ENSURING THE FUTURE’S VISION
Defeating Childhood Glaucoma
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.

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.
CONTENTS

04 From the Chair’s Desk
05 UC Davis Eye Center Executive Advisory Council
06 A Childhood Glaucoma Center of Excellence at UC Davis
10 Eye on Tele-ophthalmology
14 The Gift of Sight
16 Little People, Big Dreams
19 A Teacher to Us All
21 Full Circle
22 Coding Oneself Out of a Job
24 Awards & More
26 To Research with Audacity
30 Donor Recognition
36 Faculty Listing
45 Newest Faculty Position
47 Alumni Corner
49 UC Davis Directory
In early 2020, we will begin the joyous task of building the Ernest E. Tschannen Eye Institute at UC Davis. This new edifice, designed with our patients in mind and looking to the future of eye care, will be the culmination of hard work on the part of numerous individuals at UC Davis and, of course, the largesse of Ernest E. Tschannen and many other generous donors. But an even more important beginning is the “groundbreaking” that we have been doing over the past decade, building a faculty of exceptional capability and leadership. Together, this faculty has brought our institution to national prominence and has served the region and the nation with distinction in both clinical care and innovative research.

What makes our department so unique are the strong and heavily traveled bridges between the clinicians in Sacramento and the vision scientists on the Davis Campus. Advances in retina, cornea, and glaucoma research are fueled by talented clinicians and basic scientists joining forces to open new areas of inquiry in translational science. Working hand-in-hand with our colleagues in the School of Veterinary Medicine, our physicians and PhDs are developing new procedures for treating corneal edema, developing an artificial cornea, exploring the genetic basis for retinal degenerations and their treatment through gene therapy, examining the nature of glaucoma at the most basic level, and developing new techniques for in-vivo imaging at the cellular level, among many others. Through the strong leadership of Paul FitzGerald, PhD, our talented cadre of vision scientists have organized to form the Center for Vision Science, drawing together talented researchers from across a wide range of university departments with interest in the visual system. UC Davis now boasts nearly $31M in vision research funding with a strong emphasis on the treatment of retinal degenerations, stem cell therapy, and gene therapy.

On the clinical front, the Eye Center is gaining momentum as a regional and national center for the management of childhood glaucoma. With referrals from around the world, James Brandt, MD is leading the initiative to establish a comprehensive West Coast center for the specialized treatment of congenital and other childhood glaucomas.

Our faculty have assumed significant positions of leadership nationally and internationally in glaucoma, cornea and eye banking, tele-ophthalmology, ophthalmic imaging, neuro-ophthalmology, retinal research, international eye care and resident education. They represent the most important facet of our new building that will house innovation, new discovery, and education of the next generation of ophthalmologists. “Ground breaking” has truly already begun, and our future is incredibly bright.

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 2019-2020

our mission

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 cutting-edge research for the world.

Council Members

Council Chair
DAVID MOTES, C.P.A.

Council Vice Chair
MICHAEL SCHERMER, M.D.

Members
JACK BLANKS
BONNIE DALE
BARBARA FINGERUT
BARB GRIFFIN
PHYLLIS HAMMER
JOHN HILLS, M.D.
ANN KERR
DEREK LEDDA
BINDA MANGAT
MARK J. MANNIS, M.D., F.A.C.S
ROBERT MILLER, M.D.
DEBBIE PRICE
ROBERT B. PRICE, IV
PAMELA ROSMAN
ALAN ROTH, M.D.
JIM STRENG
MARY JO STRENG
ERNEST TAKAHASHI, O.D.
ROSEMARY WILLIAMS
JOSEPH ZEITER, M.D.

Honorary Council Members
ANNIE FREDRIKS
KATHY HOWARD
LYN LIVINGSTON
SUSAN PRUDLER
ERNEST TSCHANNEN
A Childhood Glaucoma Center of Excellence at UC Davis

Our vision for the future to ensure the future’s vision
For the most part this is true, with one important exception – pediatric glaucoma, a rare form of this blinding disease. Pediatric glaucoma can be present at birth or develop later in childhood or even in young adulthood. Even though pediatric glaucoma is rare, it is a leading cause of irreversible blindness in children.

