

2021


# enVISION

News from the UC Davis Eye Center



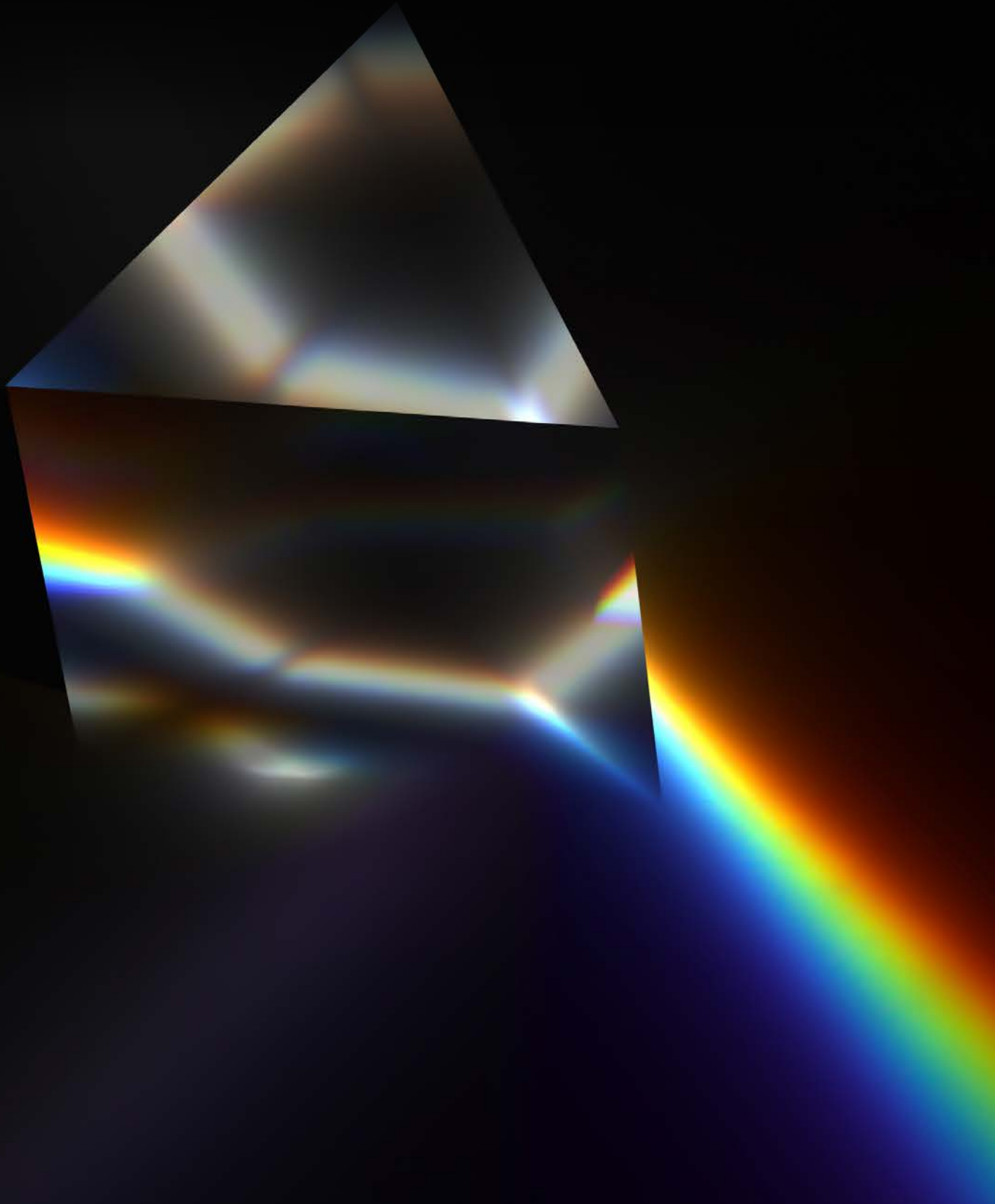
## Ophthalmic Research in the Pandemic

[health.ucdavis.edu/eyecenter](http://health.ucdavis.edu/eyecenter)

 UC Davis Eye Center

# enVISION

News from the UC Davis Eye Center



## our VISION

Our vision is to be the world's transformational leader in collaborative vision research and the development of cures for blinding eye disease, from cornea to cortex.

## our MISSION

We will realize our vision through pioneering collaborative vision research, providing state-of-the-art, world-class eye care, and training superbly prepared ophthalmologists and vision scientists.

Through community outreach and relationship building, we support and promote the UC Davis Eye Center as the premier provider of quality eye care for Northern California and of leading-edge vision research for the world.

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# Eye to Eye

In the fall of this year, the Department of Ophthalmology & Vision Science will inaugurate the first of four new Endowed Chairs. The investiture of an endowed chair is a great moment for our faculty and for the patients for whom we care.

By way of explanation, a gift of \$2M establishes an endowment. The chair holder can use the interest that spins off the endowment principal to invest in meaningful academic pursuits above and beyond the delivery of patient care. As such, an endowed chair is the catalyst for new discoveries in medicine. The chair bears the name of the donor in perpetuity, and when the career of the chair holder comes to an end, a new chair holder carries on the legacy. It is, therefore, a gift that truly keeps on giving and is a permanent legacy for discovery and innovation.

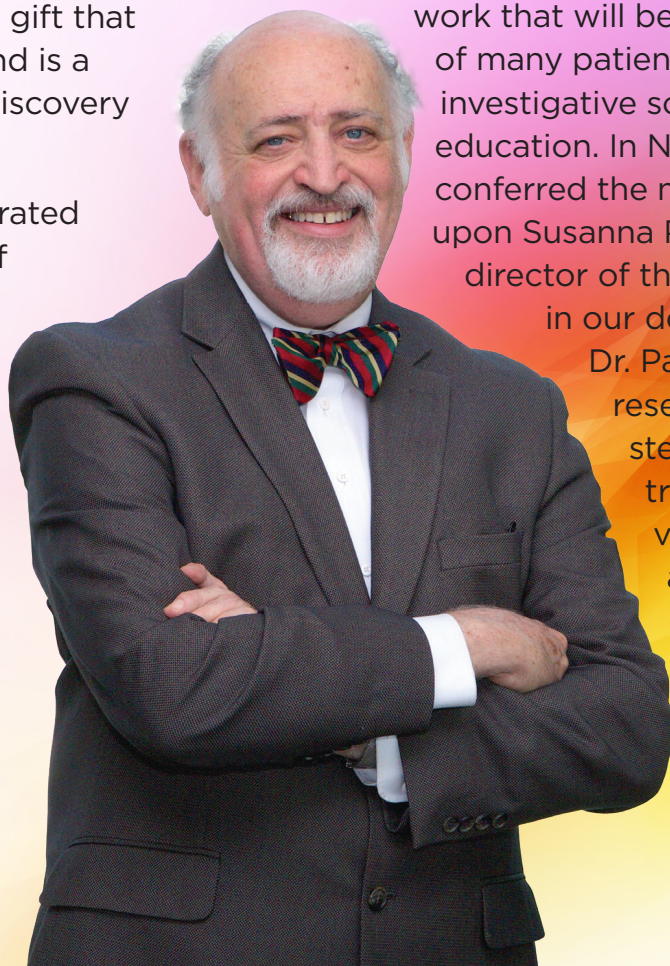
In September, we celebrated the formal investiture of the Neil and MJ Kelly Presidential Chair in Vitreoretinal Science. Neil and MJ Kelly had the generosity and foresight to establish this chair, which will no doubt contribute significantly to treatments for devastating retinal diseases. This endowed

chair will be held by Professor Paul Sieving, former director of the National Eye Institute and now a senior member of our department. Dr. Sieving is the lead in the development of the Center for Ocular Regenerative Therapy (CORT), which will occupy a central place in the new Tschannen Eye Institute Building. Dr. Sieving and his collaborators will focus on the development of gene therapy for a range of inherited retinal disorders.

In November, we celebrated the formal investiture of the Barbara A. and Alan M. Roth, M.D., Endowed Chair for Discovery, Education and Patient Care in Vision Science. Emeritus faculty member Dr. Alan Roth, sees this \$2M investment

as a roadmap and key to creative work that will better the lives of many patients through investigative science and education. In November, we conferred the named Chair upon Susanna Park, M.D., Ph.D., director of the Retina Service in our department.

Dr. Park's innovative research employs stem cells for the treatment of retinal vascular diseases as well as macular degenerative disorders.





Currently, the search is underway for two additional chairs: one in clinical glaucoma and one in glaucoma research. Through the generosity of grateful patient Daryl Geweke, these chairs will serve to advance the science and treatment of glaucoma, the cause of so much vision loss in our population. This gift will no doubt advance the science needed to understand and treat this disease.

We are witnessing the construction of the new eye institute. As wonderful as that is, what counts even more is the programming and science that is housed in this wonderful new building. The endowment of a chair or professorship ensures the future of our academic pursuits to the ultimate benefit of our patients by allowing for the recruitment and retention of outstanding faculty. We thank those who have made an investment in vision science and whose names will be carried forward in perpetuity to symbolize their dedication to advancement in vision care.

**Mark J. Mannis, M.D., F.A.C.S.**

Fosse Endowed Chair in Vision Science Research  
Professor and Chair  
Department of Ophthalmology & Vision Science  
University of California, Davis Eye Center

## Executive Advisory Council 2021-2022

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# VISION SCIENCE AT UC DAVIS

From glaucoma discoveries that hold clues about Alzheimer's disease to stem cell therapies that reverse blinding eye diseases, every day, UC Davis Eye Center researchers and specialists are expanding the horizons of what vision science can do for patients. Our partnerships across fields, including our extraordinary collaboration with colleagues at the world's best veterinary school, position us to accelerate groundbreaking science, leading-edge therapies and, ultimately, cures.

## ADOLPH COORS FOUNDATION PROVIDES MULTI-YEAR RESEARCH GRANT

The UC Davis Eye Center received a \$310,640 award from the Adolph Coors Foundation supporting a three-year study to determine the effects of noninvasive electroacupuncture on T-cell production. The study will rigorously analyze participants' overall health, immune cells, and the biochemical markers associated with immunity.



Dr. Min Zhao, Professor, UC Davis Eye Center, and Dr. Fernando Fierro, Associate Professor, UC Davis Department of Cell Biology and Human Anatomy, are leading the project in collaboration with Dr. Don Ha from UCLA. The study addresses immune regulation, which will benefit innumerable medical conditions including infections, cancer, and other diseases where immunity is dysregulated. At this early stage, the researchers are not targeting a particular disease; rather, they aim to establish the efficacy of noninvasive electroacupuncture on immune regulation. Once this is tested and proven, the team expects to work on specific, carefully selected disease targets.

“This unique support gives us a rare opportunity not available from conventional funding

mechanisms, accelerating our ability to determine systemic immune responses to electrical stimulation of acupuncture points noninvasively, without needles,” said Dr. Zhao. “Our research may lead to a completely new understanding of how our body responds to precisely controlled electric stimulation, and may offer new electroceuticals for immune modulation for the treatment of many important diseases.”

The Adolph Coors Foundation was established in 1975 and has awarded \$135.3 million to a variety of causes since its inception. This is the first award the Adolph Coors Foundation has given to the nationally-renowned UC Davis Eye Center.

“Due to a generous gift and the unbelievable vision of Bill Coors, the Adolph Coors Foundation has sought and funded promising evidence-based integrative medicine practices with the goal of seeing those practices reach the medical mainstream,” said Carrie Tynan, Executive Director of the Adolph Coors Foundation. “Our foundation is proud to partner with UC Davis Health on what we believe could be a revolutionary approach to wellness.”

The two-year research project began July 2021 and will conclude in June 2023.

## PAUL A. SIEVING, M.D., PH.D., INDUCTED AS THE INAUGURAL HOLDER OF THE NEIL AND MJ KELLY PRESIDENTIAL CHAIR IN VITREORETINAL SCIENCE

Paul Sieving, M.D., Ph.D., an internationally renowned physician, vision scientist and leader in eye care and research, has been inducted as the inaugural holder of the Neil and MJ Kelly



Investiture Ceremony of the Neil and MJ Kelly Presidential Chair in Vitreoretinal Science

Presidential Chair in Vitreoretinal Science at UC Davis. Among the distinguished speakers at the event was the twenty-first president of the University of California, Michael V. Drake, MD, who is a glaucoma specialist by training.

Dr. Sieving joined the UC Davis Eye Center faculty in 2019 as a professor of ophthalmology. He specializes in identifying the genetic causes of blinding inherited diseases of the retina and macula with the goal of bringing gene therapy and cell-based therapies to patients. He is creating a new Center for Ocular Regenerative Therapy (CORT) to provide care for patients with genetically-caused eye disease and to explore the development of gene- and cell-based regenerative therapies. Inherited retinal degeneration conditions currently have no effective treatment.

Prior to coming to UC Davis, Dr. Sieving served as the longtime director of the National Eye Institute (NEI) at the National Institutes of Health, where he managed a \$700 million budget that supported 550 physicians, researchers, and staff. His signature accomplishment was launching the NEI Audacious Goals Initiative for Regenerative Medicine, a fifteen year research and clinical effort that seeks to restore function of critical nerve cells in the eye and visual system, even after damage from diseases such as age-related macular degeneration and glaucoma. As a senior investigator at the NIH, Dr. Sieving explored new treatments for retinitis pigmentosa, Stargardt disease, and other inherited disorders of the retina and macula. His work led to the first human clinical trial of ciliary neurotrophic factor (CNTF) for retinitis pigmentosa, a genetic disorder that causes retinal vision cells to progressively break down and die. Dr. Sieving is also known for working to develop gene therapy treatment for X-linked retinoschisis

(XLRS), a form of retinal degeneration that causes central vision loss in children and young adults. His lab developed a mouse model for XLRS and then successfully used gene supplementation to rectify the condition. The treatment is now in human clinical trials.

Neil Kelly, MD, and MJ Kelly established the Neil and MJ Kelly Presidential Chair in Vitreoretinal Science in 2017. Neil was the first resident to graduate from the UC Davis Department of Ophthalmology & Vision Science. He served for fifteen years on the department's volunteer clinical faculty and helped to train and educate its residents. Neil, who was the first fellowship-trained retina specialist in Sacramento, established the Retinal Consultants Medical Group in 1975. As the acknowledged inventor of macular hole surgery, he changed the lives of countless patients suffering from macular disease. Before this discovery, patients with macular holes were considered legally blind. In addition, Neil is one of two physicians to pioneer the use of pneumatic retinopexy as a treatment for retinal detachment, now a standard tool in vitreoretinal surgical repair options. MJ trained and worked as a nurse for many years and is very active in Sacramento garden clubs, floral design, and Toastmasters. Neil retired from practice in 2003.

## **DENNY AND JEANENE DICKENSON DONATE SEED FUNDING FOR CENTER FOR OCULAR REGENERATIVE THERAPY - TRANSLATIONAL ORGANOID PROGRAM**

Thanks to the philanthropic support of Denny and Jeanene Dickenson, the Translational Organoid



Program (CORT-TOP) will support advanced organoid technologies for the study of human ocular disease biology and is directed toward development of human ocular therapy. The overall mission is to generate and facilitate disease modeling using human organoids and to develop and initiate human translational therapy trials. The CORT-TOP will run a human ocular disease patient tissue clinical acquisition service and maintain an ocular disease biobank of iPSC transformed disease cells and organoids of select ocular diseases. The immediate and ultimate goal is to develop and support human ocular cell therapy trials. The program is directed by Anna LaTorre, Ph.D. and Ala Moshiri, M.D., Ph.D., in collaboration with Paul Sieving, M.D., Ph.D., and colleagues from the Eye Center and veterinary medicine.

