* from the National Center for Children's Vision and Eye Health (NCCVEH) at Prevent Blindness at the NCCVEH Annual Meeting on September 14, 2019, in Baltimore, Maryland. The award recognizes significant efforts to improve children's vision and eye health at the state or national level.

Dr. Coleman also presented The Joseph Smiddy Memorial Lecture "Looking Beyond Established Risk Factors: Lifestyle and Nutrition in Glaucoma" at the Wilmer Eye Institute at Johns Hopkins University on December 5, 2019, in Baltimore, Maryland.

Ava K. Bittner, OD, PhD, Smotrich Family Optometric Clinician-Scientist Chair, received the 2019 Clinical Research Award for $100,000 from the American Academy of Optometry and a sub-award from the National Institute on Disability, Independent Living, and Rehabilitation Research to conduct the "Community Access through Remote Eyesight (CARE) Study" of Aira services for people who are blind or have low vision.

Sophie X. Deng, MD, PhD, Joan and Jerome Snyder Chair in Cornea Diseases,* received a four-year $10.3 million award from the California Institute for Regenerative Medicine, which will fund a clinical trial for limbal stem cell deficiency, a blinding eye condition.

Dr. Deng's testing involves extracting a small number of limbal stem cells from a person's eye, multiplying them in a lab, and then transplanting them back into the eye, where they could regenerate the cornea and restore vision. The research will be conducted in collaboration with the UCLA–UCI Alpha Stem Cell Clinic, a partnership between UCLA and UC Irvine.

Lynn K. Gordon, MD, PhD, Vernon O. Underwood Family Chair in Ophthalmology, and Women in Ophthalmology Champion for Change awardee, received the 2019 Distinguished Service Award from the California Academy of Eye Physicians and Surgeons.

Roxana A. Radu, MD, assistant professor of ophthalmology, was awarded a $125,000 Rose Hills Foundation (RHF) Research award from the Broad Stem Cell Research Center for her project "The Role of ABCA4 in iPSC-derived RPE Cells from Patients with Macular Degeneration." The RHF award supports innovative science conducted by UCLA's junior faculty that will advance the understanding and utility of stem cells.

Steven D. Schwartz, MD, The Ahmanson Chair in Ophthalmology, and scientists at the UCLA Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research, have been awarded a $5.1 million grant from the California Institute for Regenerative Medicine to advance the development of a novel therapy for blinding retinal conditions. The team, led by Dr. Schwartz, will use the grant to support development of a treatment that will use patients' own skin cells to generate autologous induced pluripotent stem cells to derive retinal pigment epithelium cells, which are lost in many blinding eye conditions.

Barry A. Weissman, OD, PhD, professor of ophthalmology emeritus, was presented with the 2019 Dr. Richard Hemenger Faculty Research Award at the Marshall B. Ketchum University (MBKU) Southern California College of Optometry Fall Awards ceremony on November 12, 2019, in Fullerton, California. The award recognizes the quality, significance, impact, and relevance to optometry of Dr. Weissman's research contributions. In addition, Dr. Weissman's name has been added to a perpetual plaque displayed in MBKU's Warren & Carol Low Student Union.

Dr. Eric Borsting (left), professor and acting dean of the Southern California College of Optometry, Marshall B. Ketchum University, presents Dr. Barry Weissman with the 2019 Dr. Richard Hemenger Faculty Research Award, which recognizes "excellence in faculty research."

*Pending title

Institute News

New Faculty Appointments

Laura Bonelli, MD
Health Sciences
Assistant Clinical Professor

Dr. Bonelli completed her residency in ophthalmology, as well as fellowships in neuro-ophthalmology and oculoplastics, at the Hospital de Clínicas, University of Buenos Aires, Argentina.

Joining the UCLA Department of Ophthalmology in 2008 as associate physician diplomate, Dr. Bonelli specializes in comprehensive ophthalmology and neuro-ophthalmology. A committed educator, Dr. Bonelli teaches medical student courses at the David Geffen School of Medicine and regularly lectures at educational conferences. In recognition of her work with ophthalmology residents, Dr. Bonelli received the Stein Eye Institute Faculty Teaching Award in 2014.