Pediatric glaucoma has long been one of the most challenging eye conditions for children, parents and families. It can be difficult to diagnose and treat without specialized knowledge. Only an experienced team can provide this expertise and, just as important, the comfort and support for families beginning what will become a life-long medical journey.

Northern California has such an experienced team. Led by James D. Brandt, M.D., Professor of Ophthalmology and Director of the UC Davis Eye Center’s Glaucoma Service, the Childhood Glaucoma Team at UC Davis cares for children not only from the Central Valley but from all over the United States and abroad with families traveling here for specialized care. “Because pediatric glaucoma is a rare disease, most ophthalmologists have limited experience.” Brandt says. “It is estimated that the average ophthalmologist sees one new case of childhood glaucoma in their entire career. Here at the UC Davis Eye Center we see a new case or two every week. Children do best when the appropriate operation is done quickly by an experienced surgeon.”

After arriving at UC Davis in 1989, Dr. Brandt set out to build a national practice in childhood glaucoma. A founding member of the Childhood Glaucoma Research Network (CGRN), he has published and lectured widely on childhood glaucoma. In 2012 Dr. Brandt gave the inaugural Noel Rice Lecture on Childhood Glaucoma at the UK Pediatric Glaucoma Society in London, and Dr. Brandt has taught courses on childhood glaucoma at each World Glaucoma Congress since that meeting’s inauguration in Vienna in 2005. The CGRN connects doctors around the globe to help them leverage each other’s unique expertise and understanding of pediatric eye disease to advance research and care. Dr. Brandt has traveled to more than a dozen developing countries to carry out and teach hands-on surgical teaching so that children can be cared for by properly-trained local surgeons. For his global work on childhood glaucoma, Right now the childhood glaucoma center at UC Davis has all the key parts in place that has made it a national and international resource center for children and their families. Research Network (CGRN), he has published and lectured widely on childhood glaucoma. In 2012 Dr. Brandt gave the
Dr. Brandt was awarded the 2018 Humanitarian Award by the American Glaucoma Society (see enVision 2018)

At this time, the childhood glaucoma center at UC Davis has all the key parts in place that has made it a national and international resource center for children and their families. However, we are just a virtual center. We want to change that through philanthropy to make the Childhood Glaucoma Center real and sustainable.

A child with congenital glaucoma usually has many issues that are best addressed by a multi-disciplinary team. The parents of a newborn with potentially blinding eye disease confront the daunting task of organizing and pursuing multiple consultations, weighing the different opinions they receive and then dealing with insurance and state agencies to arrange for proper coverage of their child’s care. It is not uncommon for some children to ‘fall through the cracks’ of our fragmented health care system.

In a formal childhood glaucoma center, specialists from all the different ophthalmic disciplines would meet regularly to better plan the therapeutic needs of the child. A dedicated social worker would coordinate necessary support and help the family navigate the health care system.

Through philanthropy, we hope to establish endowments for a Professorship in Childhood Glaucoma and for a social worker dedicated to the care of these children. As we plan our move into the Tschannen Eye Institute in the next few years, it is our hope that the Childhood Glaucoma Center will become a physical reality in the new building, making sure that what we are already doing will be sustained into the future to assure that more of these children grow into adulthood with vision preserved.

---

**Childhood Glaucoma**

- Childhood glaucoma is rare, occurring in **1:15,000 to 1:25,000** births
- The most common symptoms of childhood glaucoma include excessive tearing, **light sensitivity** and a **large, cloudy cornea** that can cause the eye to appear blue or hazy
- The **gene mutations** for some of the more common forms of childhood glaucoma have been discovered and can be tested for in children and families
- Glaucoma in children can be treated very effectively when **diagnosed early** in life before a child loses eyesight forever
- Older children with glaucoma tend to develop damage **without any obvious symptoms**, similar to adult glaucoma
Lucy’s Story

**Lucy Maguire** was just three months old, and her family were out on the lake, enjoying a beautiful sunny day. Lucy’s aunt noted to Brenna, Lucy’s mom, “I think Lucy is going to have different colored eyes.” Brenna looked at her baby’s left eye and saw a metallic sheen she knew was not right (page 8, top picture: Lucy as a baby). After an emergency room visit with no answers, Brenna and Lucy were taken by ambulance to UC Davis where the problem was recognized. Thus began their journey together with Dr. James Brandt and something called congenital glaucoma.