### **CLAIRE BURNS AUDACIOUS PROPOSALS 2021 GRANT PROGRAM**

Through a generous gift from the Burns, the Department of Ophthalmology & Vision Science is able to offer small seed grants for “audacious” proposals in vision care to members of the UC Davis faculty. The intent is to stimulate the testing of bold hypotheses, encourage engagement by experts both inside and outside the specialty field, and foster the creation of unique interdisciplinary teams to address unmet clinical needs in cornea and external disease.

The premise of these grants is that investigators will use the funding to support novel ideas for therapeutics for the cornea and external eye that can be translated from bench to bedside. Our goal is to give an opportunity to investigators to explore a new idea with the potential to provide new diagnostic tools or treatments for disabling eye disease. The proposals funded from a very competitive pool of submissions include:

- Parisa Emami, M.D., M.P.H., “A Fully Automated Wearable Ophthalmic Imaging System.”
- Brian Leonard, DVM, Ph.D., “Introduction of antimicrobial peptides from corneal donor tissue.”
- Sangwan Park, DVM, Ph.D., “Evaluation of novel lipid extract to improve ocular surface health in a murine model of meibomian gland dysfunction.”
- Min Zhao, Ph.D., “Contact Lens Bioelectronics to Mobilize Corneal Epithelium for Wound Healing.”

Many thanks to the grant selection committee members, which included Eye Center alumni Neil Kelly, M.D., and Rick Lewis, M.D., as well as Eye Center faculty members Paul FitzGerald, Ph.D., Gary Novack, Ph.D., Mark Mannis, M.D., F.A.C.S., Ivan Schwab, M.D. and Paul Sieving, M.D., Ph.D.

### **SUSANNA SOON-CHUN PARK, M.D., PH.D., INDUCTED AS THE INAUGURAL HOLDER OF THE BARBARA A. AND ALAN M. ROTH, M.D., ENDOWED CHAIR FOR DISCOVERY, EDUCATION AND PATIENT CARE**



Susanna Soon-Chun Park, M.D., Ph.D., a board-certified ophthalmologist with fellowship training in vitreoretinal surgery, has been inducted as the inaugural holder of the Barbara A. and Alan M. Roth, M.D., Endowed Chair for Discovery, Education and Patient Care.

She joined the UC Davis Department of Ophthalmology faculty in 2005 and is the director of the Retina Division. She is also the director of the vitreoretinal fellowship program. Dr. Park provides surgical and medical therapies for retinal disorders. She has expertise in ocular oncology and treats patients who have intraocular tumors, offering proton beam irradiation for ocular melanoma and local eye therapies for retinoblastoma. Dr. Park’s research focuses on developing novel therapies for retinal disorders through translational and clinical research, including exploring the use of stem cells for retinal regenerative therapy.

Dr. Park earned her M.D. from the Yale University School of Medicine and her Ph.D. in pharmacology from Yale University with support from the Medical

Scientist Training Program from the National Science Foundation. She completed her residency in ophthalmology and fellowship in vitreoretinal surgery at the Massachusetts Eye and Ear Hospital, Harvard Medical School. Dr. Park has authored numerous peer-reviewed publications and received the Joan Oettinger Memorial Award for Excellence in Cancer Research. She also received the Senior Honor Award from the American Society of Retinal Specialists and the Achievement Award from the American Academy of Ophthalmology. Dr. Park has been selected by Sacramento Magazine as one of the Best Doctors in Sacramento and by Best Doctors, Inc. as one of the Best Doctors in America every year since 2011.

Alan M. Roth, M.D., established the Barbara A. and Alan M. Roth, M.D., Endowed Chair in 2017. Dr. Roth is a former UC Davis faculty member, having joined the then-new Department of Ophthalmology in 1972. With a long career as a comprehensive ophthalmologist, he delivered care to his patients and, as an ocular pathologist, determined the causes of disease at the microscopic level. Dr. Roth distinguished himself as a clinician, pathologist, and teacher.

Dr. Roth feels it is important to support the future growth of the Eye Center with philanthropic investment. In addition to the endowed chair, Dr. Roth established the Alan and Barbara Roth Ophthalmic Pathology Laboratory in the new UC Davis Eye Center facility. Dr. Roth devotes his time to enjoying music, watching Giants baseball games, and traveling.

## 2021 J. WILLIAM KOHL, M.D. SUMMER SCHOLARS

Thanks to the ongoing support of Ann Kohl, the J. William Kohl Summer Scholarship for medical students continues to be an important source of inspiration and hope in UC Davis Eye Center's endeavor to promote young scholars in ophthalmology. This program was inspired by Ann's late husband, Bill Kohl, MD, who was one of the founding members of the UC Davis Department of Ophthalmology and Vision Science as well as a champion for encouraging medical students to pursue ophthalmology as a specialty.

Medical students from across the United States reached out with interest in the scholarship, having heard from educators and peers about this unique

opportunity. The UC Davis faculty responded enthusiastically, with new mentors offering an array of projects. UC Davis had its largest group of applicants for the 2021 cycle, and was able to extend an invitation to eight young researchers.

This opportunity provides a stipend of \$2,500 for medical students undertaking mentored research in the vision sciences. Associated with this program is the J. William Kohl, M.D. Research Travel Grant, which consists of a \$1,200 stipend per student. The grant is intended to defray the cost of presenting summer research at national ophthalmology conferences and meetings.

Past and present participants have moved forward with applications to ophthalmology residency, and being a recipient of this scholarship is a pivotal accomplishment that helps students stand apart from other candidates. It has helped ignite continued interest in vision research in these future ophthalmologists, who will contribute to the advancement of the field for years to come.

## Clinical Trials Overview

13 funded clinical trials

6 upcoming funded trials  
(pending approvals)

14 unfunded prospective trials

22 retrospective chart review studies

### CLINICAL TRIALS SPOTLIGHT:

Susanna Park, M.D., Ph.D., received grant funding from Cures Within Reach to start a phase 1 clinical trial exploring autologous CD34+ cells from bone marrow as treatment for retinitis pigmentosa.



# THE PANDEMIC ORIGIN



# OF MODERN VISION SCIENCE

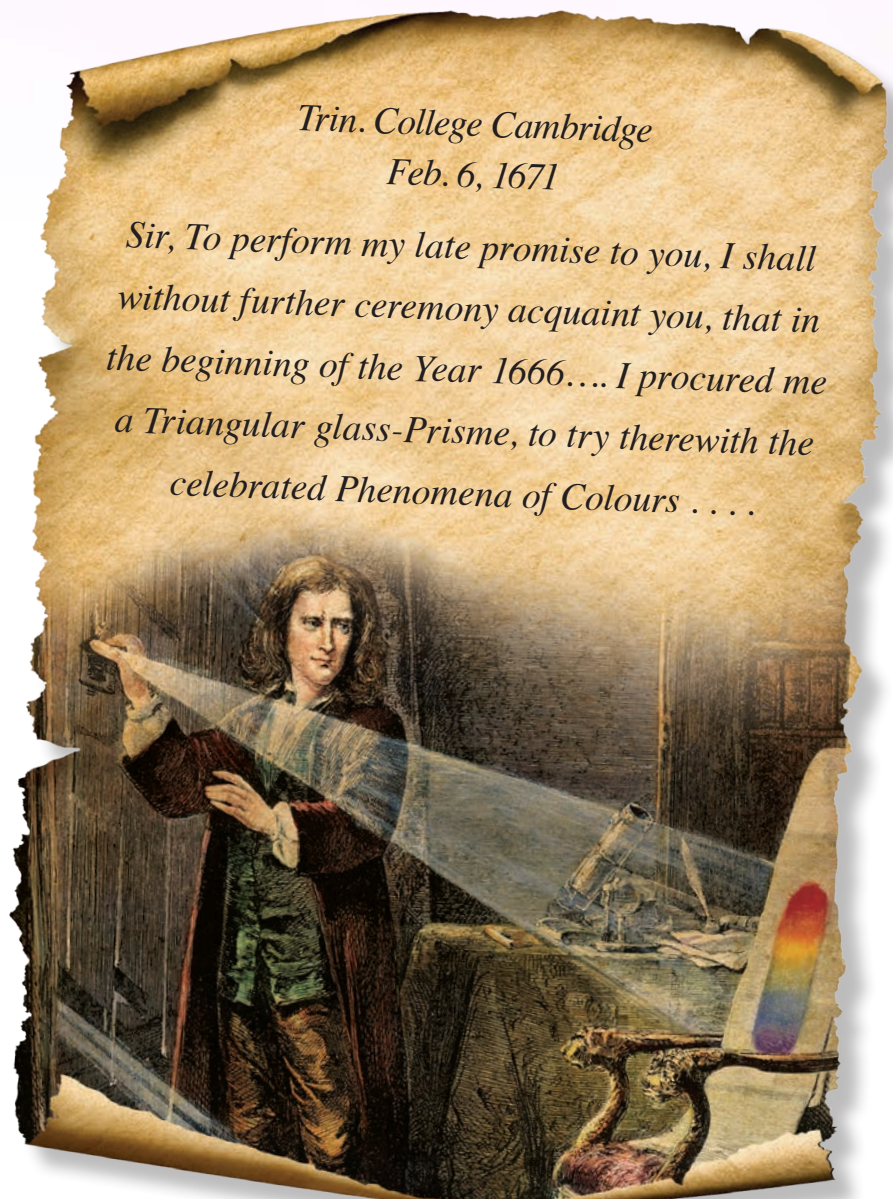
JOHN S. WERNER, PH.D.

MARK J. MANNIS, M.D., F.A.C.S.

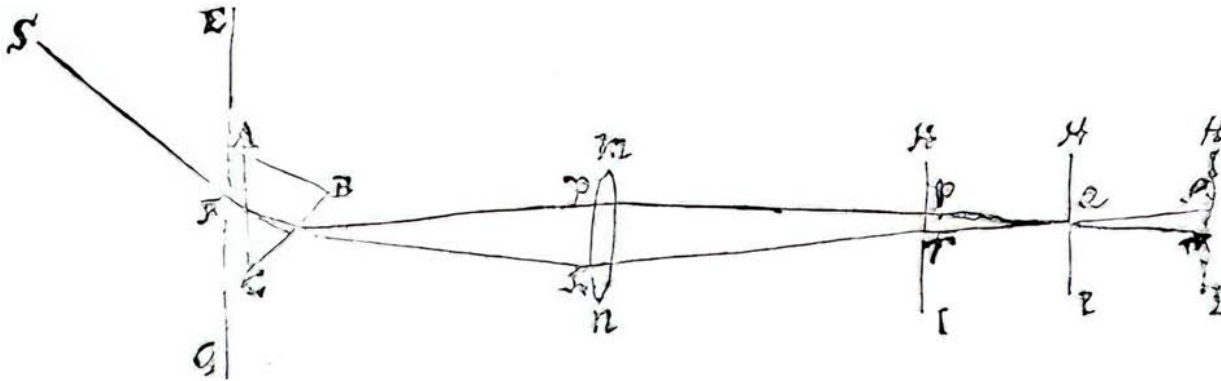


Isaac Newton was a bit of a mystic, so it is unlikely to have escaped his notice that his birth on Christmas day, 1642, nearly coincided with the death of Galileo Galilei. Newton was born in a farmhouse called Woolsthorpe Manor, located in a hamlet of Lincolnshire—a county in the East Midlands of England about 60 miles from Cambridge. Inside the house is a plaque with a couplet by Alexander Pope: “Nature and nature’s law lay hid in night: God said, Let Newton be! and all was light.” Newton’s discoveries of the “hidden” laws of nature occurred during the pandemic that began in the summer of 1665.

While Newton was born in Woolsthorpe Manor, he actually spent little time there after his twelfth year, with one important exception. In the summer of 1665, he had to leave Trinity College because the plague had reached Cambridge. He was 22 and had only recently completed his bachelor’s degree. Newton expected to be at Woolsthorpe Manor until the following March, but a second wave of the pandemic forced him to stay until April 1667. During the 18 months that he spent there, he invented calculus and worked out the laws of force, gravity, and motion. He also conducted experiments with a prism that he had purchased at a county fair on Stourbridge Common. About these experiments, he wrote the following in his first scientific paper (graphic to the right):



Newton held the prism up to a hole in the wall to permit the sun's rays to pass through, and he observed what he called the spectrum (Latin for appearance) of colors. Below we see his 1671 illustration of the light rays being bent or refracted as they travel through the prism to form a spectrum on the opposite wall.



Newton described the spectrum as giving rise to seven fundamental colors. Why Newton chose the number seven is not entirely certain, but he may have felt that there was something magical about this number; he remarked that as there are seven notes in an octave, with the eighth repeating, so too should there be seven sensations of hue. Newton's claim that there are seven fundamental hues (what is normally meant by "color") is still debated—and it now invites other important questions. For example, if we experience a limited number of hue sensations, is it because we have that same limited number of nerve fiber types in the visual system? Prior to Newton, an answer might have been because we have a limited number of light qualities.

For the next 30 years, Newton went on to conduct experiments in which he mixed various colors of the spectrum and depicted his results in the first semi-quantitative diagram of color mixture. With pure colors of the spectrum arranged on the circumference of a circle, all mixtures plotted inside, the exact point was weighted according to his center of gravity rule. He noted that when he mixed all the colors, the result appeared white, like the original sunlight before it passed through the prism. He therefore wrote that the "rays are not coloured"—and stated that the reason for our color perception is not to be found in the nature of light, but the nature of our eye and brain. This insight was without precedent, and set the stage for modern vision science. Like Newton in his later years, scientists study vision by examining the neural pathways in the eye and brain.

The years of the plague in Newton's lifetime spawned the creative thinking of a genius that led to the foundation of modern vision science. Now beginning in the visually symbolic year of 2020, we find ourselves in the midst of a global pandemic of unprecedented proportions. The first physician to succumb to COVID-19 was a





“The years of the plague in Newton’s lifetime spawned the creative thinking of a genius that led to the foundation of modern vision science.”



Chinese ophthalmologist, Li Wenliang, who observed the first patient’s coronavirus infection. Of course, the conditions of the pandemic in 2020 are very different from those of the plague years in Newton’s time. Vaccinations, antiviral therapies, and a better understanding of microbiology and disease transmission have made our efforts more effective. Yet, the COVID-19 pandemic has affected every aspect of ophthalmology—both clinical care and laboratory science. Like the plague years in 17th-century Europe, the pandemic of 2020-2021 resulted in forced isolation and the shutdown of many laboratories and has disrupted scientific work and academic discourse. We have been forced to adapt to new paradigms in our clinical practices and our research laboratories, as in all other aspects of our lives. The pandemic has forced us to look at so many aspects of our personal lives, clinical practices, and research enterprises in completely new ways. The research enterprise—both basic and clinical—remains at the center of what we do in academic ophthalmology. Royal College of Ophthalmologists Academic Chair, Professor Jugnoo Rahi, has said:

*Research is the basis of innovation . . . and the source of the knowledge that underpins prevention and treatment of eye conditions and strategies to reduce the burden of sight impairment. It’s essential that we act now and proactively to minimise the significant adverse impacts of the COVID-19 pandemic on our ability to undertake sight-saving and sight preserving research and develop the clinician scientists of the future.<sup>1</sup>*

Hopefully, in the time of this modern pandemic, we will find ourselves addressing novel questions with fresh perspectives, such as when Newton looked back on his discoveries in Woolsthorpe Manor after 50 years and wrote:

*For in those days I was in the prime of my age for invention....*

#### REFERENCES

1. A letter of Mr. Isaac Newton, Professor of the Mathematicks in the University of Cambridge; containing his new theory about light and colors: sent by the author to the publisher from Cambridge, Febr. 6. 1671/72; in order to be communicated to the R. Society.
2. Mitigating the impact of COVID-19 on academic ophthalmology and ophthalmic research, Royal College of Ophthalmology, July 2020.