Dr. Bonelli is the director of in-patient consultation services for the Ronald Reagan UCLA Medical Center and UCLA Medical Center, Santa Monica, where she oversaw a broad reorganization to improve services and to provide more efficient patient care. In addition to those locations, Dr. Bonelli teaches residents and sees patients at the Stein Eye Institute in Westwood and the Stein Eye Center–Santa Monica.

Kaustabh Ghosh, PhD
Associate Professor

Dr. Ghosh is an interdisciplinary researcher with expertise in vascular inflammation, mechanobiology, bioengineering, and nanomedicine.

He obtained his undergraduate degree in chemical engineering from the National Institute of Technology, Warangal, India; received his PhD in biomedical engineering from Stony Brook University, New York; and conducted his postdoctoral fellowship in the Vascular Biology Program at Boston Children's Hospital and Harvard Medical School.

Most recently, Dr. Ghosh was associate professor of bioengineering at the University of California, Riverside (UCR), as well as participating faculty in the UCR Division of Biomedical Sciences, Stem Cell Center, and the Program in Cell, Molecular and Developmental Biology. The Ghosh Research Group at UCR focused on leveraging the principles of mechanobiology to examine and treat inflammation-mediated vascular degeneration associated with diabetic retinopathy and age-related macular degeneration.

Dr. Ghosh has two active R01 grants from the National Eye Institute and has received numerous honors, most recently Featured Scientist from the BrightFocus Foundation.

Monica R. Khitri, MD
Health Sciences
Assistant Clinical Professor

Dr. Khitri specializes in the evaluation and treatment of pediatric ophthalmic diseases, including pediatric cataracts, nasolacrimal duct obstructions, amblyopia, and retinopathy of prematurity. She also treats and operates on strabismus in both children and adults.

She received her medical degree from the David Geffen School of Medicine at UCLA and completed her residency in ophthalmology at the Stein Eye Institute, followed by a fellowship in pediatric ophthalmology and strabismus at the Children's Hospital of Philadelphia.

Dr. Khitri is also a medical educator, researcher, and winner of over two dozen academic and professional awards, including the 2018 Faculty Teaching Award for the Stein Eye Institute ophthalmology residency program.

Dr. Khitri sees patients at the Doheny Eye Center UCLA locations in Arcadia, Pasadena, and Orange County. She also teaches residents and fellows at Harbor-UCLA Medical Center, where she is chief of the Pediatric Ophthalmology Service.

Shawn R. Lin, MD
Health Sciences
Assistant Clinical Professor

Specializing in cataract and refractive surgery, Dr. Lin obtained his MD and MBA from Stanford University. He conducted his ophthalmology residency at the UCLA Stein Eye Institute, and he completed a Heed Cornea Fellowship at the Massachusetts Eye and Ear Infirmary at Harvard University.

Dr. Lin's research is focused on combining human and artificial intelligence to deliver exceptional surgical results. He has authored more than a dozen peer-reviewed publications in leading ophthalmology journals, has written chapters on ophthalmology and cornea for textbooks, and has delivered keynote presentations at international scientific meetings.

Dr. Lin founded EyeGuru, an online educational platform visited more than 300,000 times a year by ophthalmologists from 125 countries. In this role, Dr. Lin helps to advance knowledge in the field and train the next generation of ophthalmologists.

Dr. Lin sees patients at the Stein Eye Institute in Westwood.

New Faculty Appointments, *continued*

Yirong Peng, PhD
Assistant Professor of Ophthalmology

Dr. Peng is a neuroscientist whose research focuses on large-scale transcriptomic profiling of retinal cells in healthy and pathological conditions to understand human vision and provide insights for the study of ocular diseases.

Dr. Peng received her PhD in neurobiology from the Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China, in 2011. Her doctoral research examined the role of functional interactions between inhibitory and excitatory synapses that maintain the stability of neural networks. She then joined the laboratory of Dr. Joshua Sanes at Harvard University, where she was a postdoctoral fellow until 2019. In her postdoctoral work, she leveraged high throughput single-cell transcriptomic methods to uncover key transcriptional factors that control the specification of retinal cell types.