Lucy is now five and seeing well. Dr. Brandt continues to manage her glaucoma. Access to Dr. Brandt and his team remains a requirement of the Maguires’ long-term plans. A decision to move to a suburb must include consideration for proximity to the Eye Center. Nonetheless, the family counts Dr. Brandt to be a blessing. “We feel like we just fell into Dr. Brandt’s lap,” says Brenna. “He has always patiently answered all of my questions and has bridged the gap for us in understanding congenital glaucoma. Not knowing can be hard, but we know it’ll be okay because we have Dr. Brandt.”

Sophia’s Story

**In contrast** to Brenna Maguire, David Sexton knew exactly what was happening when his daughter Sophia was born in a hospital in rural India. David grew up in the Bay Area and has been blind since early childhood. David’s mother became blind from congenital glaucoma in her early twenties and David has two siblings blind from the disease. In college, David completed training in computer engineering in the United States, but found his true calling while traveling in India. He met his wife Mary there and they decided to establish a school in rural India two hours away from the nearest paved road. When David and Mary decided to have children, they both knew there was a high chance their children too would have congenital glaucoma.

Sophia’s eyes were cloudy at birth, a clear sign that she had not escaped congenital glaucoma. Because her family history suggested she was at high risk malignant hyperthermia, the local doctors in India could not safely care for her. David reached out to colleagues and quickly found out where he and Mary needed to take Sophia: UC Davis. With only the income from running a charity school in northeastern India, Mary and David crowdfunded their family’s 8,000-mile trip to Sacramento, raising over $6,000 from 75 people in 30 countries. Two days after they arrived, half asleep from jetlag, the Sextons were in the Eye Center, seeing Dr. Brandt. Sophia had surgery on both eyes just a few days later. David says, “I always knew I would have blind kids…I think the surprise for us now is that she is actually not blind.”

Bobby’s Story

**It was surprising** to Bob and Debbie Price when they took their 7-month old son Bobby on a cruise and noticed the sun bothered him throughout the trip. Once home, they sought the advice of their pediatrician, who didn’t detect anything wrong with Bobby. A second physician immediately recognized something and referred them to Dr. Brandt who broke the news that their baby had congenital glaucoma.

“I remember the day we met Dr. Brandt and he said he’d be in our life for the rest of his life (knowing that our son Bobby would outlive him),” Debbie said. “That moment was very moving for us as parents and it immediately made us feel like we were in the best hands possible with Dr. Brandt – we instantly trusted him.”

Fast forward nine years, and the Eye Center has become like family to the Prices. Bob remarks, “the moment the teams from UC Davis came into our lives we didn’t know what we were facing and we were scared. They did more than treat our son. Dr. Brandt and his team also helped my wife and me get through it. They were compassionate. They let us know we were in good hands, and they had all the resources to treat his glaucoma.” Now, 11 years old, Bobby is an avid reader who loves to play Minecraft, swim and travel. He’s undergone a number of surgeries and procedures in his young life, but his vision has been stable for the last four years and even improved. “UC Davis has impacted our lives tremendously and we were treated immediately as the teams acted with great speed,” Bob said. “We are so lucky to have access to clinicians who are internationally recognized for their expertise in diagnosing and treating blinding eye diseases at all ages and stages in life.”
EYE ON

TELE-OPTHALMOLOGY

Michael Ellis, MD, and Glenn Yiu, MD, PhD
The UC Davis Eye Center and Primary Care Network are teaming up to improve diabetic retinopathy screening and prevent vision loss using tele-ophthalmology.

Diabetic retinopathy is the leading cause of vision loss among working-age adults, and vision loss can be prevented if treatment is initiated at early stages.