# BIOELECTRICITY AND THE EYE

## DIAGNOSTIC AND THERAPEUTIC POTENTIAL

MIN ZHAO, M.D., PH.D.

MARK MANNIS, M.D., F.A.C.S.

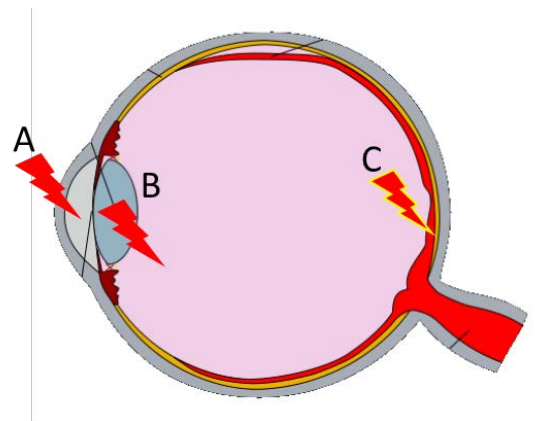
### How is the eye electrical?

When we think about our eye, we most often consider it as a light “detector”, not as an electrical organ.

The retina is very active electrically, however the electrical activity is essential to light detection and our vision. What is less known is that other parts of the eye manifest electrical activities too. For example, the cornea maintains distinct electrical potentials across various layers; the lens has unique electric currents that flow out of the anterior and posterior poles and return at the equator (Fig. 1). The electric currents across the cornea and circulating in the lens are maintained by the activity of molecules in the cell membrane, called ion channels, transporters, and pumps. When many cells accumulate to form tissues, these molecules and cells collectively consume energy to pump ions, thus generating electricity at the tissue level.

### Is electrical activity important in eye disease?

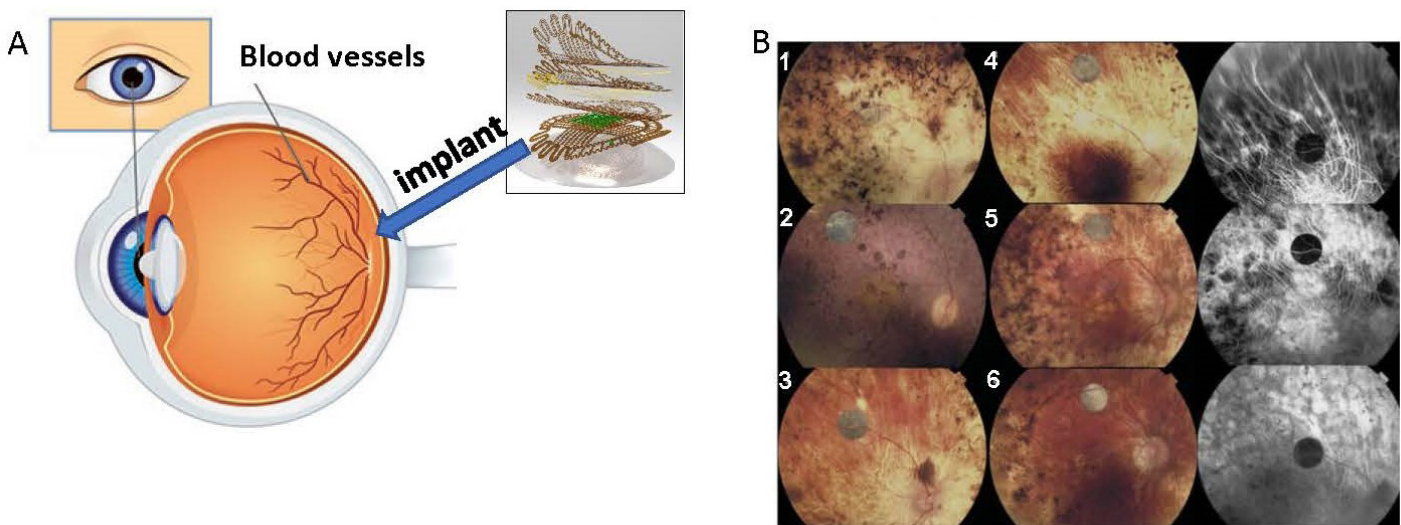
There has been fascination with the use of electricity in medical practice for centuries. Edward Jackson, founder of the American Journal of Ophthalmology (AJO) and first president of the American Academy of Ophthalmology and Otolaryngology (AAOO), chronicled the use of galvanic and faradic currents commonly used to treat ocular diseases in the early 20th century. Recent decades have seen attempts at electrical stimulation for treatments of conditions of the cornea, lens, choroid, and retina.



**Fig. 1. The eye is electrical.** Electrical activities are readily detected at tissue levels in the eye, for example, at: A) Cornea - Trans-corneal electrical potential difference; B) Lens - Electric currents flow out of the anterior and posterior poles and enter at the equator; C) Retina - Electrical activities of various cell types in the retina, as detected in an electroretinogram. Source: Modified from Wikipedia copyright public domain graph.



Significant advances in electronics and bioelectronics in recent years have brought about leading-edge technology: Visual Prosthetics. These include subretinal and epiretinal prosthetics (Fig. 2). Improved, miniaturized, and more biocompatible devices promise better suprachoroidal, optic nerve, and brain implants.



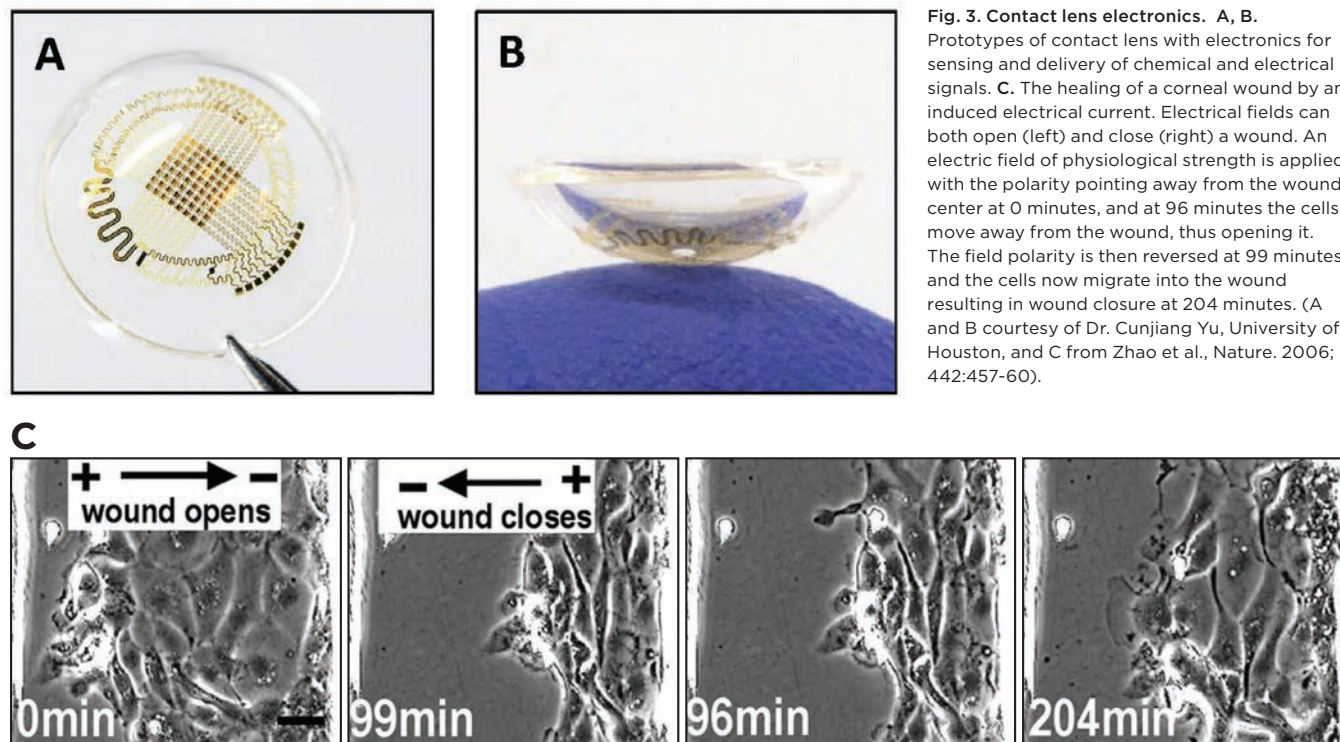
**Fig. 2. Electronic retinal prosthesis.** **A.** Schematics to show untethered epiretinal prosthesis with photovoltaic array that senses light and generates local electrical pulses, relaying light intensity and wavelength. **B.** Fundus photographs and fluorescein angiograms of an implanted artificial silicon retina microchip in the superior temporal retina. Photograph number indicates the patient number; the fluorescein angiogram (right) is from patient 3. Top to bottom: early, middle, and late phases. (A and B courtesy of Dr. Cunjiang Yu, University of Houston, and Dr. Alan Chow, Optobionics Inc., respectively).



Recent research by the UC Davis Eye Center, in collaboration with other laboratories, has provided strong evidence suggesting important roles for this type of electricity and electrical intervention in health and disease. We have found that when the cornea is injured or diseased (e.g. in diabetes), the electrical activity becomes abnormal. In a cataractous lens, the electric currents circulating around the lens become significantly weaker. Longer-term (several years) follow-up of electrical activity in the retina showed that an abnormal electroretinogram predicted the location of retinal pathology.

Importantly, application of similar electrical stimulation to cells and tissues from eyes resulted in significant effects on cell migration, cell division, and intracellular signaling, which regulate gene expression (Fig. 3). Stem cells also respond very well to electrical stimulation. These responses are potentially beneficial to tissue repair and regeneration.

These findings point to a new mechanism in the eye, in both health and disease: *bioelectrical regulation*. It is exciting to envisage that detection of electrical activities might offer us new diagnostic tools and that manipulating the electrical activity might result in new therapies.







### What do we do at UC Davis?

The Min Zhao and Brian Reid Laboratory at UC Davis is using state-of-the-art probe systems to investigate changes in electricity in the eye to understand the role of bioelectricity in the eye in both health and disease. This is the only laboratory in the nation that has a unique vibrating probe, ion-selective probe, and optical electrode to detect minute electric currents, electrical fields, and fluxes of ions in biological tissues.

This is the only laboratory in the nation that has a unique vibrating probe, ion-selective probe, and optical electrode to detect minute electric currents, electrical fields, and fluxes of ions in biological tissues.



The bioelectronic research at UC Davis has also pioneered and developed technology to deliver effective and safe electric stimulation to cells and tissues.

In the past decade, the Zhao Laboratory has collaborated with Drs. Mannis, Schwab, Chodosh, Murphy and other colleagues to answer:

- 1) how cells and tissues generate and regulate bioelectricity;
- 2) how cells detect and respond to weak bioelectricity; and
- 3) how eye tissues can be electrically stimulate to achieve regeneration in injuries and diseases

With colleagues from Johns Hopkins, University of Maryland, UC Santa Cruz, Tufts University, and other institutions, we at UC Davis are developing a new generation of bioelectronics to tap into this new frontier of biology. Exploiting electricity in the eye, we aim to develop new diagnostic and therapeutic tools for the management of eye injuries and disease. Our research is currently supported by grants from the NIH, the Air Force, DARPA, and a generous donation from the Burns family. We believe there is great potential in harnessing the bioelectricity of the eye for both diagnosis and treatment. ■

# THE FUTURE OF BASIC SCIENCE

One of the most important missions of the UC Davis Health Department of Ophthalmology & Vision Science is to train the next generation of vision scientists. Meet Kaitryn (Kaity) Ronning, a trainee in the lab of Dr. Marie Burns.

Kaity is homegrown talent, born and raised in the Davis area. She graduated from our own public schools, attending Patwin Elementary School all the way through Davis Senior High School. A child of teachers, she and her sister were encouraged in all manner of learning, including music. Unlike her sister, Kaity did not choose music as a career; rather, she chose the path of science, although to this day she plays as a double bassist in the UC Davis Symphony Orchestra.

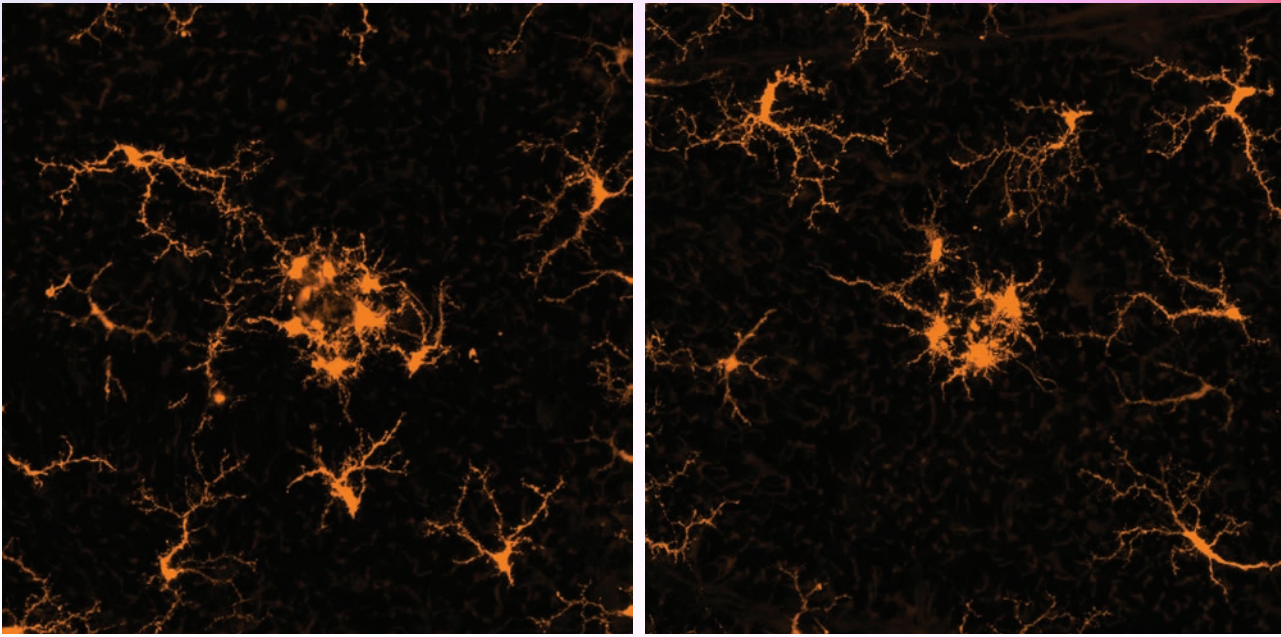
A big factor that led Kaity to science as a career was a brief internship during high school working in a genetics lab at UC Davis. But it was our own Dr. Marie Burns, whom Kaity first met through the alumni program of her collegiate alma mater, Susquehanna University, who instilled in her a love for vision science. Kaity worked in the Burns lab for several summers during college, and then returned there once she became a graduate student in the UC Davis Neuroscience Graduate Program.