At Stein Eye, Dr. Peng will continue to develop state-of-the-art transcriptomic and genomic tools to reveal the molecular underpinnings of the formation of retinal circuits and the pathogenesis of retinal diseases.

Edmund Tsui, MD
Assistant Professor

Dr. Tsui is a clinician-scientist specializing in the management of uveitis and ocular inflammatory diseases. He completed his medical training at Dartmouth Medical School followed by an ophthalmology residency at the New York University School of Medicine, where he was elected chief resident. He completed his fellowship in uveitis and ocular inflammatory disease at the Francis I. Proctor Foundation at University of California, San Francisco.

Dr. Tsui's research includes developing new methods to measure and quantify intraocular inflammation with optical coherence tomography and laser flare photometry. He is a co-investigator in the MERIT, ADVISE, and ZEDS multicenter clinical trials. He serves on the Association for Research in Vision and Ophthalmology Continuing Medical Education Committee and the Advocacy and Outreach Committee. He is also a social media editor for the journals *Ophthalmology, Ophthalmology Retina*, and *Ophthalmology Glaucoma*.

Dr. Tsui provides care to patients at the Stein Eye Institute in Westwood.

COURSES

Avoiding and Treating Filler Related Complications

The UCLA Stein Eye Aesthetic Center presented a three-hour evening course for physicians, physician assistants, and nurse practitioners that perform facial filler injections or see patients who have had injections. Although fillers are among the safest of all techniques for facial rejuvenation, complications do occur, and the course—held July 18, 2019, at the UCLA Stein Eye Institute—reviewed the current understanding and research related to causation, avoidance, and treatment of the most serious filler complications.

(Above) From l to r: Dr. Bartly Mondino, Danica Fiaschetti, Dr. Robert Goldberg, and Dr. Cynthia Boxrud at the course: Avoiding and Treating Filler Related Complications.

Aesthetic Eyelid and Facial Rejuvenation Course

Surgical specialists and practicing ophthalmologists from across the world attended the two-day Aesthetic Eyelid and Facial Rejuvenation Course at the UCLA Stein Eye Institute July 19–20, 2019.

The popular course included a hands-on dissection workshop where participants gained experience performing eyelid and facial procedures utilizing the most advanced techniques. Emphasis was on delivering high quality, individualized care—hallmarks of the UCLA Department of Ophthalmology's Aesthetic Center.

The second day featured a full-day symposium that covered a wide range of aesthetic surgery topics and included live demonstrations. The didactic portion of the course was highlighted by the Robert Axelrod, MD, Memorial Lecture, which was presented by **Guy Ben Simon, MD**, professor of ophthalmology at Sackler Faculty of Medicine, Tel Aviv University and senior consultant in the Division of Orbital, Ophthalmic Plastic and Lacrimal Surgery at Sheba Medical Center Tel Hashomer, Israel.

Robert Alan Goldberg, MD, chief of the Orbital and Ophthalmic Plastic Surgery Division, was the program chair. Course directors were Drs. Goldberg, **Daniel Rootman**, **Norman Shorr**, and **Jonathan Hoenig**.

(Left) Ronald Strahan, MD, (left), Jonathan Hoenig, MD, (center), and fellow Alexandra Manta, MD, at the dissection workshop.

(Below) "Class Photo" from the 2019 Aesthetic Eyelid and Facial Rejuvenation Course.

Education

25th Vision-Science Conference

The annual Vision-Science Conference, jointly sponsored by the UCLA Stein Eye Institute and the National Eye Institute Vision Science Training Grant, celebrated its twenty-fifth year October 11–13, 2019, at the UCLA Lake Arrowhead Conference Center.

Eighty participants—including basic scientists, clinical researchers, pre- and postdoctoral fellows, and invited guests—participated in discussions and educational activities. **Greg Field, PhD**, assistant professor of neurobiology, Duke University School of Medicine, presented the keynote address "New insights into parallel processing and synchronous activity in the mammalian retina."

Awards were presented for best oral presentations and best posters.