Fewer than 50% of the 29.1 MILLION Americans diagnosed with diabetes undergo annual eye screening as recommended by the American Diabetes Association (ADA).

In fact, within many major health systems, including the UC Davis Health System, screening rates are usually between 30-50% ANNUALLY.

Dr. Glenn Yiu, an Associate Professor and Director of Tele-ophthalmology programs at the UC Davis Eye Center, is now partnering with Dr. Christopher Lillis, Medical Director of PRIME/PCMH, Dr. Scott MacDonald, EHR Medical Director, and Dr. Michele Lim, Eye Center Medical Director, to coordinate a new tele-medicine screening program at the UC Davis Midtown clinic in order to detect early signs of eye involvement in diabetic patients. With the launch of this new program, patients can now get their eye images taken while waiting to see their primary care provider and have those images remotely read by an ophthalmologist without having to schedule a separate visit to an eye care provider. Results are transmitted back to the primary provider to determine if the patient has disease requiring referral to an eye specialist, or needs simply routine annual follow-up.

The concept for this program began more than a year ago, when Dr. Yiu successfully secured grant funding from the UC Davis Collaborative for Diagnostic Innovation and the CITRIS/Banatao Institute. The planning process involved obtaining a non-mydriatic fundus camera (i.e. a camera that captures a retinal image without dilating eye drops), training a team of ophthalmic photographers to operate the camera, and importantly, designing both a physical and electronic workflow that could be integrated at the Midtown Clinic. This location was chosen as the initial site due to its central location near the medical center, and the high volume of diabetic patients seen there.

Within the first 6 months of the program, the tele-ophthalmology program has screened more than 200 patients and increased diabetic retinopathy screening rates at the Midtown clinic by more than 10%. A portion of these patients who otherwise would not have undergone screening were diagnosed with diabetic retinopathy and were promptly referred for treatment at the Eye Center. Drs. Michael Ellis and Colin Bacorn, current Ophthalmology residents, have analyzed this data and presented their preliminary findings at the Association for Research in Vision and Ophthalmology (ARVO) meeting in Vancouver, Canada in April this year.

However, the study has significant obstacles moving ahead. First, because tele-ophthalmology is very new, some insurance providers, including Medicare, do not have established mechanisms for payments. Payors do not routinely cover procedures if the patients are “asymptomatic.” However, eye screening is an important aspect of preventive care for diabetic patients."Early
stages of diabetic retinopathy may not only be markers for sight-threatening disease, but could also be harbingers of other serious systemic complications of diabetes,” said Dr. Yiu. Most patients with early stages of diabetic retinopathy are asymptomatic, so routine screening is necessary to look for early disease. “Even a single diabetic patient who is prevented from progressing to kidney dialysis or leg amputation could translate to substantial cost savings, not to mention the incredible benefit to our patients,” he said. To address this issue, Dr. Yiu and Dr. Lim have been working with the health policy experts at the American Academy of Ophthalmology (AAO) to discuss these issues with the leadership of insurance companies that administer federal Medicare programs. Dr. Yiu and Dr. Ellis have also discussed these issues with health policy staff at Congresswoman Doris Matsui’s office in Sacramento. “Congresswoman Matsui is known to be heavily in favor of telemedicine programs that aim to increase participation in preventative care,” said Dr. Ellis. “Her office is aware that telemedicine is absolutely crucial in terms of preventive care and cost savings with wide-ranging implications on community healthcare and population health.”

Another ongoing barrier is physician work-flow. Many primary care physicians are already overwhelmed by their work-load, and they do not always remember to send a diabetic patient for eye screening. To this end, Dr. Yiu has been working with nurses and medical assistants who could help alert the physician that a certain patient needs eye screening. Automated electronic reminders such as “best practice alerts” (BPAs) or bulk messaging to patients, are other methods to improve uptake of the tele-ophthalmology program. Dr. Yiu is also collaborating with industry partners such as Verily Life Sciences, the healthcare division of Google’s parent company Alphabet, to optimize the physician work-flow.