Her doctoral work in the Burns Lab addresses the important question of what happens in the eye not to cells that are affected by disease or injury, but to the concurrent immune response. Microglial cells, which are immune cells resident to the eye, are thought to be the first responders to all sorts of trouble. In a recent publication, Kaity's work demonstrated that when photoreceptors are damaged, as they are in the common blinding disease macular degeneration, the expression of genes within microglia changes dramatically, and that soon after an injury they are joined in the retina by other immune cells coming from the blood circulation, which become nearly indistinguishable from the resident microglia cells. She gained this insight using a technique called single-cell sequencing, which she and her high school friends had once discussed as purely science fiction. (Fig 1)

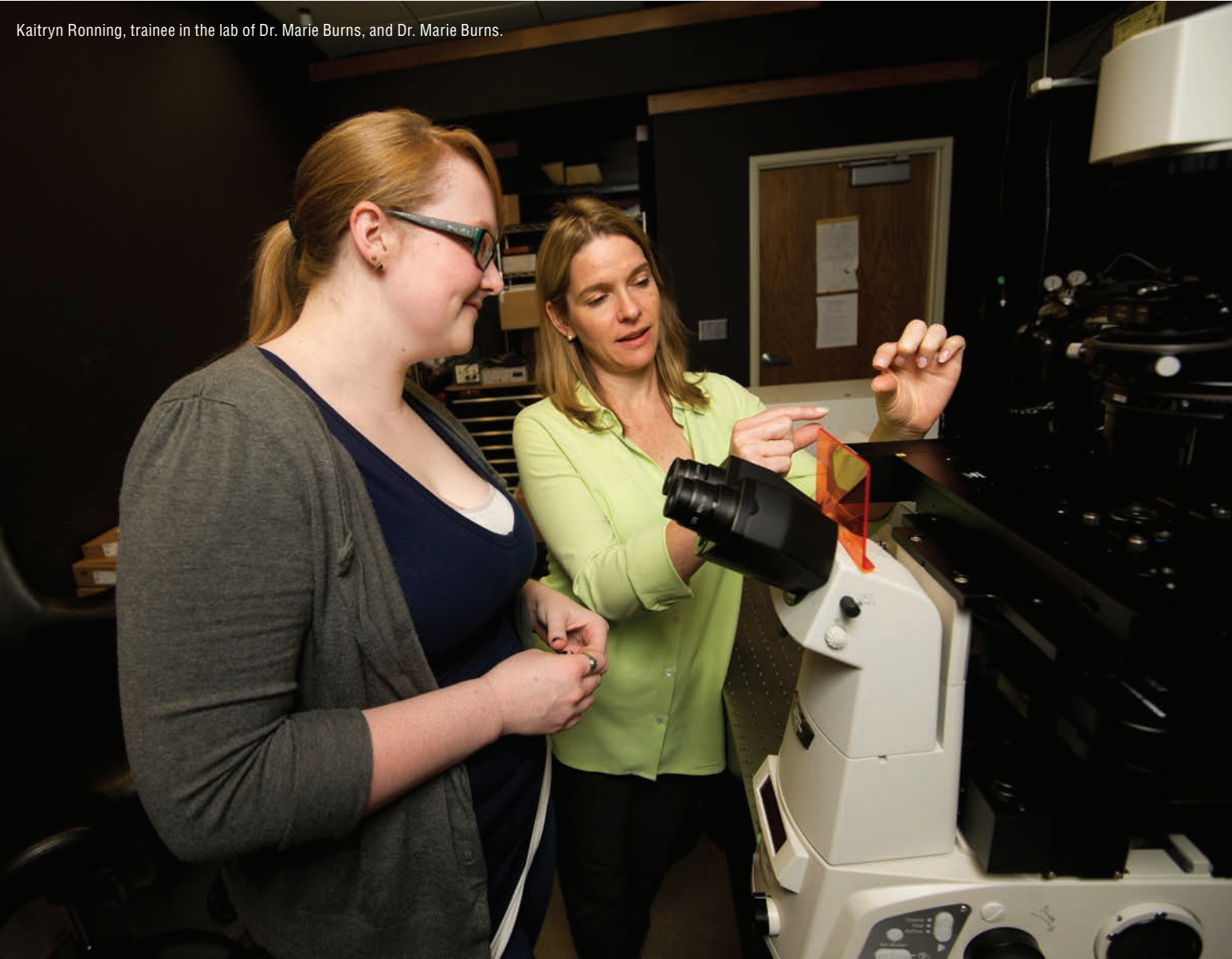
The last question she wants to answer before obtaining her Ph.D. is whether the "newcomer" cells are as good as the original microglia at protecting the retina from further damage. After she graduates, Kaity plans to seek post-doctoral training to learn more about how the immune system affects health and disease in the central nervous system. After that, Kaity wants to become a professor like her mentor, Dr. Burns. Kaity, like many other scientists, believes that we will soon know enough about the immune response to harness it to treat various diseases, including those that rob people of vision. Kaity is committed to helping lay the basic science foundation needed for such future medicines. ■



Figure 1



Kaitryn Ronning, trainee in the lab of Dr. Marie Burns, and Dr. Marie Burns.







# OUTWARD BOUND!

AN INTERVIEW WITH  
MICHAEL CONDRIN

Outpatient medicine has taken on increasing importance in the last decade, and this trend has been an important feature of the development of clinical services at UC Davis Health. Ophthalmology is primarily an outpatient service—hence, the importance of providing prompt, efficient, and cost-effective care to our patients. At the center of this emphasis on outpatient services at UC Davis Health is Michael Condrin, who now serves as Chief Operating Officer, Ambulatory Care Services, and who has provided important guidance and assistance to the Eye Center and its growing patient population.

Mike Condrin, a native of the San Francisco Bay Area, found his entry into medicine through physical therapy. Through high school and college athletics, he developed an interest in the physiological sciences, and after completing his degree at UCLA, he went on to obtain a degree in physical therapy at Boston University. He practiced outpatient physical therapy for seven years in a variety of settings including a sports and occupational setting in Castro Valley as well as in the San Francisco Airport, where he worked with baggage handlers, flight attendants, pilots, and others on staff.

With a growing interest in administration, Condrin came to UC Davis in 2000 to obtain an M.B.A. degree. Inspired by Bill McGowan and Nabil Musallam, who at that time led the financial and outpatient services administratively at UC Davis, he worked as a senior budget analyst in finance.



Moving from the analyst position, Mr. Condrin spent two years as Chief Administrative Officer for the Department of Orthopedics and from 2005-2008 held the same position in Internal Medicine under the leadership of Dr. Fredrick Meyers. In 2008, he joined the Dean's office as Assistant Dean for Administration and Finance (2008-2013).

In 2013, he became Director of Clinical Operations and he was recently placed in charge of all outpatient services—a huge portion of UC Davis Health's operations.

When asked about the outward-bound direction of UC Davis, Mike Condrin emphasizes the plan to move as much of the complex care from inpatient to outpatient as possible. He sees this as better for patients and caregivers alike. In terms of the growth of UC Davis Health, he looks to expand outpatient services to Solano, Napa, San Joaquin, Sutter, Colusa, Yuba, and El Dorado counties and to develop regional partners for the delivery of tertiary care by UC Davis. To this end, his staff is working tirelessly to improve capacity, ease of access, and efficiency of outpatient services delivery.

During the past year, the pandemic has occupied much of Condrin's attention, both in terms of keeping employees safe as well as the protean efforts to provide testing through a partnership with Sacramento County. His unit has developed vaccination sites at the Med Center, the Scottish Rites facility, Oak Park, and South Sacramento as well as assisted efforts for the homeless in the community.

Condrin sees UC Davis Health as a complex system made up of 19 clinical departments, dozens of diverse service lines, and thousands of employees all on the complicated landscape of contemporary medicine. "Our greatest strength," he points out, "is, first and foremost, the dedicated people who work here. Then there is the incredible and enabling technology that moves us to the forefront of the field in our region." Condrin sees this as



a point of pride for everyone who works at UC Davis.

Outside the office, Mike is the proud father of three sons: a junior at the University of Washington, a graduating senior, and a junior in high school. Like their father, his sons are budding athletes. Mike's spouse, Amy, works in a consultancy that advises dental practices.

In his leisure time, Mike has become a licensed falconer, developing the requisite skills in hunting with redtailed hawks—and soon merlin falcons. Inspired by UC Davis veterinarian Bill Ferrier, Mike has learned the complicated process of training these remarkable birds to trust him and work with him before he ultimately releases them again into the wild.

Condrin has been a consistent and dedicated supporter of ophthalmic services at UC Davis. He notes, "I am so happy to see the Tschannen Eye Institute becoming a reality. This will be a key regional facility for patients with significant eye disease. It is one of the crowning accomplishments of this excellent department. We are glad to see that the Eye Center is outbound as is all of UC Davis Health. The future is bright!" ■



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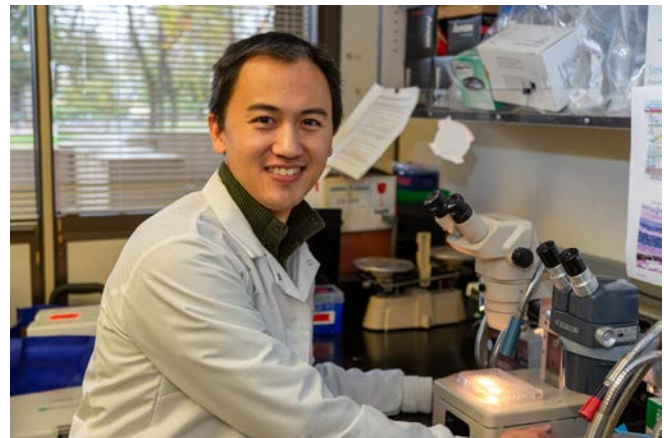
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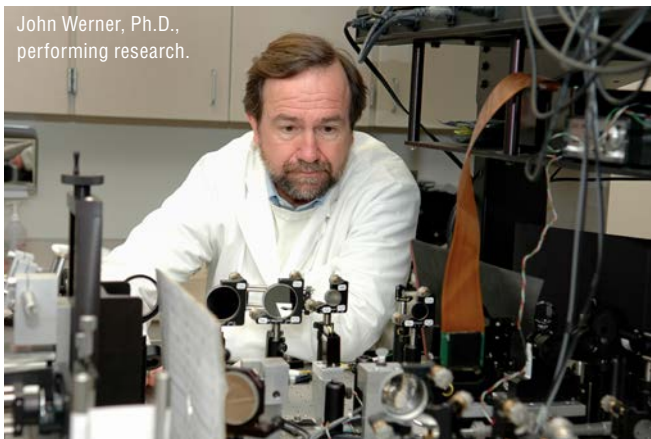
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# ALUMNI HIGHLIGHTS

## Luis Izquierdo Jr., M.D., Ph.D.



**The educational outreach of the Department of Ophthalmology at UC Davis is broad, training residents and fellows not only from around the United States but from all of the Americas and beyond.**

Luis Izquierdo, a native of Lima, Peru, came to UC Davis to undertake a fellowship in Cornea and External Disease with Dr. Mannis in 1998-99. Coming from a family of ophthalmologists—his father, a prominent practitioner in Lima, and his brother, a glaucoma specialist, also trained at UC Davis, Luis completed his residency training in ophthalmology at the prestigious Paulista School of Medicine in Sao Paulo, Brazil. After the completion of his ophthalmological training in Brazil

He then decided to come to UC Davis for specialty training in Cornea, then returned to Lima and his family's practice, Oftalmosalud. Luis is currently the Medical Director at Oftalmosalud, which has its own residency and fellowship training programs, attracting fellows from around the world to study with Dr. Izquierdo and his associates. He is also an Associate Professor of Ophthalmology at the Universidad Nacional Mayor de San Marcos in Lima.

Luis has become a leader of ophthalmology in Latin America, serving as the president of the Latin American Association of Cataract and Anterior Segment Surgery and president of the Peruvian Ophthalmological Society. He is widely considered to be one of Latin America's most respected ophthalmic surgeons.

His practice in Lima—founded by his father almost 30 years ago—has multiple sites and collectively sees more than 18,000 patients a month and performs 7,000 surgical procedures annually. The state-of-the-art facility boasts 20 operating rooms, 4 Excimer lasers, 36 ophthalmologists, 400 employees, 25 residents, and 10 fellows from around Latin America and Europe.

In addition to his busy practice and his academic productivity, Luis has spearheaded social programs for individuals who do not have the means to obtain surgery, performing more than 5,000 cataract operations gratis. He was honored by the Peruvian government as Embajador de la Marca Peru—only one of two physicians holding this title to represent Peru in medicine throughout the world.

An avid surfer and dedicated family man, Luis is the husband of Maria Alejandra Henriquez, M.D., also a talented ophthalmologist and director of the research division at Oftalmosalud. They have four lovely children. Together, Luis and Maria have published numerous studies in high-quality, refereed journals.

Dr. Izquierdo and Dr. Henriquez are currently the lead authors in a book collaboration with Dr. Mannis. Dr. Mannis points out, "The greatest source of pride for a teacher is when his students surpass him." Indeed, Luis Izquierdo is a wonderful ambassador for the programs at UC Davis. He brings us great pride. ■

## Claudia Pinilla, M.D.



**Upon walking through the doors of the Danville San Ramon Eye Medical Corp., the positive environment and strong culture among team members is immediately evident. Each person in Dr. Pinilla's practice is compassionate, bright and thoughtful in their interactions with patients and visitors.**

Not surprisingly, if you ask Dr. Pinilla about her career as an ophthalmologist, the first thing she will do is acknowledge her staff for their efforts in making the practice a successful, inviting place for patients to receive top-notch vision care. As one grateful patient shared, "Right away I liked Dr. Pinilla's professionalism and the time she spent with me to answer my questions. She took time to calm my nerves when the surgery date was set, which I needed and appreciated. I had the surgery and knew it was done by a wonderful doctor. The entire staff in this office is so nice and very efficient."

## From Serving Food to Serving Patients

Dr. Pinilla was born in Colombia and as a child moved with her family to the Bay Area, where her parents opened the Little Red Hen restaurant. The youngest of seven children, Claudia enjoyed working in the family restaurant with her siblings and parents. But she always had an interest in medicine, which led to jobs in local hospitals. Claudia credits a distant family friend with igniting her interest in ophthalmology as a specialty.

Prior to completing her residency at the UC Davis Eye Center in 1990, Dr. Pinilla earned her undergraduate degree at the University of Santa Clara with a B.S. in Biology. She then attended UC San Francisco School of Medicine, where she obtained her M.D., followed by an internship at San Francisco's Pacific Presbyterian Medical Center.

Dr. Pinilla met her husband, Dr. Barry Latner, a pathologist at John Muir Medical Center, in medical school and the couple married after their first year. They have two children. Their son Joshua, is completing a residency in internal medicine at the University of Florida, while their daughter Brooke manages the Embarcadero COVID Collection Site at Carbon Health.

A few of Dr. Pinilla's favorite experiences as a resident at UC Davis Eye Center include:

- The opportunity to work and live with her sister, who was a staff member at the Eye Center
- Training with fellow resident David Shapiro, MD, and together selecting Bob Miller, M.D., as teacher of the year
- Training with Mark Mannis, M.D., F.A.C.S., and John Keltner, M.D., and learning of Dr. Keltner's passion for nutrition and love of bran muffins
- Being invited to the home of Linda Margulies, M.D., for dinner during the Veterans Affairs rotation

Even after completing her residency, Dr. Pinilla and Dr. Margulies maintained a strong connection. In reflecting on Dr. Margulies as a mentor and a friend, Dr. Pinilla said, "I can't thank her enough for her contributions to my success."