BEST ORAL PRESENTATIONS

Norianne Ingram, PhD
Joseph Park
Michel Sun, MD, PhD

BEST POSTER PRESENTATIONS

Nan Hultgren, PhD
Benjamin Smith, PhD
Jeonghyun Johnny Ji

Basic and Advanced Training in Cataract Surgery

To help meet the demand for surgery to treat cataracts, **Kevin M. Miller, MD**, Kolokotrones Chair in Ophthalmology and chief of the Cataract and Refractive Surgery Division, presents basic and advanced training courses for ophthalmology residents and fellows in Southern California.

The November 2019 Basic Cataract Surgery Course in Irvine—sponsored by Bausch & Lomb—is a module of the UCLA Department of Ophthalmology's Comprehensive Cataract Surgery Program, and includes all the steps of cataract surgery from incision construction through postoperative instructions. Skills-transfer laboratories provided attendees with hands-on experience in phacoemulsification, phacodynamics, ocular biometry, corneal topography, intraocular lens power calculation, capsulorrhexis, ophthalmic viscosurgical devices, lens loading, toric lens implantation, and laser capsulotomy.

Residents and fellows can sign up for the April 4, 2020, Advanced Cataract Surgery Course at the Marriott Irvine Spectrum Hotel. Sponsored by Alcon Laboratories, the course provides active instruction in anterior and pars plana vitrectomy, femtosecond laser-assisted astigmatism management, toric lens implantation, phaco machine settings, B scan ultrasonography, secondary lens implantation, glaucoma microstent implantation, small pupil management, Meibomian gland imaging, and extracapsular cataract extraction. A "challenging cases" video workshop will also be presented. For more information, email Dr. Miller at: kmiller@ucla.edu.

Attendees at the 2019 Basic Cataract Surgery Course gain hands-on surgical experience.

Alumni Honors

Paul S. Bernstein, MD, PhD
(Residency class of '93, Fellowship class of '93, and 2004 Bradley R. Straatsma Lecturer) has been selected by the Association for Research in Vision and Ophthalmology as the recipient of its 2020 Mildred Weisenfeld Award for Excellence in Ophthalmology, which honors outstanding research in the basic or clinical sciences.

John So-Min Chang, MD
(Residency class of '90) received the International Society of Refractive Surgery (ISRS) Founders' Award on October 11, 2019, in San Francisco, California. Dr. Chang serves as president of the ISRS, and the award honors a member who has made extraordinary contributions to the growth and advancement of the society and its mission.

David B. Glasser, MD
(Residency class of '83 and 2009 Thomas H. Pettit Lecturer), American Academy of Ophthalmology Secretary for Federal Affairs, participated in a congressional roundtable on vision health in the context of 21st-century America's aging demographics. Participants examined the economic and social impact of vision loss, while highlighting specific policy recommendations. The event, "A Life Course of Healthy Vision in the United States," was hosted by the Congressional Vision Caucus, the Global Coalition on Aging, and Prevent Blindness.

Barry M. Kerman, MD
(Residency class of '74 and Fellowship class of '75) was voted the 2019 "Teacher of the Year" for the California Pacific Medical Center–San Francisco campus, with his recognition noting, "The next generation of surgeons is stronger thanks to your enduring generosity and mentorship. Thank you for your dedication to resident education."

Gregg T. Kokame, MD,
(Residency class of '87 and 2013 Thomas H. Pettit Lecturer) has been appointed chief of the Division of Ophthalmology at the University of Hawaii School of Medicine starting January 1, 2020, where he will work to further advance ophthalmology teaching, research, and patient care throughout the region.

Gregg T. Kokame, MD
Chief of the Division of Ophthalmology
University of Hawaii
School of Medicine

UCLA Stein Eye Institute Alumni Association Support Group

New officers were appointed to the UCLA Stein Eye Institute Alumni Association in 2019—faculty alumna **Dr. J. Bronwyn Bateman**, President (Residency class of '78, Fellowship class of '79); **Dr. Troy Elander**, Vice President, assistant clinical professor in the UCLA Department of Ophthalmology, who has been part of the volunteer teaching faculty for nearly 30 years; and Associate Professor of Ophthalmology and Residency Program Director **Dr. Stacy Pineles**, Secretary/Treasurer (Residency class of '08, Fellowship class of '09).