“Tele-ophthalmology has been around for years,” said Dr. Yiu, “but mainly in underserved communities or underdeveloped countries where access to eye care is limited.” Widespread deployment of tele-ophthalmology, however, could not be possible without innovations that are only starting to become mature in recent years. First, electronic health record (EHR) systems had to become fully-integrated into physician workflow, with automated triggers to alert doctors that a diabetic patient may be overdue for an eye exam. Also, fundus cameras must not only obtain high-quality images but also be easy to use. The newest generation of fundus cameras can automatically locate, focus, and photograph the retina with just one or two clicks of a button. Since the beginning of this year, the team has successfully placed an ultrawide field imaging camera from Optos, a Nikon company, at the Midtown clinic. This will enable the services to be even more sensitive in detecting retinal disease at the patient’s visit.

Finally, the process of interpreting the images by an
ophthalmologist must become faster and more efficient as well. That is why Dr. Yiu has teamed up with research partners to employ artificial intelligence (AI) to assist in the tele-ophthalmology screening initiative. In 2016, Google published the first report of a fully-automated “deep-learning” algorithm that could detect diabetic retinopathy from fundus photographs with accuracy matching that of human graders. “There are two important advantages to the use of AI for remote diabetic retinopathy screening,” said Dr. Yiu, “they provide instantaneous feedback, and they never get tired and make a mistake.” If AI-integration becomes fully-realized in tele-ophthalmology, a diabetic patient could have their retinal photo taken and immediately find out if they will need an ophthalmology referral, even before they enter the exam room with their primary doctor.

Dr. Yiu’s goal for this project has been from the start to increase screening of diabetic patients at UC Davis until it reaches 100%. The Midtown Clinic tele-ophthalmology program was only a first step and there is expansion underway. Discussions have occurred with Pediatric Endocrinology and Family Medicine services to encourage deployment of tele-ophthalmology services in other high-yield locations. Still, successful system-wide implementation will require more physician involvement, more cameras, and more funding. Eye exams for patients with Diabetes is one of many quality measures tracked by the National Committee on Quality Assurance (NCQA), Centers for Medicare and Medicaid Services (CMS) and private insurance carriers showing the potential positive financial footprint of the project. Dr. Yiu and his team remain optimistic that improving awareness, innovative technologies, and the immense passion of the physicians and staff on his team will ensure the success of this program.
It is not uncommon to see Charleen Roccucci hiking with her family, whale watching on the coast or kayaking on the American river. But for many years those activities were not always possible or rewarding.

“My vision problems began very slowly,” Roccucci recalled. “First oncoming headlights would totally blind me for a few minutes, and later, even tail lights on freeways became blurry. So, I stopped driving on two-lane roads and at night.”

But over a 15-year period, Roccucci’s vision would become progressively worse, affecting her ability see clearly during the day as well.

“It’s like driving on a very foggy day,” she said. “I’d be looking for a particular street and have difficulty making out the names on the signs. I would creep up to an intersection, and the red, yellow or green light would be very hazy. It was a scary situation.”

In 1997, Roccucci learned that she had Fuch’s endothelial corneal dystrophy, a slowly progressing disorder that causes the clear layer (cornea) on the front of the eye to swell, leading to glare, cloudy vision and eye discomfort. The disorder is slightly more common in women than men, affects both eyes and does not become noticeable until individuals reach their 50s or 60s. Initially, Roccucci used drops and ointments to help reduce swelling of her cornea and minimize her symptoms. But in 2013, when the words on a printed page became too blurry for her to read, she was referred to Dr. Jennifer Li, a corneal specialist at UC Davis Eye Center. It was at that time Dr. Li offered the option of a novel corneal transplantation procedure to help restore her vision and eliminate her disease.

“The prospect of being able to see was exciting but almost unbelievable” states Charleen. “Over the past decade, corneal transplantation has been revolutionized by new techniques that allow patients to see better, faster, and with fewer risks and complications,” says Dr. Li. “In particular, endothelial keratoplasty surgery has drastically improved the lives of many patients just like Ms. Roccucci. In endothelial keratoplasty surgery, only a thin layer of diseased cells is removed from the patient’s cornea and replaced which allows better outcome than traditional corneal transplantation surgery.”