From Dr. Pinilla's perspective, "What makes the Eye Center distinct from other residency training programs is the outstanding Volunteer Clinical Faculty (VCF) and the exposure to exceptional ophthalmologists such as Neil Kelly, Rob Wendel, Barbara Arnold, Bob Miller, and Craig Berris, to name a few."

## Recognizing Her Special Talents

Former department chair John Keltner, shared: "Dr. Pinilla was not simply a talented surgeon. She was a great listener, thoughtful, diligent, and always a delight to be around. It was a pleasure to watch her continue to develop her skills and knowledge throughout her residency, and it's no surprise she went on to build a thriving, well-regarded practice."

Current department chair Mark Mannis, likewise has fond memories of working with Claudia as a resident and staying connected post-residency through the UC Davis Eye Center Napa Symposium, Resident and Alumni Day, and the AAO. "Claudia is a very kind and warm person in addition to being a gifted ophthalmologist," said Dr. Mannis. "I'm very proud of all she has accomplished and to see all she has done to care for those with vision needs. She has stayed connected and been a great friend to the department since she completed her residency, and it's an honor to count her among our distinguished alumni."

One of the many attributes that makes Dr. Pinilla a superb practitioner is her genuine regard for the wellbeing of others—her patients, her staff members, her family, her friends, and her fellow resident alumni—not to mention the ease with which she earns the trust of practitioners who themselves require vision care. "Dr. Pinilla's practice can be busy, and the staff doesn't have an abundance of time to socialize," said one grateful patient. "What Dr. Pinilla has is an abundance of skill. She's a gifted surgeon and a no-nonsense practitioner. If you want to know how good an eye doctor she is and how good this practice is, ask another physician. I think you'll find that she is well respected."

When Dr. Pinilla is not in clinic or surgery, she enjoys attending Best of Broadway performances with her husband and her friends the Margulies. She also enjoys hiking, walking her dogs, spending time with her family, and just relaxing.

Yet her thoughts are never far from ophthalmology. Dr. Pinilla is in awe of the advancements made in the past 30 years for cataract surgery, and her hope for the future is that we will continue to see advancements in the treatment of glaucoma and optic nerve damage. If history is any indicator, Dr. Pinilla will play an important role in delivering those breakthroughs to her patients with a unique combination of skill and compassion. ■



## LEADERSHIP



**Mark J. Mannis, M.D., F.A.C.S.**  
Fosse Endowed Chair in Vision  
Science Research  
Distinguished Professor and Chairman,  
Cornea and External Disease



**James D. Brandt, M.D.**  
Vice Chair of International  
Programs and New Technology  
Director, Glaucoma Service  
Professor, Glaucoma



**Paul A. Sieving, M.D., Ph.D.**  
Neil and MJ Kelly Presidential Chair in  
Vitreoretinal Science  
Distinguished Professor  
Research Director  
Center for Ocular Regenerative  
Therapy  
Retinal and Macular Dystrophy



**Michele C. Lim, M.D.**  
Vice Chair and Medical  
Director  
Professor, Glaucoma



**Christopher J. Murphy, D.V.M., Ph.D.**  
Vice Chair for Innovation and  
Industry Relations  
Distinguished Professor,  
Comparative Ophthalmology



**Nandini Gandhi, M.D.**  
Byron Demorest Endowed Chair in  
Pediatric Ophthalmology  
Director, Pediatric Ophthalmology and  
Adult Strabismus Service  
Director, Residency Program  
Associate Professor, Pediatric  
Ophthalmology and Adult Strabismus

## CLINICAL FACULTY



**Annie K. Baik, M.D.**  
Associate Professor,  
Glaucoma  
Veterans  
Administration, Mather



**Jeffrey J. Caspar, M.D.**  
Director, Cataract and  
Refractive Surgery  
Professor, Comprehensive  
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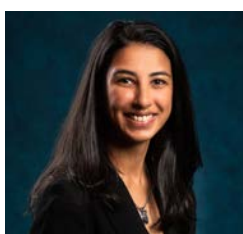
**Parisa Emami, M.D., M.P.H.**  
Assistant Professor, Ocular  
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Director, Glaucoma Service  
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Director, Pediatric Ophthalmology and  
Adult Strabismus Service  
Director, Residency Program  
Associate Professor, Pediatric  
Ophthalmology and Adult Strabismus

# CLINICAL FACULTY, CONTINUED



**Marcela M. Estrada, M.D.**  
Assistant Professor, Pediatric  
Ophthalmology and  
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**John L. Keltner, M.D.**  
Chair Emeritus  
Distinguished Professor/Emeritus,  
Neuro-Ophthalmology



**Jennifer Li, M.D.**  
Director, Cornea and External  
Disease Service  
Professor,  
Cornea, External Disease and  
Refractive Surgery



**Lily Koo Lin, M.D.**  
Director and Professor,  
Ophthalmic Plastic and Orbital  
Surgery



**Jeffrey Ma, M.D.**  
Assistant Professor,  
Comprehensive Ophthalmology  
and Ocular Surface Disease



**Ala Moshiri, M.D., Ph.D.**  
Associate Professor, Retina



**Susanna S. Park, M.D., Ph.D.**  
Barbara A. & Alan M. Roth, M.D.,  
Endowed Chair  
in Discovery, Education and Patient  
Care in Vision Science  
Director, Retina Fellowship  
Professor, Retina



**Glenn C. Yiu, M.D., Ph.D.**  
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Director, Tele Medicine



**Natalie Homer, M.D.**  
Assistant Professor, Ophthalmic  
Plastic and Orbital Surgery



**Esther S. Kim, M.D.**  
Director, Comprehensive and  
Optometric Services  
Professor, Comprehensive  
Ophthalmology and  
Ophthalmic Pathology



**Michele C. Lim, M.D.**  
Vice Chair and Medical  
Director  
Professor, Glaucoma



**Allison Liu, M.D., Ph.D.**  
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Cornea and External Disease



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Neil and MJ Kelly Presidential Chair in  
Vitreoretinal Science  
Distinguished Professor  
Research Director  
Center for Ocular Regenerative  
Therapy  
Retinal and Macular Dystrophy



*Patient comments:*

“Since my meeting Dr. Caspar, it has been nothing but kindness and professional treatment. I appreciate that kind of professionalism.”

“Dr. Homer was always nice, friendly, and took her time to deliver the care needed. She’s an awesome provider.”

## VETERANS AFFAIRS NORTHERN CALIFORNIA HEALTH CARE SYSTEM



**Harinder S. Chahal, M.D.**  
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**Linda Margulies, M.D.**  
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Northern California Health  
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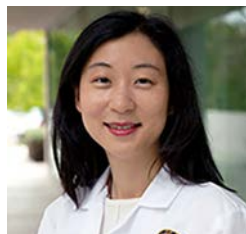
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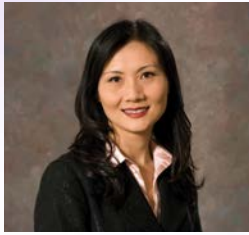


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## OPTOMETRISTS



Brooke S. Chang, O.D.  
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Senior Optometrist



Jonathon Ross, O.D., M.S.,  
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Senior Optometrist



Kaaryn Pederson-Vanbuskirk,  
O.D., F.A.A.O.  
Senior Optometrist



Hai Tong, O.D.  
Senior Optometrist

## ORTHOPTIST



Tania Usner, B. Med. Sci.  
Orthoptist

*Patient comments:*

“Dr. Gandhi is always so kind. She is amazing at what she does and you can tell she really does care about her patients. She took great care of my daughter.”

“As always, I am very lucky to have Dr. Park looking after me.”

“Dr. Yiu was very pleasant and answered all of my questions clearly.”

# VISION SCIENTISTS



**Marie E. Burns, Ph.D.**  
Professor, Retinal Physiology  
Research Interests:  
Photo transduction,  
photoreceptor adaptation, and  
protein movement



**Mark S. Goldman, Ph.D.**  
Associate Professor,  
Neuroscience  
Research Interests:  
Computer models of eye  
movement



**Nicholas Marsh-Armstrong, Ph.D.**  
Associate Professor  
Research Interests:  
Basic cellular, molecular and  
developmental biology of  
retinal ganglion cells relevant to  
glaucoma



**Gary D. Novack, Ph.D.**  
Visiting Professor  
Pharmacology and Ophthalmology  
Research Interests:  
Development of new therapeutics,  
patient adherence and  
performance, regulatory affairs



**Paul A. Sieving, M.D., Ph.D.**  
Neil and MJ Kelly Presidential Chair in  
Vitreoretinal Science  
Distinguished Professor  
Research Director  
Center for Ocular Regenerative Therapy  
Retinal and Macular Dystrophy



**Sara Thomasy, D.V.M., Ph.D.**  
Associate Professor of  
Comparative Ophthalmology  
Research Interests: Corneal  
wound healing, glaucoma, ocular  
pharmacology, antiviral therapy  
for FHV-1, large animal models of  
ophthalmic disease



**Robert J. Zawadzki, Ph.D.**  
Associate Professor,  
Vision Science and Advanced  
Retinal Imaging



**Paul FitzGerald, Ph.D.**  
Professor, Cell Biology  
and Human Anatomy  
Director, Center for Vision Science  
Research Interests:  
The role of intermediate filaments in  
the biology of the ocular lenses



**Ravi S. Jonnal, Ph.D.**  
Assistant Professor  
Research Interests:  
Retinal imaging, adaptive optics,  
optical coherence tomography



**Christopher J. Murphy, D.V.M., Ph.D.**  
Vice Chair for Innovation and  
Industry Relations  
Distinguished Professor,  
Comparative Ophthalmology



**Edward N. Pugh, Jr., Ph.D.**  
Professor, Cell Biology and  
Human Anatomy, Physiology &  
Membrane Biology,  
Ophthalmology  
Research Interests:  
Retinal photoreceptors and color vision



**Charles E. Thirkill, Ph.D.**  
Adjunct Professor Emeritus,  
Immunology & Biology  
Research Interests:  
Ocular immunology



**John S. Werner, Ph.D.**  
Distinguished Professor Emeritus,  
Visual Psychophysics  
Research Interests:  
Color and spatial vision, normal  
aging and age-related disease,  
retinal and optic nerve imaging



**Min Zhao, M.D., Ph.D.**  
Professor, Dermatology and  
Ophthalmology,  
Institute for Regenerative Cures  
Research Interests:  
Electrically stimulating cell  
migration in corneal wound  
healing and neuron regeneration



# FELLOWS



Jason Chow, M.D., M.S.  
Clinical Retina Fellow 2022



Judy Chen, M.D.  
Clinical Retina Fellow 2022



Cristy Ku, M.D., Ph.D.  
Clinical Retina Fellow 2023



Neesurg Mehta, M.D.  
Clinical Retina Fellow 2022



Shane Seipel, M.D., M.S.  
Clinical Cornea Fellow 2022

## *Patient comments:*

“Dr. Brandt is amazing and cares about his patients.”

“Dr. Moshiri is an excellent doctor. UC Davis and myself are very blessed to have Dr. Moshiri.”

“Dr. Mannis is a fantastic doctor and human being.  
I am now seeing after three years of blindness!”

“Dr. Ma gave me the most thorough eye exam I’ve ever been given by any provider.”

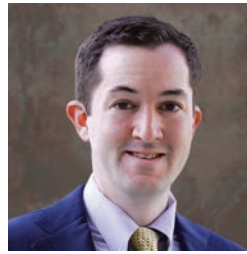
# RESIDENTS



Emily Armstrong, M.D.  
Fourth Year Resident 2022



Evan Chang, M.D.  
Fourth Year Resident 2022



Matthew De Niar, M.D.  
Fourth Year Resident 2022



Edward Lee, M.D.  
Fourth Year Resident 2022



Saumya Copparam, M.D.  
Third Year Resident 2023



Kiran Malhotra, M.D.  
Third Year Resident 2023



Benjamin West, M.D.  
Third Year Resident 2023



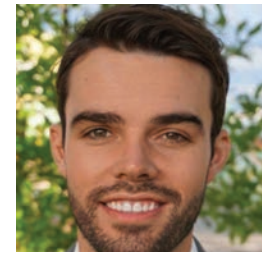
Matthew Javitt, M.D.  
Second Year Resident 2024



Denis Huang, M.D.  
Second Year Resident 2024



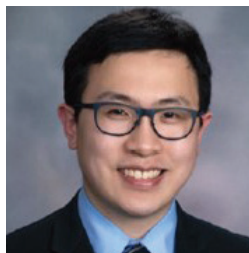
Andrew Nelson, M.D.  
Second Year Resident 2024



Blake Snyder, M.D.  
Second Year Resident 2024



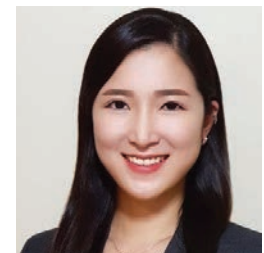
Andrew Chen, M.D.  
First Year Resident 2025



Abraham Hang, M.D.  
First Year Resident 2025



Manpreet Tiwana, M.D.  
First Year Resident 2025



Joo Yeon Jung, M.D.  
First Year Resident 2025

# VOLUNTEER CLINICAL FACULTY



**Barbara Arnold, M.D.**  
Clinical Professor

**Robert Bellinoff, M.D.**  
Clinical Instructor

**Craig Berris, M.D.**  
Clinical Professor, Emeritus

**John Canzano, M.D.**  
Associate Clinical Professor

**Harinder Chahal, M.D.**  
Assistant Clinical Professor

**David Chu, M.D.**  
Assistant Clinical Professor

**Charles Cooper, M.D.**  
Clinical Professor

**Joseph Giovannini, M.D.**  
Clinical Instructor

**Tyrone Glover, M.D.**  
Clinical Professor

**J. Christopher Hartley, M.D.**  
Clinical Associate

**Sukhjit Johl, M.D.**  
Assistant Clinical Professor

**Daniel King, M.D.**  
Clinical Professor

**David Kira, M.D.**  
Clinical Instructor

**Daniel Lee, M.D.**  
Associate Clinical Professor

**Samuel Lee, M.D.**  
Clinical Instructor

**Vivian Lien, M.D.**  
Assistant Clinical Professor

**Jennifer Long, M.D.**  
Clinical Instructor

**Linda Margulies, M.D.**  
Clinical Professor

**Michael Merkley, M.D.**  
Clinical Instructor

**Robert Miller, M.D.**  
Clinical Professor

**Gary Novack, Ph.D.**  
Clinical Professor

**Sang Oh, M.D.**  
Assistant Clinical Professor

**Jonathan Perlman, M.D.**  
Associate Clinical Professor

**James Ruben, M.D.**  
Clinical Professor

**Bradley Sandler, M.D.**  
Assistant Clinical Professor

**Denise Satterfield, M.D.**  
Clinical Professor

**Francis Sousa, M.D.**  
Clinical Professor

**Ernest Tark, M.D.**  
Clinical Professor, Emeritus

**David Telander, M.D., Ph.D.**  
Clinical Instructor

**Alexander Vu, M.D.**  
Assistant Clinical Professor

**Tiffany Wong, M.D.**  
Assistant Clinical Professor

**Michael Yen, M.D.**  
Assistant Clinical Professor

**John Zeiter, M.D.**  
Clinical Professor



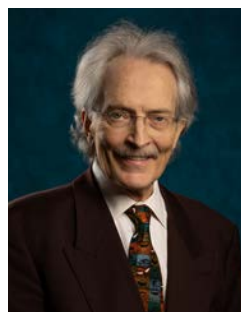
# FACULTY RETIREMENTS

It is with mixed emotions that we announce the retirement of three long-standing faculty members from the UC Davis Eye Center.