The Alumni Association also became an officially recognized UCLA Support Group, with the primary objectives to promote the social and professional relations of its members and alumni as well as advance the interests of Stein Eye and the Department of Ophthalmology. Stein Eye is the common bond, and as such, membership is open to all graduates, residents, fellows, faculty, and volunteer clinical faculty. Annual membership dues are nominal and help underwrite the Resident Research Grant Awards, the Stein Eye Institute Excellence in Research Graduation Awards for Residents and Fellows, and the annual receptions at the American Academy of Ophthalmology and Association for Research in Vision and Ophthalmology.

With the vast footprint Stein Eye has made in ophthalmology the world over, the officers are invigorated with the goal to inspire more active engagement of our broad group of constituents across all regions and foster a supportive network among Stein Eye and community-based ophthalmologists.

To become a member of the UCLA Stein Eye Institute Alumni Association, go to: http://giving.ucla.edu/SEIAlumniDues.

J. Bronwyn Bateman, MD, PhD
President

Troy Elander, MD
Vice President

Stacy L. Pineles, MD
Secretary/Treasurer

Celebrating Five Years of Partnership

Alumni from the Stein and Doheny Eye Institutes gathered for a reception on October 13, 2019, in San Francisco, California. In addition to seeing friends and colleagues, the event marked a five-year milestone: In 2014, the Doheny Eye Institute began its historic partnership with the UCLA Department of Ophthalmology. With that action, UCLA became the only university in the United States with two eye institutes: the Stein Eye Institute and the Doheny Eye Institute.

In his speech to attendees, **Bartly J. Mondino, MD**, chair of the UCLA Department of Ophthalmology and affiliation chair for the Doheny Eye Institute, reflected on this brave leap of faith: "Over five years ago in the boardroom of the Doheny Eye Institute, I looked around the table at members of the USC faculty and at **Ronald E. Smith, MD**, former chair of the Department of Ophthalmology at USC. There was a sense of understandable apprehension based on consideration of this drastic career move for each and every one of them. I told the USC faculty they would be on the ground floor in establishing something great—this unprecedented and perhaps unique affiliation in ophthalmology."

Trust in that promised outcome was justified. Doheny's partnership with UCLA has proven to be a bona fide success. Over 20 faculty have been recruited as a result of the affiliation, and between the two Institutes, there are 35 endowed chairs and more than 30 fellows. Doheny Eye Centers UCLA in Arcadia, Orange County, and Pasadena are operational, with strong upward trajectories in new visits, return visits, and surgeries. Just as importantly, the three Centers have returned a profit, which is noteworthy for medical centers with senior faculty, broad research, federal grants, and educational activities.

Looking forward, the Doheny Eye Institute has purchased a state-of-the-art facility in Pasadena, with generous grounds for parking and future expansion. The building will include research labs, as well as educational and patient care facilities. The Doheny Eye Institute in "Eastwood" will be home to the UCLA Department of Ophthalmology's second vision-science campus, complementing the Stein Eye Institute's vision-science campus in Westwood, which was completed in 2017, with the construction of the Edie & Lew Wasserman Building and renovation and seismic upgrade of the Jules Stein Building.

"Aside from the historic and remarkable affiliation," said **Alfredo A. Sadun, MD, PhD**, vice chair of ophthalmology at the Doheny Eye Center UCLA, "I personally feel extremely gratified that the large core of former faculty, who, by voting with their feet demonstrated great courage in leaving USC, can now look back, five years after, knowing that their faith in UCLA, in our leadership, and in each other, was fully justified."

The Doheny Eye Institute vision-science campus in Pasadena, anticipated opening 2021.

2019 Stein and Doheny Alumni Reception

Alumni from the Stein and Doheny Eye Institutes attended a reception in San Francisco, California, on October 13, 2019, for a fun evening reconnecting with friends, colleagues, and mentors.