According to the National Eye Institute, corneal transplants are among the most common and successful transplantation procedures in medicine. Each year approximately 33,000 Americans undergo corneal transplants to replace diseased and injured corneas, the normally crystal clear tissue that protects the eye and helps focus light on the retina.

Today Roccucci has clear 20/20 distance vision, wears glasses for reading and shares her story as a volunteer with Sierra Donor Services, the organ, eye and tissue donation and transplantation Network that serves almost four million people in Northern California and Nevada.

“I am an adventurous person and like to travel, hike, camp and be outdoors. On a recent whale-watching trip to Point Reyes lighthouse, I could spot whale spouts way out in the ocean, well before others. Then I remembered all those other years when people pointed the whale spouts out to me and I could not see them.

“I am forever grateful for this precious gift of sight and my transformed life because of the two people who signed up to be donors,” Roccucci said.
Consider giving the gift of life. Join the Donate Life Registry (registerme.org) or check the box on the DMV license application. Sierra Donor Services is committed to saving and improving lives by connecting one life to another through organ, eye and tissue donation and transplantation. Become one of the nearly 66,000 people in the U.S. who chose to give the gift of sight through Donate Life.

Roccucci with the Sierra Donor Services team, which supplied 986 corneas for transplant in 2017.
On any given Friday morning at Society, you can hear peals of laughter, and a lot of energetic babbling as our infant/toddler support group gets underway. Parents of babies and toddlers with vision loss come together to help their young ones explore their world through tactile toys, Braille books, and other objects.
Through this play time, children who are blind or have low vision get to work on gross motor, orientation and mobility skills; sensory stimulation, cognitive development and early communication skills.

School-age youth receive one-to-one instruction and training in Braille, Assistive Technology and Orientation and Mobility from our professional staff through our After-School Academy. Each child receives an assessment to tailor the academic tutoring to their needs.

Society for the Blind is focused on the whole child, so we offer community events and family activities to engage everyone and develop the social and emotional skills of the children. From our “cooking without looking” classes, audio assisted movie nights, to kayaking and hiking, we aim to get our little people to dream big!

“It is so helpful to have Society for the Blind as a resource right here in our community,” said Dr. Nandini Gandhi, Pediatric Ophthalmologist at the UC Davis Eye Center.

“Giving parents a place to turn to for help and support so their child can grow up and pursue their hopes and dreams is incredibly helpful.”

The UC Davis Pediatric Ophthalmology Department has been referring patients to Society for the Blind since 2015. Children are served in our Low Vision Clinic, the Infant/Toddler Program and the After-School Academy.

In addition to our youth programs, Society offers courses and programs for working-age adults and seniors. We serve nearly 6,000 clients annually throughout our 27-county service area. We provide services at our training center in Sacramento, at our low vision clinic in Roseville, and through in-home services and community-based workshops and seminars.

To learn more, please visit our website at www.societyfortheblind.org.
seeing life again

UC Davis Health is improving lives and transforming health care by providing excellent patient care, conducting groundbreaking research, fostering innovative, interprofessional education, and creating dynamic, productive partnerships with the community.

Creating health. Transforming lives.

Demorest Chair Filled

This past November, the Eye Center received the final funds needed to establish the Byron Demorest, MD Chair in Pediatric Ophthalmology. Dr. Demorest (1925 – 2011) was a community ophthalmologist and is considered to be the department’s first chairman. “He’s the reason (the department) all exists,” states Eye Center Alumnus Michael Schermer, MD. In addition to his efforts to help create an ophthalmic department at UC Davis, Byron specialized in pediatric ophthalmology and was also a national leader in setting ethical ophthalmic practices. Nandini Gandhi, M.D. — Director of the Pediatric Ophthalmology and Strabismus Service — currently holds this chair. Former director Mary O’Hara, M.D., was the Demorest Chair’s inaugural holder.