**Dr. Lawrence Morse** was appointed as a faculty member in the UC Davis Eye Center on July 1, 1989. A native of the San Joaquin Valley, Dr. Morse completed a bachelor's degree at UC Riverside, a PhD at the University of Chicago, and both his MD and ophthalmic residency at

UCLA. He then completed his advanced training in vitreo-retinal surgery at Duke University before returning to California to join the faculty at UC Davis. While Dr. Morse's research was far-reaching and diverse, in the latter part of his career he focused on fostering an interactive collaboration between members of the UC Davis Eye Center group and the Ophthalmology Retina service to develop a retinal gene therapy and stem cell replacement program to treat retinal disease. To this end, over the course of his career, Dr. Morse published over 200 peer-reviewed articles, 203 abstracts, and 6 book chapters. He also presented 218 academic lectures, both domestic and international. As a colleague, Dr. Morse will be remembered for his collegiality, his passion for doing the right thing, and his unwavering resistance to the bureaucracy of an academic medical center. Upon retirement, Dr. Morse has since relocated to South Carolina with the hope of spending more time with his family and finding productive fly-fishing waters on par with that of Northern California.



**Dr. Ivan Schwab** was appointed as a faculty in the UC Davis Eye Center on September 1, 1989. Hailing from the great state of West Virginia, Dr. Schwab received a BA and MD from West Virginia University, and completed both his residency and advanced training in

Corneal and Reconstructive Surgery at Pacific Medical Center in San Francisco and at the

Francis I. Proctor Foundation at the University of California, San Francisco. Prior to his appointment as a faculty member at UC Davis, he was faculty physician at West Virginia University for seven years. Dr. Schwab is widely considered a founding member of the Cornea service, including the Cornea Fellowship training program. Over the course of his career, Dr. Schwab received numerous teaching accolades including 'Professor of the Millennium' in 2000 and 'Best Teacher' numerous times as awarded by graduating residents. On the research front, Dr. Schwab's interests were truly far-reaching, spanning the topics of cell biology, translational research, public policy, and comparative ophthalmology. Throughout the course of his career, Dr. Schwab published over 220 peer-reviewed journal articles, 34 book chapters, and authored 6 books, including "Evolution's Witness: How Eyes Evolved," in 2011. Dr. Schwab will be remembered as a fantastic colleague and teacher, for his love of all things sports (particularly West Virginia athletics), and his thoughtful and sophisticated responses to almost every question posed in his direction.



**Robert B. Miller, MD** transferred his practice, Advanced Valley Eye Associates, to the UC Davis Eye Center in September, 2019 after many years of successful practice in the community as a high-quality general ophthalmologist. At the same time, Dr. Miller joined the full-

time faculty of the Department of Ophthalmology & Vision Science at UC Davis in Comprehensive Ophthalmology.

Over the years, Bob has continuously served the Department as a volunteer clinical faculty, teaching our residents and students in an outpatient setting and has been a loyal supporter and advocate of the Department within the greater ophthalmic community. Dr. Miller's

## FACULTY UPDATES

contributions to the Department as a full-time faculty member provided a new level of engagement with our clinical and educational programs. He has brought the Eye Center forward in many ways, providing his expertise in practice management, patient care delivery, and his excellence in the provision of cataract and refractive surgical care. He remains a consummately gifted teacher.

With an eye toward the next phase of his life, Dr. Miller retired from the department in February of 2021 to pursue other interests in and outside of ophthalmology. He will continue as a volunteer clinical faculty member and will certainly share his wealth of knowledge with our trainees for the foreseeable future. We wish Bob all the best in what we know will be a creative and busy “retirement”.

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Drs. Morse and Schwab embodied what it means to be a physician-scientist. Dr. Miller exemplified the model of compassion and skill in the delivery of patient care. They will be sorely missed, and we wish them the best in their retirement.

The Eye Center is pleased to announce that successful recruitments are underway to add faculty to both the Cornea and Retina services to ensure the continuation of our high standard of patient care. We continue to accept referrals in all specialties, and will announce new faculty appointments in the next issue of *enVision*.



**Natalie Homer, M.D.**  
Assistant Professor |  
Ophthalmic Plastic and  
Orbital Surgery

**Dr. Natalie Homer** is an assistant professor of ophthalmology and specializes in plastic and reconstructive surgical procedures of the eyelids, orbit, nasolacrimal system and face. She completed fellowships with the American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS) and with the American Academy of Cosmetic Surgery (AACCS), training in procedures including rhytidectomy, platysmaplasty, forehead/brow lift, upper and lower blepharoplasty, and autologous fat transfer. Dr. Homer is board certified in both ophthalmology and facial cosmetic surgery. She has clinical and research interests in the areas of orbital oncology, orbital and facial trauma, periorbital infections, eyelid and facial reconstruction, facial nerve palsy, pediatric orbital and adnexal disorders, nasolacrimal surgery, thyroid eye disease, cosmetic facial surgery, wound healing, and oculoplastic education.

After earning her Bachelor of Science degree from the University of Michigan with Phi Beta Kappa distinction, Dr. Homer, who is originally from Chicago, received her M.D. from Northwestern University, Feinberg School of Medicine and was elected to the Alpha Omega Alpha Honor Society. She went on to complete her residency training at Harvard Medical School and her fellowships at Texas Oculoplastic Consultants in Austin, Texas. She has received numerous awards and research grants, and has lectured at national subspecialty conferences.

# FACULTY UPDATES CONTINUED



**Marcela M. Estrada, M.D.**  
Assistant Professor | Pediatric  
Ophthalmology and Adult  
Strabismus

**Dr. Marcela Estrada** joined the UC Davis department of ophthalmology in October of

2020. As an assistant professor in ophthalmology, Dr. Estrada specializes in comprehensive pediatric ophthalmology and adult strabismus. Her growing practice includes the medical and surgical management of a range of ocular conditions including amblyopia, pediatric cataracts, nasolacrimal duct obstruction, retinopathy of prematurity, and pediatric and adult strabismus. She has a deep research interest in retinopathy of prematurity, having published and presented her work at numerous national meetings. She is a member of the American Academy of Ophthalmology (AAO), American Academy of Pediatric Ophthalmology and Strabismus (AAPOS), Association for Research in Vision and Ophthalmology (ARVO), and Women in Ophthalmology.

Raised in Lodi, California, Dr. Estrada earned her Bachelor of Arts degree in Human Biology from Stanford University and her M.D. from the University of Iowa. She completed her ophthalmology residency training at the University of Washington, followed by a fellowship in pediatric ophthalmology at the Children's Hospital of Philadelphia. Dr. Estrada's interests in clinical ophthalmology and research are complemented by her interest in promoting advocacy, diversity, and inclusion in ophthalmology and medicine. She serves as a member of the AAPOS Young Ophthalmology Committee and is a committee chair for the UC Davis Health's Inclusion, Diversity, Anti-Racism, and Equity initiative. We are thrilled that Dr. Estrada returned to her home state of California to join UC Davis, and we look forward to having her as an integral member of our growing community.



**Min Zhao, M.D., Ph.D.**  
Professor, Dermatology and  
Ophthalmology, Institute for  
Regenerative Cures

**Min Zhao's** research focuses on 1) understanding how electrical activities in our body help

to heal and regenerate; and 2) exploiting such electrical mechanisms to treat injuries and diseases, with a focus on the eye. His lab led experimental discoveries that wound electric fields provide an overriding guidance mechanism for cell migration, and the first sets of genes underlying the response.

Mr. Zhao graduated from the Third Military Medical University in China and obtained his Ph.D. in trauma surgery and pathology. He moved to England in 1994 and was trained under Geoff Burnstock at University College London. He then established his lab with a prestigious Wellcome Trust Strategic Award at University of Aberdeen, Scotland and worked closely with Professors John Forrester and Colin McCaig. He was selected to present at the House of Commons as one of the top young scientists of the UK in 2001. Mr. Zhao was promoted to full professor and personal chair in Regenerative Medicine and Biomedical Sciences, University of Aberdeen, and honorary consultant in the Department of Ophthalmology at Aberdeen Royal Infirmary in 2004. He moved his lab to UC Davis in 2007 with appointments in the Department of Dermatology and the Department of Ophthalmology. His research has been continuously supported by the NIH, the Air Force, DARPA, and NSF. His work has been published in *Nature*, *PNAS*, *Nature Communications*, *Nature Protocols*, the *Journal of Cell Biology*, *AJO*, *IOVS*, and other peer-reviewed journals.

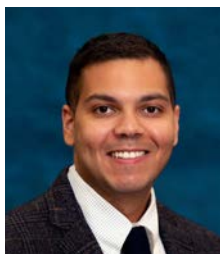
The Zhao lab has unique expertise, with Dr. Brian Reid as a leading member, and unique equipment, using instrumentation to map minute electrical signals at cells and tissues. There are no other labs in the United States with this capacity. The Zhao lab developed a gold-standard method of controlled application of electrical stimulation of cells and tissues, that has been widely adopted and practiced. The unique expertise of the Zhao lab, with 25 years' experience and a solid track record,



has made it a base for visitors and collaborations in bioelectricity and wound healing across the country and around the world.

The Zhao laboratory is working with ophthalmologists, dermatologists, biologists, engineers, physicists, and mathematicians from Johns Hopkins University, Princeton University, Oxford University, UC Santa Cruz, Tufts University, and others to develop novel bioelectronics to treat eye injuries and diseases, promising novel therapies: electroceuticals.

The Zhao lab is collaborating with Drs. Mannis, Schwab, Murphy, Marsh-Armstrong, and other colleagues at UC Davis, as well as Drs. Andrew Dick and Julie Daniels (Institute of Ophthalmology, London) to develop a contact lens that, through bioelectricity, may modulate pathophysiology of the eye. They plan to exploit electrical regulation of intracellular signaling pathways, corneal epithelial differentiation and migration, corneal immune modulation, and innervation to treat corneal wounds and diseases that may respond to electrical modulation.



**Kareem Moussa, M.D.**  
Assistant Professor, Retina

**Dr. Kareem Moussa** is a vitreoretinal surgeon at UC Davis Eye Center with a special interest in ocular infectious and inflammatory diseases. A proud Aggie, he

received his undergraduate education at UC Davis, where he majored in biochemistry & molecular biology. He received his M.D. from Duke University School of Medicine, and completed ophthalmology residency training at University of California, San Francisco (UCSF).

Dr. Moussa developed a keen interest in diseases of the retina while in residency at UCSF and completed additional training in vitreoretinal surgery at Harvard Medical School's Eye and Ear and uveitis at UCSF's Proctor Foundation. He is honored to join the faculty at UC Davis Eye Center, where he looks forward to continuing the center's mission of providing world-class eye care, educating the next generation of physicians, and advancing our knowledge of diseases of the eye.



**Roma Patel, M.D., M.B.A.**  
Former Chief of  
Ophthalmology and  
Eye Care

**Dr. Roma Patel** joined the Veterans Affairs (VA) and UC Davis faculty in 2015 after

completing her UC Davis ophthalmology residency and Duke glaucoma fellowship. She has done an incredible job as the site chief at the Sacramento VA and built a robust program with a great team of people, state-of-the-art equipment, and new services to improve care for the veterans. She provided fearless leadership and thoughtful creativity to identify the mundane and transform it into something special. With grace and keen organizational skills, she helped lead the VA Eye Care team through a global pandemic. Besides being an accomplished clinician, surgeon, and teacher, Dr. Patel also has an M.B.A. Her analytical mind allows her to see the big picture, cut through administrative bureaucracy, create efficiencies, and solve complex issues. Importantly, her selfless and caring approach continually guides her in always doing what is best for the patient.

Dr. Patel departed the UC Davis Eye Center team in July 2021 to move to Houston, Texas, to be closer to her family. There, she will be joining the faculty at Baylor University and the county hospital. They are lucky to have recruited such a wonderful individual. Her absence will be deeply felt by all those who have worked with her at the VA and the UC Davis Eye Center.

We thank Dr. Patel for being a good friend and colleague to so many of us and for her dedication and commitment to her patients and staff, and to the profession of ophthalmology. We will miss her greatly and are sad to see her depart our VA and UC Davis family. We wish her the very best in this next phase of her career, and we know that she will use her "superhero" powers to accomplish amazing feats in the big state of Texas. Happy trails, Roma!

## Richard A. Lewis honored with the Binkhorst Medal at the American Society of Cataract and Refractive Surgery

Dr. Lewis has published more than 90 articles and book chapters focusing on glaucoma, ophthalmic surgery, and ophthalmic pharmacology.

He has received the American Academy of Ophthalmology Honor and Senior Honor as well as the Secretariat and Life Achievement Awards for his contributions in teaching and leadership and for initiating the AAO Subspecialty Day meeting.



We are pleased to announce that Richard A. Lewis, M.D., former UC Davis resident and former faculty member, was honored with the Binkhorst Medal at the American Society of Cataract and Refractive Surgery this year at the national meeting in Las Vegas, Nevada. Dr. Lewis presented the Binkhorst Lecture entitled: “We Can Prevent Blindness in Glaucoma: Why Don’t We?”

Richard A. Lewis is the former director of glaucoma at the UC Davis. In 1988, he co-founded Sacramento Eye Consultants in Sacramento, California. In addition to his busy clinical practice, Dr. Lewis is actively involved in clinical research in national and international trials in anterior segment disease and glaucoma therapy. He is the past President of the American Society of Cataract and Refractive Surgery (2014-15) and past President of the American Glaucoma Society (2000-02). Dr. Lewis is the medical editor emeritus of “Glaucoma Today” and on the editorial board of the “Journal of Cataract and Refractive Surgery”, “Journal of Glaucoma”, “Advanced Ocular Care”, “Glaucoma Physician” and “Ocular Surgery News”. He is co-founder of Sacramento’s Capital City Surgery Center (2003) and the current Chief Medical Officer for Aerie Pharmaceuticals (2015).

Dr. Lewis attended the University of California, Berkeley, as an undergraduate and received his M.D. from Northwestern University Medical School in Chicago in 1978. His ophthalmology training included a residency at the Department of Ophthalmology at the University of California, Davis, and a fellowship in glaucoma at the University of Iowa Department of Ophthalmology (1982- 83). He is a diplomat of the American Board of Ophthalmology and the National Board of Medical Examiners.

Dr. Lewis has published over ninety articles and book chapters focusing on glaucoma, ophthalmic surgery, and ophthalmic pharmacology. He is co-author of the book, “Curbsides in Glaucoma”. He teaches and lectures extensively on glaucoma and cataract surgery. He has received the American Academy of Ophthalmology Honor and Senior Honor as well as the Secretariat and Life Achievement Awards for his contributions in teaching and leadership and for initiating the AAO Subspecialty Day meeting. In 2019, he received the Presidential Medal from the American Glaucoma Society.

A native of San Francisco, California, Dr. Lewis lives in Sacramento with his wife. The couple has two grown children.