The joint reception—held annually during the American Academy of Ophthalmology meeting—was hosted by the UCLA Stein Eye Institute Alumni Association and the Doheny Eye Institute Professional Alumni Association.

Drs. John Chang and J. Bronwyn Bateman share a commitment to advancing their field and serve as leaders in ophthalmology societies.

Dr. Bartly Mondino (center), chair of the UCLA Department of Ophthalmology and director of the Stein Eye Institute, with Department faculty members Dr. Anne Coleman (left), president-elect of the American Academy of Ophthalmology, and Dr. Lynn Gordon, immediate past chair of the AAO Council.

L to r: Isabela Lin, Dr. Tara McCannel, Dr. Shawn Lin, and Dr. Mitra Nejad enjoy the evening festivities.

UCLA Department of Ophthalmology faculty members (l to r): Drs. Simon Law, James Tan, and Kouros Nouri-Mahdavi.

2019 Stein and Doheny Alumni Reception

L to r: Dr. Alfredo Sadun, vice chair of ophthalmology, Doheny Eye Center UCLA, with Dr. SriniVas Sadda, president and chief scientific officer, Doheny Eye Institute.

Dr. Joseph Demer (left) joins his colleague and research collaborator Dr. Azam Qureshi.

Drs. George Rajacich (left) and Troy Elander enjoy an opportunity to visit with one another.

Dr. J. Bronwyn Bateman (left) and Dr. Bartly Mondino with Ms. Marissa Goldberg (right), executive director and chief financial officer of the Doheny Eye Institute.

L to r: Drs. Lydia Sauer, Paul Bernstein, Bradley Straatsma, and Andrew Chang savor the chance to reconnect at the alumni event.

UCLA Stein Eye Institute

405 Hilgard Avenue
Box 957000, 100 Stein Plaza
Los Angeles, California, 90095-7000
U.S.A.

Forwarding Service Requested

Non-Profit Org.
U.S. Postage
PAID
UCLA

Contact Information

Stein Eye Institute, Westwood
100 Stein Plaza, UCLA
Los Angeles, CA 90095
Referral Service: (310) 794-9770
Emergency Service: (310) 825-3090
After-Hours Emergency Service:
(310) 825-2111
uclahealth.org/eye

Stein Eye Center–Santa Monica
1807 Wilshire Blvd., Suite 203
Santa Monica, CA 90403
(310) 829-0160

Doheny Eye Center UCLA–Arcadia
622 W. Duarte Rd., Suite 101
Arcadia, CA 91007
(626) 254-9010

Doheny Eye Center UCLA–Orange County
Orange Coast Memorial Medical Center
18111 Brookhurst St., Suite 6400
Fountain Valley, CA 92708
(714) 963-1444

Doheny Eye Center UCLA–Pasadena
Huntington Pavilion
624 S. Fair Oaks Blvd., 2nd Floor
Pasadena, CA 91105
(626) 817-4747

UCLA DEPARTMENT OF OPHTHALMOLOGY
Los Angeles and Beyond

Alumni Relations
Email: alumni@jsei.ucla.edu

Philanthropy
Stein Eye Development Office
100 Stein Plaza, UCLA, Room 1-124
Los Angeles, CA 90095-7000
Telephone: (310) 206-6035
Email: giving@jsei.ucla.edu

Volunteer Opportunities
Center for Community Outreach & Policy
www.uclahealth.org/UMEC
Telephone: (310) 825-2195
Email: community@jsei.ucla.edu
facebook.com/uclamobileeyeclinic
instagram.com/uclamobileeyeclinic
twitter.com/uclaMEC

Read past issues of EYE Magazine at:
www.uclahealth.org/Eye/news

Send comments or questions to:
Tina-Marie Gauthier
Managing Editor
Email: Tina@EyeCiteEditing.com

UCLA Health is consistently ranked among the best hospitals in the country by U.S. News & World Report, *and UCLA Stein Eye and Doheny Eye Institutes are ranked among the top five in the nation in ophthalmology.*

UCLA Stein Eye Institute | DOHENY EYE INSTITUTE