From Dr. O’Hara: “We must recognize the giants who are our donors. You made the Demorest Chair possible. Without your help, we cannot continue the important work of this department. You honor Byron and all of us with your faith in support of the work that we do.” On behalf of Dr. O’Hara and the rest of the Eye Center, a very special thank you to all the donors who helped to make the Demorest Chair a reality.

Obituaries

This year, the Eye Center lost three great friends, whose dedication and generosity will be part of our future for many years to come.

Charles Bradbrook, MD (May 26, 1931 – Feb 8, 2019) was a constant presence at every Eye Center event. Practicing ophthalmology in the community into his 80s, Dr. Bradbrook supported the Eye Center with his ongoing participation in our educational programs. He will be sorely missed.

Gene Christopher (January 18, 1935 – April 9, 2019) passed away this year and was a dedicated supporter of the Eye Center. His quiet generosity was an expression of his interest in our mission of sight restoration.

Fred Sauze (February 6, 1924 – May 28, 2019) left us this year as well. Fred, a vibrant and gracious WWII veteran, was a very grateful corneal transplant recipient and generously supported our program.

We will miss all three of these men, who so generously gave of their time and support to nourish the growth of the Eye Center. May they rest in peace.
When Mary O’Hara joined the UC Davis Eye Center as its new Chief of Pediatric Ophthalmology in 2004, she brought a completely new range of dedicated services to the Health System.

Trained in the military, having completed her residency in ophthalmology at Brooke Army Medical Center, Dr. O’Hara then went on to obtain fellowship training in Pediatric Ophthalmology and Strabismus at the Wills Eye Hospital in Philadelphia. She subsequently served as an instructor at Emory University and then as a Professor at the Uniformed Services University and the University of Texas Health Science Center in San Antonio.

The 15 years of her service to the Eye Center at Davis has seen significant growth of our pediatric ophthalmology services and has gained the department a position of prominence in the nation because of her stature in the pediatric ophthalmic community. Among other positions, Mary has been a leader in the Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO) and served as its president from 2002-2003. She has also given considerable volunteer time to providing pediatric care.
and instruction in other parts of the world through ORBIS International and other outreach organizations.

Here at home, in addition to her busy pediatric practice, Dr. O’Hara developed the annual Doctoring Course in ophthalmology for our medical students and has served as Surgical Director for the Department, coordinating surgical services among the ophthalmic subspecialties—often a demanding and tricky undertaking. She has also forged strong ties between the Eye Center and the Society for the Blind, supporting services to children with visual disabilities. In the community, Mary developed the annual “Eyes of a Child” course in pediatric ophthalmology directed at school nurses, pediatricians and ophthalmic care givers at all levels.

In 2018, Dr. O’Hara was inaugural holder of the Byron Demorest Chair in Pediatric Ophthalmology and Strabismus—a chair designated for the director of the service and named after our first department chair and pediatric ophthalmologist, the late Byron Demorest and given in recognition of her many contributions to our field.

But most importantly, Mary has served as a teacher to all of us. She has taught us about the special considerations in the management of children and their parents; she has collaborated with every faculty member whose activities touched the pediatric population; and she has served as a staunch advocate for the child in the Health System. All of this has been accomplished with a special combination of military grit and efficiency tempered with genuine warmth and affection for kids and a refreshing sense of humor that puts all of what we do in perspective.

Mary O’Hara will be sorely missed at the Eye Center. However, she will go on to the next phase of her life with family and grandchildren. Her legacy at UC Davis will be lasting.
Nandini Gandhi likes circles. Her life has been a series of circles. This Sacramento native has been committed to the welfare of children since she herself was a child. Her family describes how a young Nandini first settled on a career in medicine while in high school. This determined young woman then pursued her dream through a sterling medical education: undergraduate studies at Stanford University, a medical degree from the University of California, San Francisco, and ophthalmology residency at the University of Iowa. After that, she refocused on children by completing a pediatric ophthalmology fellowship at Duke University. She then circled home to Sacramento where the University of California, Davis Eye Center was fortunate to recruit Dr. Gandhi to its faculty as a pediatric ophthalmologist.