# HONORS & AWARDS

**Winter/Spring 2019:** Executive Director of Development Erin Bauer was selected by Chancellor Gary May and the University of California Office of the President to participate in the University of California Women's Initiative for Professional Development. The initiative is a system wide, experiential professional development program for women who have demonstrated potential for advancement. It is designed to elevate and retain women in leadership, establish a pipeline for advancement, and contribute to women's and UC's success.

**July 2019:** We are very excited to report that the R21 grant that Dr. Glenn Yiu submitted to the National Eye Institute has been funded. This research project involves the development of a new animal model of dry macular degeneration in mice and monkeys. Congratulations, Dr. Yiu!

**July 2019:** Congratulations to Barbara Arnold, M.D. She was selected as the 2019 Outstanding Philanthropist as part of the Association of Fundraising Professionals California Capital Chapter's Outstanding Honorees. Thank you, Dr. Arnold, for your commitment to the UC Davis Eye Center, one of the many organizations lucky enough to receive your support.

**September 2019:** Executive Director of Development Erin Bauer was selected as the recipient of the leadership award as part of the annual Excellence Awards program. This program acknowledges Development and Alumni Relations employees who have demonstrated excellence in their work over the course of the year and whose efforts have made UC Davis one of the top

fundraising programs in the nation. Awards are presented by UC Davis Chancellor Gary May and Vice Chancellor, Development & Alumni Relations Shaun Keister, Ph.D.

**September 2019:** Dr. Jennifer Li was honored by the Women in Medicine and Health Sciences (WMHS) for her achievement of the rank of full professor in the Department of Ophthalmology. At the event sponsored by WMHS, Dr. Li received a commemorative pin that recognizes her as the 225th female faculty member to achieve the rank of full professor in Medicine/Health Sciences at UC Davis!

**October 2019:** The Eye Center's Michele Lim was featured in "Glaucoma Today" cover article, "Women in Glaucoma!" Take a break from your morning routine and for a great read at [http://glaucomatoday.com/pdfs/0919GT\\_F\\_Roundtable.pdf](http://glaucomatoday.com/pdfs/0919GT_F_Roundtable.pdf). Congratulations Dr. Lim!

**October 2019:** Dr. Ivan Schwab was awarded the 2019 Dohlman Award by the Cornea Society. This prestigious award recognizes a lifetime of teaching excellence in the field of cornea and external disease as well as contributions to the profession. Please join us in congratulating Dr. Schwab on this well-deserved honor!

**October 2019:** Congratulations to Dr. Mark Mannis for receiving the California Academy of Eye Physicians and Surgeon's Distinguished Service Award!



**October 2019:** Congratulations to Eye Center resident Dr. Michael Ellis! Dr. Ellis was recognized by “Ophthalmology Times” for his research on telemedicine and AAO 2019.

**November 2019:** Congratulations to the Eye Center’s Dr. Jeff Caspar! Dr. Caspar is among the four UC Davis Health physicians with the greatest number of compliments given through the Press Ganey patient survey. And a big thank you to the patients who took the time to give this valuable feedback.

**May 2020:** Dr. Glenn Yiu is one of seven recipients selected to receive a research credit from the OptumLabs Data Warehouse (OLDW). OLDW is a database of medical claims with access to 160 million de-identified medical records from across the United States. Dr. Yiu will be using this powerful database to study the utilization of and reimbursements for tele-ophthalmology services in the U.S. and to examine the cost and clinical effectiveness of tele-ophthalmology. Two years ago, Dr. Yiu received grant funding from the UC Davis Collaborative on Diagnostic Innovation and the CITRIS/Banatao Institute to launch a pilot tele-ophthalmology program, which is currently undergoing expansion to three different sites across the UC Davis Health. Now, as director of tele-ophthalmology, he hopes to promote and expand the use of these remote services for eye screening among all diabetic patients at UC Davis.

**June 2020:** Congratulations to Dr. Jennifer Li, who was elected as the chair-elect for the Eye Bank Association of America!

**July 2020:** Congratulations to Dr. Lily Lin for being designated as a Fellow of the American College of Surgeons.

**July 2020:** Executive Director of Development Erin Bauer was selected from among her Health Sciences Development and Alumni Relations peers and leadership for the “MVP” award. This award is to recognize the employee who has consistently excelled and gone above and beyond.

**November 2020:** Congratulations to, UC Davis Eye Center’s faculty member, Dr. Jennifer Li on being the winner of the 2021 R. Townley Paton Award. The R. Townley Paton Award is the Eye Bank Association of America’s highest honor for corneal physicians. This award is presented annually to an ophthalmologist in recognition of her outstanding contribution to eye banking and EBAA. We look forward to your remarks at Eye Bank Association of America and Cornea Society University Cornea and Eye Banking Forum next year!

**December 2020:** Congratulations to UC Davis Eye Center faculty member, Dr. Jennifer Li on winning the 2021 R. Townley Paton Award. The R. Townley Paton Award is the Eye Bank Association of America’s highest honor for corneal physicians. This award is presented annually to an ophthalmologist in recognition of their outstanding contribution to eye banking and the EBAA. We look forward to Dr. Li’s remarks at Eye Bank Association of America and Cornea Society’s Cornea and Eye Banking Forum next year!

**December 2020:** We are celebrating our ophthalmology faculty who were recognized by their patients:

Clinician Health & Well Being Excellence Award 2020 — Annie Baik, M.D. “The doctor is the happiest doctor I have ever had. She brings joy to the patient environment and seems to incorporate happiness into her work. The world needs more people like her. I’m so glad that she is my doctor with her happy personality and expertise of the eyes.”

Excellence Award Honorable Mention - Jeff Caspar, M.D. “Dr. Caspar has provided me extraordinary care for a complex now resolved eye problem. His technical competence combined with empathy and effective communication are top in my experience.”

Also noteworthy and deserving of celebration are the top 25 specialty care physicians. These providers had the most amount of patient compliments in FY20, as collected through the Press Ganey patient surveys. The ophthalmology faculty are: Michele Lim, M.D., Esther Kim, M.D.,

James Brandt, M.D., Jennifer Li, M.D., Susanna Park, M.D., Ph.D., Jeff Caspar, M.D. and Annie Baik, M.D.

**January 2021:** Glenn Yiu, M.D., Ph.D., an associate professor in the Department of Ophthalmology & Vision Science, has been awarded a five-year, \$3.2 million grant from the National Institutes of Health, National Eye Institute, for a study on age-related macular degeneration (AMD). Dr. Yiu and his team will be looking at factors that may contribute to the development of AMD, including genetics, metabolism, and a Western-style diet high in fat and sugar. He will also be looking at whether high doses of statins — a class of lipid-lowering medications — can slow the progression of the disease.

**January 2021:** UC Davis Eye Center Faculty Natalie Homer M.D. and Volunteer Clinical faculty Harinder Chahal, M.D., both passed the American Board of Facial Cosmetic Surgery 2020 exam. Congratulations!

**March 2021:** As part of Women's History Month, we would like to recognize Ann Kerr for founding the Sacramento Eye Bank, now known as Sierra Donor Services Eye Bank. As a recipient of the gift of sight, Ann wanted to give back so that others might see through corneal transplant surgery. She has served on the UC Davis Eye Center Advisory Council and has brought the very special viewpoint of an eye patient to the table since its inception in 2011. Vision has allowed her to express her gratitude through art and beauty in everything around us. We are thankful to Ann for her acts of kindness and helping those around her.

**May 2021:** Dr. Michele Lim was the recipient of the UC Davis Foundation Board's Stewardship Committee and the Office of Development and Alumni Relations Faculty Stewardship Award. This award is given in recognition of innovative and notable leadership in stewarding donors and supporters of UC Davis. It honors and celebrates those individuals whose accomplishments as a faculty member have

made a significant and lasting impact on UC Davis.

**June 2021:** Parisa Emami, M.D., M.P.H., has been awarded the UC Davis Academic Federation Innovative Development Award. This grant will support Dr. Emami's research on a novel ophthalmic imaging technology. In collaboration with UC Davis School of Engineering faculty member, Dr. Iman Soltani, she seeks to breach barriers that hinder the use of ophthalmic imaging in vulnerable patients and improve the diagnosis and treatment of retinal pathologies. Dr. Emami is a vitreoretinal surgeon and director of the uveitis service at the UC Davis Department of Ophthalmology & Vision Science.

**June 2021:** "Viewfinder: Life After Sight" won an EMMY® Award. The story was developed in partnership with Sacramento PBS station KVIE and UC Davis Eye Center. It introduces three resilient individuals facing vision loss and explores the steps they take to navigate an ever-changing world. The "Life After Sight" video can be viewed by visiting: <https://bit.ly/3pEUiVV> online.

**August 2021:** Mark Mannis, M.D., F.A.C.S., was named president-elect of the California Academy of Eye Physicians and Surgeons for 2022.

# In Memoriam

**This year, UC Davis Eye Center lost several dear friends whose vision, dedication, and generosity will always be remembered.**

LEONARD MARTIN  
HJELMELAND, PH.D.

May 2, 1948 - July 12, 2021



“Larry’s career success qualifies as ‘stellar’ by any measure, but it is all the more compelling in light of the obstacles he had to overcome.”

**Leonard Martin Hjelmeland, Ph.D.**, Professor Emeritus of Ophthalmology at UC Davis and former Chair of the Department of Biological Chemistry, died July 12, 2021, at the age of 73. He was at home with his wife, Mary Kay, and daughter, Anna, when he succumbed to complications of diabetes.

Larry was born in 1948 in Atascadero, California. He graduated from Stanford in 1971 with a degree in Mathematics and Chemistry. Remarkably, he published his first paper as an undergraduate, an article in “Discrete Mathematics”, entitled “Constructive graph labeling using double cosets”. He used to joke that this was the last time his name and the word “discrete” appeared on the same page.

Larry entered the Ph.D. program in Biophysical Chemistry at Stanford in 1971. His main area of study was the quantum chemistry of polycyclic aromatic hydrocarbons, but he continued work in math and computer science, participating in the first forays into artificial intelligence. He received his Ph.D. in 1976.

In 1977, Larry moved to the National Institute of Child Health and Human Development at the NIH in Bethesda, where he was a staff fellow. At this time, the field of protein electrophoresis was undergoing a renaissance but was plagued by the problem of isolating insoluble membrane proteins while retaining functionality. Larry brought his chemistry training to bear, working to develop detergents that could achieve this goal. While he published many manuscripts during this period at the NICHD, a highlight was his synthesis and patenting of a zwitterionic, non-denaturing detergent, referred to as CHAPS, which became very widely used by cell biologists and biochemists. This achievement earned him the Inventor’s Award from the NIH.

In 1982, Larry moved to the National Eye Institute where, he began work on growth factors and their role in a variety of ocular processes such as cell migration, differentiation, wound repair, and neovascularization, a theme that would characterize his work until his retirement.

John Keltner, M.D., former Chair of the U.C. Davis Department of Ophthalmology, recruited Larry to the ophthalmology faculty in 1986. Larry went on to procure decades of funding from the National Eye Institute, and from private foundations. He built a laboratory that became the training ground for numerous Ph.D. students who went on to careers in academia, medicine, industry, and foundations. He also mentored many ophthalmologists to careers as clinician-scientists at major academic medical centers.



“Larry’s astounding intellect, seemingly unlimited memory, and broad knowledge never ceased to amaze.”

These included many scholars from Japan and Switzerland. Ultimately, Larry contributed 113 manuscripts to the scholarly literature, advancing knowledge across a wide range of disciplines and establishing himself as a highly respected scientist, known internationally for his work. Through his work and his mentoring, he had a major impact on the field of vision research, advancing knowledge and training the next generation of scientists.

Notably, the publication in which he described the development of a human retinal pigmented epithelial cell line, called “ARPE 19”, remains the most cited work in the history of the “Experimental Eye Research” journal. This cell line enabled an enormous number of valuable advances in the study of the retinal pigment epithelium and is now being used by pharmaceutical companies for the development of therapeutic approaches to treating ocular disease and producing protein pharmacologics.

In addition to his bench research, Larry contributed at many key levels, both to the campus and to the national and international community of vision research. At UC Davis, Larry served as the Chair of the Department of Biological Chemistry, Acting Associate Dean for Research in the School of Medicine, and as Special Assistant to the Provost where he chaired the building committee for the genome and biomedical sciences facility. He served on the editorial boards of major journals, as a consultant to industry partners, and a member of NIH Study Sections, to name but a few on a long list of activities.

Larry’s career success qualifies as “stellar” by any measure, but it is all the more compelling in light of the obstacles he had to overcome. As a teenager he was diagnosed with insulin-dependent diabetes, and ultimately lost his sight to it while working at the National Eye Institute in the early ‘80s. To overcome this, Larry was at the leading edge of machine-human interfacing, consulting with companies that developed talking computers, and later smartphones. When Larry’s kidneys began to fail, he was kept alive by dialysis until he received a transplant from his sister. While waiting for the transplant he developed prostate cancer, which delayed the transplant and extended his time on dialysis. He also dealt with several serious squamous cell carcinomas, and two incidents of sepsis, one as a result of a surgery to correct a broken hip. Despite these life-threatening events, Larry maintained an admirable equanimity and a remarkable sense of humor. To those of us who have known him for decades, it was remarkable to never have heard him complain; it just wasn’t in his nature. That Larry succeeded in the face of such obstacles defies description. Larry managed to meet every new challenge he faced. He was a man of exceptional empathy for others, and his resilience and perseverance in the face of innumerable setbacks inspired and motivated everyone who knew him.

Larry’s astounding intellect, seemingly unlimited memory, and broad knowledge never ceased to amaze. There seemed to be no area in which he was not deeply knowledgeable and well-read, from theology and philosophy to quantum mechanics, from Pink Floyd to Persian poetry.

When queried by his peers about where he found the strength to keep pushing, he attributed it to his desire to be the best husband, father, and provider to his wife, Mary Kay, and daughter, Anna. In that, he achieved perhaps his greatest success.

Larry made a huge impact, both scientific and personal, on all our lives, and he will be greatly missed.

## SHELLY SCHERMER

June 29, 1944 – December 2, 2020



**Shelly Schermer** was born in Chicago, Illinois, to Henry and Doris and had a brother named Larry. She attended the University of Michigan in Ann Arbor, where she joined the Alpha Epsilon Phi sorority and graduated in 1966. One spring day in 1965, on the steps of the Sammy fraternity house, she met Michael. They were married in Ann Arbor in December 1965 and were married for 54 years. Shelly put Michael through medical school by working as a high school teacher in Pinkney, Michigan. She gave birth to two remarkable boys, David and Ethan, who spent two of their childhood years with the family on the Papago Indian Reservation in Arizona. When they moved to Davis in 1972, Shelly decided to attend law school, first at McGeorge, then at UC Davis King Hall, where she was Order of the Coif, graduating number two in the class of 1977. Shelly always said, “hope for the best and prepare for the worst,” but she was not prepared for when her beloved son Ethan unexpectedly passed away in 2009. The serenity prayer helped her to heal and gave her the strength to provide essential support for others at that tragic time.

Shelly was hit by lightning on June 28, 2019, leaving her no longer able to walk. Her last days were colored by a unique mixture of love, comfort, and sadness. Her last breath was taken on Wednesday, December 2, 2020, at home, cradled in the arms of Michael and David. She now rests with her son Ethan, her father, who was her role model, and her dear mother. Shelly was a beacon of hope and light for many who have experienced vision loss, and a role model to countless individuals in the Sacramento region and beyond.

## ELISE KATHLEEN DALE FONG

August 21, 1967 – December 4, 2020



**Elise Kathleen Dale Fong** was the truly delightful child of Bonnie Dale, a longstanding member of the Eye Center Advisory Council. Elise attended school in Santa Rosa, California, graduating from Santa Rosa High School in 1985. She attended Sacramento State University and earned both a bachelor’s and a master’s degree in Communications. Elise worked for The March of Dimes, with her main responsibility being the coordination of Walk America for the Northern California region. On January 29, 1994, she married Glenn Fong, and they began their life together in the Sacramento area. In 1999, she became a mom when Sarah was born. Two years later, Katy came into the family. When the girls were old enough, Elise became a Girl Scout leader and held that position until fall 2020. She also served as the adult advisor for Alpha Phi at Sacramento State. Part of Elise’s legacy during her final illness was to establish a fund to be made available to her sorority to fulfill the needs of the membership. In addition to this fund, Bonnie created the Bonnie

Dale Fund for Advancements in Glaucoma in Memory of Elise Dale Fong. Elise was a truly wonderful daughter and friend. She lost her battle to cancer on December 4, 2020. She will be missed

## NORMAN FREDERICK SCHWILK, M.D.

May 25, 1929 – December 27, 2020



**Norman Frederick Schwilk, M.D.**, passed away peacefully on December 27, 2020. He was a beloved husband of Reba for 67 years, father of Janine and Kenneth, grandfather of Hailey and John, brother to Sharon Hoffart and Elizabeth Rudd, and dedicated ophthalmologist. Norman was a graduate of C.K. McClatchy High School as well as UC Berkley. Norman graduated from UCLA Medical School in 1955. He was a member of the U.S. Air Force and honorably discharged in 1961. Norman's hobbies were traveling and woodworking. He will be missed immensely. Dr. Schwilk was a longstanding supporter of the UC Davis Health Eye Center and dear friend to the department. He served for many years in the capacity of volunteer clinical faculty, teaching and staffing our residents.

## HENRY ZEITER, M.D.

July 1934- December 20, 2020



**Henry Zeiter, M.D.**, a beloved husband, father, grandfather, great grandfather, and uncle and prominent ophthalmologist in our region passed away peacefully after experiencing congestive heart failure in his Lodi, California, home. He was 86 years old. Born in Lebanon, Henry grew up speaking Arabic and French. He later became fluent in Spanish after moving to Venezuela with his family. At age 16, Henry, along with his parents, moved to Ontario, Canada where he completed secondary school at Assumption High School and became fluent in English. (As an adult, he became fluent in his fifth language, Italian.)

He attended Assumption College in Windsor where he studied philosophy and literature, as well as the sciences, which led him into the field of medicine at the University of Western Ontario Medical School. He did his internship and residency in ophthalmology at Harper Hospital and the Kresge Eye Institute in Detroit, Michigan. At Harper Hospital, Henry met the love of his life, Carol Joyce Schooff. Their oldest son, John Henry, was born the following December in Detroit, with son Philip Joseph and daughters Suzanne Antoinette and Camille Marie subsequently born in Stockton, California.

After completing residency, they moved to Stockton, California in 1962, where Henry began a successful surgical ophthalmic practice in downtown Stockton. He was later joined by his Dr. Joe Zeiter, then by his son, Dr. John, and later still by his great nephew, Dr. Joseph Zeiter. The Zeiter Eye Medical Group continues to thrive nearly 60 years later, currently employing six ophthalmologists, 8 optometrists, and 100 staff. As a "Jiddo" (Arabic for grandfather), Henry was happily anticipating his grandson, Dr. John Henry Jr., joining the family business in two years. Henry Zeiter practiced ophthalmology for 40 years, never tiring of the intricacy of the eye and helping people to see. Throughout his life, another of Henry's passions was classical music, which he knew and loved from childhood. Thanks to Carol, he also learned to love tennis and skiing, but an even bigger pleasure for him was travel.



Henry and Carol enjoyed visiting with her family around the country and his family around the world, and he took his children on trips that were to produce lifelong memories (and education) for all of them. In his retirement, Henry reveled in spending time with his 13 grandchildren and, most recently, his first great-grandchild. He was a longtime member of the American Academy of Ophthalmology, the American Society of Cataract and Refractive Surgery, the American College of Surgeons, and the San Joaquin Medical Society (past president).

## MICHAEL ZAHARAS

April 26, 1931 – March, 2021



**Michael Zaharas** was born in April 1931. He met his wife, Karen, in 1965, and they married in 1966. Michael valued his relationship with the Eye Center, especially with Dr. Mannis. Karen and Michael leaned on the Eye Center for vision care and support. Not only did they feel supported by the Eye Center, but Michael always talked about the high skill level of the faculty and their dedication to patients. The day before he passed, he was having a hard time speaking up and whispered to Karen, “Trust Dr. Mannis. He knows what he is doing, and he can take care of you.” Sadly, he passed away the next day in March 2021 after losing his battle with pancreatic cancer.

## THOMAS W. PURCELL II

February 23, 1941 – March 16, 2021



UC Davis Ophthalmology alumnus **Thomas W. Purcell II**, age 80, of Bayfield, Wisconsin, passed away on March 16, 2021, at his home. He was born on February 23, 1941, in Clarion, Iowa, to Robert and Frances Purcell.

**From Neil Kelly:** In undergraduate school, Thomas played basketball at the University of Iowa. After medical school, he was drafted and went to Vietnam. After being discharged, he was admitted to the ophthalmology residency at UC Davis. Tom married a young woman from Australia and had two sons with her. After his residency, he completed a plastic surgery fellowship and specialized in ophthalmic plastic surgery. Tom was an expert snow skier, and together with former residents Jack Hughes and Neil Kelly, they skied most of the top skiing sites in western North America. Tom also was an expert sailor, and he ultimately built his own large sailing catamaran. Tom’s wife, Liz, preceded him in death, and he is survived by his two sons, Brett and Thomas.

**From Mike Schermer:** Tom was a senior resident right out of central casting: tall, handsome, athletic, intelligent, and kind. I copied him as much as I could. We stayed in touch over the years since 1973 when he left Sacramento. I last saw Tom at Resident’s Day in 2012, but it seems like yesterday.

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With gratitude to the following donors who have provided sustaining support to the UC Davis Eye Center since its inception.

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**We will correct our records immediately.**



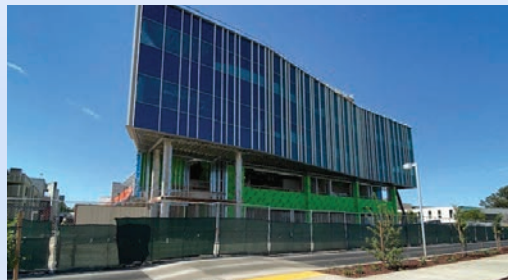
# EYE CENTER BUILDING

## CONSTRUCTION UPDATE

Construction on the new Ernest E. Tschannen Eye Institute Building is underway, and we are pleased to share several exciting updates on the progress (as of June 2021):

- Building construction is now more than 55% complete
- Exterior framing is complete except for the west elevation, which will be complete by early fall
- Windows and exterior window fins are installed with the exception of the west elevation
- The interior is continuing to be framed out as well as the former physical medicine and rehabilitation clinic space that was a part of the ACC building
- Mechanical, electrical, and plumbing work is ongoing throughout the building
- Elevator rough-in is in progress
- The exterior architectural envelope will be complete by early fall
- Building energization will be complete by late summer
- Roofing will be complete by mid-summer
- The building is slated to open to patients in fall 2022

We will provide further updates in the next issue of *enVision*.



# TECHNOLOGY

Connecting People with Vision Loss to Health Care and Employment

By Shari Roeseler, Executive Director

## SOCIETY FOR THE BLIND

More than what you see



**One thing we know** is that blindness and vision loss do not stop for a pandemic. People experiencing vision loss need help today. They need access to low vision eye care, classes, and support services so they can learn non-visual techniques and become proficient with assistive devices that enable them to live independently, find employment, and pursue their interests.

One of our long-term goals for Society for the Blind's Low Vision Clinic was to establish a telemedicine program. The pandemic turned that goal into a reality in August 2020. The result is that our patients are able to have a portion of their low vision

evaluation conducted from the comfort of their own homes. As a result, our doctors have found patients to be more relaxed and open about their vision challenges. When they do come in for their eye examination, the appointment is shorter and there is more time to demonstrate assistive devices.

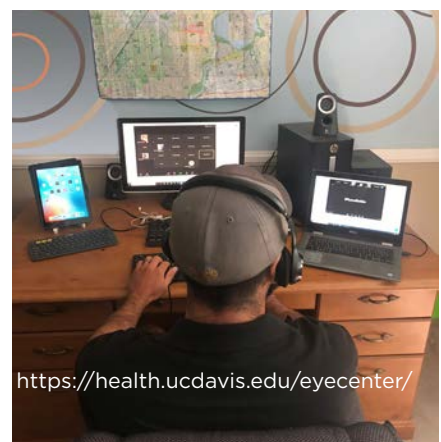
A priority at Society for the Blind is to help our clients find or retain employment. This past year has not been favorable for finding jobs, yet our team persevered—and more importantly, our clients stayed focused on their goals, with 14 finding employment in 2020. The expansion of remote work opportunities coupled with the advances in assistive technology are positive steps for increasing employment for people with vision loss.

Technology, from Zoom to iPhones to myriad assistive devices, is keeping our clients connected to one another. Technology is also playing a critical role in making it possible for our clients to pursue careers or keep the jobs they love, despite having lost some or all of their eyesight. Society for the Blind, in partnership with the UC Davis Eye Center, provides a continuum of care for people experiencing vision loss. “We know that vision loss does not mean you have to give up your hopes and dreams,” said Dr. Mark Mannis, Professor and Chair.



“Society for the Blind provides the training and support people need to get back to work and other activities they enjoy doing. The society is an important and valuable resource for our region.”

Vision loss, like a pandemic, can come upon us with little warning. The measures we take to respond makes all the difference. We have learned a lot this past year, and it has helped us reshape our programming and service delivery in a way that enables more people with vision loss to access our services. We look forward to returning to in-person classes later this year, providing a full complement of options to people living with low vision or blindness to discover, develop, and achieve their full potential. ■





# GLAUCOMA SUPPORT GROUP

BY BONNIE DALE

Support from others who share common health issues has become an important aspect of managing one's own health when chronic disease is an issue.

I am Bonnie Dale, a member of the UC Davis Health Eye Center's Executive Advisory Council and a grateful patient. I follow a Glaucoma Support Group on Facebook, which has members from all over the world. I have always found it interesting to read about how patients in other parts of the world manage their illness and how they receive their care. I feel blessed about the care that the UC Davis Health Eye Center has provided for me and the availability of outstanding care this country has to offer.

Last week, a young woman named Mona mentioned that she wanted to start a support group. I immediately contacted her to let her know that I had a support group and would be happy to offer ideas. I invited her to attend our Sun City Glaucoma Support Group virtual zoom meeting last August. Mona lives in Egypt, and the time difference is nine hours, but she made sure to join us for the meeting.

Mona is a psychiatrist and was diagnosed with Primary open angle glaucoma (POAG) seven years ago. She is a young woman and described her struggle in dealing with her diagnosis.

When Mona attended our virtual meeting, I was able to watch her reactions to the reports and interactions of the participants. She was invited to share her story and join in on the conversations.

After the meeting concluded, I asked her to wait a few moments so that we could talk privately. I mentioned the "empowered patient" concept and how we have been encouraged to learn about our diagnosis and actively participate in our ongoing care. Later that day, I was searching on Facebook and found this post from Mona (to the right).

Mona still attends our meetings when she is available. She also participated in our annual Give Day challenge to help raise funds for vision research.

I am so pleased that through a chance encounter on Facebook, a wonderful relationship has developed. I would like to thank Dr. James Brandt, for encouraging me to start this Glaucoma support group more than 10 years ago. I have learned so much from everyone who attends and am pleased to share my way of managing a support group with Mona. She will provide a wonderful service to her community, and we hope that this will be the beginning of worldwide support groups that provide a safe place for support and encouragement to all who are living with glaucoma. ■



*"So today was my first day attending a support group as a patient and when I sat down with myself afterward to reflect upon what had just happened, part of me was telling myself 'that would have really helped you back when you had your worst times of depression and anxiety and feeling invalidated all the time' which is why I want to start a support group and spread the idea. I have also loved the concept of the empowered patient and to search for a specialist who is treating me as a human and not as an illness. So thank you, Bonnie, for including me in your group and treating me with such kindness and grace."*

-Mona





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# See the difference you can make

The mission of the UC Davis Eye Center is to provide the highest possible quality of patient care, to conduct pioneering research on the visual system and its disorders, and to train residents, medical students, practicing physicians, allied health personnel, and fellows for outstanding careers in either academic or clinical practice. We welcome gifts that support this mission.

To learn more about how to give to the UC Davis Eye Center, contact Erin Bauer at 916-730-1941 or email [ejbauer@ucdavis.edu](mailto:ejbauer@ucdavis.edu) today!

Donate today at  
<https://health.ucdavis.edu/eyecenter/giving/index.html>







# Create Your Legacy at the UC Davis Eye Center

By leaving a gift in your estate plan, you can provide a lasting benefit for eye research and patient care.



Some of the methods currently available to donors seeking to make a legacy gift include:

- ✓ Bequest by Will or Revocable Trust
- ✓ Charitable Remainder Trust
- ✓ Charitable Gift Annuity
- ✓ Charitable Lead Trust
- ✓ Pooled Income Fund
- ✓ Gifts of Real Estate
- ✓ Gifts of Appreciated Securities

To learn how you can include the UC Davis Eye Center in your estate plans, visit today at **PlannedGiving.UCDavis.edu**

*As with all aspects of estate and tax matters, you should seek qualified legal, tax, and financial advice in developing your plan.*

# See the Impact of Your Generosity **and** Save On Taxes

If you are 70 1/2 or older, you can now make tax-free gifts to qualified charitable institutions such as UC Davis by making direct transfers of up to \$100,000 from your IRA. The transfer generates neither taxable income nor a tax deduction, so you receive the benefits even if you do not itemize your tax deductions.

## How the Qualified Charitable Distribution Works:

- This opportunity applies only to IRAs, and not other types of retirement plans.
- If you are required to, but have not yet taken your Required Minimum Distribution (RMD) for the year, your Qualified Charitable Distribution can satisfy all or part of that requirement.
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To include UC Davis in your plans, please use our legal name and federal tax ID and please let us know of your gift. Many retirement providers assume no responsibility for letting nonprofits know of your intentions, so your goals may not be honored.

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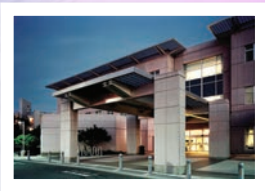
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Photo credit: Fred Greave

To learn more about this tax-smart way to make an impact at the UC Davis Eye Center, please visit **PlannedGiving.UCDavis.edu/Give-From-Your-Ira**

We can help. We'd be happy to assist you. Please contact Brian Casey at [plannedgiving@ucdavis.edu](mailto:plannedgiving@ucdavis.edu) or 530-754-2286.



# enVISION

EnVision is published by the UC Davis Eye Center. For more information about ophthalmology services and vision research at UC Davis, visit our website at: [health.ucdavis.edu/eyecenter](https://health.ucdavis.edu/eyecenter) or call (916) 734-3966.



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We look forward to sharing more information with you in the next issue of *enVision*!

Mark your calendar!



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