In this position, Dr. Gandhi demonstrated special skills that were well known to her Sacramento family. Her parents, Gautam and Harsha Gandhi, note that their daughter is “loving and giving, with compassion in her heart. We also feel that she is very bright yet humble and at all times gives one hundred percent of herself.” These attributes are very important in the practice of pediatric ophthalmology. An ability to connect with people, to be authentic and trustworthy, is essential when dealing with pediatric patients. Children can sense a “faker” and will not engage with that person. Nandini Gandhi is able to gain the confidence and trust of her little patients. Her compassionate heart also helps her to deal with their families, many of whom are stressed and worried about their children.

These same skills have also helped Dr. Gandhi connect with the ophthalmology residents of the University of California, Davis Eye Center. In the past year, she has been named Program Director of the Eye Center residency program. In this role, Dr. Gandhi has put in place innovative changes that have improved the educational experience for the next generation of eye doctors.

The coming year will bring new challenges. Dr. Gandhi will assume the directorship of the Pediatric Ophthalmology and Adult Strabismus Service and will be named the Byron Demorest Chair of Pediatric Ophthalmology and Strabismus, making her circle complete. It is a great distinction to be named to an endowed chair. It is an especial honor to be named to Dr. Demorest’s chair. Byron Demorest, MD was the consummate physician, a beloved eye doctor to the Sacramento community, the Department’s first chairperson, and a national leader in the ophthalmic profession. He taught all of us that it is a privilege to be a physician, a and a special privilege to care for children and their families. Dr. Nandini Gandhi brings distinction to this privileged role.
CODING ONESELF OUT OF A JOB

Dr. Jack Werner’s Vision Science and Advanced Retinal Imaging (VSRI) Laboratory at the UC Davis Eye Center, a familiar name is making discoveries: Marsh-Armstrong. But it is not glaucoma research specialist and faculty Nick Marsh-Armstrong, Ph.D. In fact, it is his son, Brennan, who has joined the ranks on a temporary assignment before he heads off to UC San Diego for medical school in Fall 2019.

Brennan's research career started at 16 years of age — Maryland’s minimum age for researchers—which he knows because he tried to start before that. His first investigations were at Johns Hopkins in glycobiology, continuing at Amherst College with biochemical chemical development, and later to translational ophthalmology at the Eye Center.

Brennan is excited to become a physician so that he can provide care to those in need. But those very lives that need care are why Brennan aims to be a true physician researcher. “Having taken part in the revolutionary translational research being conducted by the Werner Lab and the doctors at the Eye center, I have met numerous patients in need of yet undiscovered treatments. I have come to believe that a physician’s duty to treat their patients extends into the future through the betterment of the care they provide. Who better to develop and improve the tools physicians use than physicians themselves?” reflects Brennan. The phrase that captures Brennan’s ambition best is one that is common in computer science, an area of study from his Amherst days. “Code oneself out of a job.” It refers to the moment when a programmer develops a solution for a problem so thorough and efficient that they are no longer needed,” explains Brennan. “I hope to look back fifty years from now and realize that I researched myself out of a job. If I can, through careful study, provide a solution to a yet uncured ailment my future patients face, I will have succeeded.”

Dr. Werner states, “Brennan embodies the high standards and integrity that scientific research requires for the betterment of clinical medicine.”

We wish Brennan luck on his next chapter at UC San Diego and thank him for the great work he has during his time at the Eye Center, which he has shared to the right.
While the color discrimination of those with abnormal color vision has been carefully characterized, this population’s color contrast sensitivity has not been studied. We are using a computerized test to measure whether a commercial color filter affects the vision of color-deficient individuals. We found significant differences between contrast sensitivity in patients with normal and abnormal color vision and determined that wearing the filter-glasses improves color contrast perception in color deficient individuals even after they remove the glasses. For this project, I programmed the psychophysical test and used it to assess subjects’ color vision profiles, and I am writing our findings for a fall 2019 publication.

Photoreceptors are specialized neurons lining the back of the eye that convert light into electrical signals destined for the brain, providing us with sight. One of the indications of age-related macular degeneration is the presence of excessive drusen, bubbles of accumulated cellular waste and debris underneath the photoreceptors. Over the last year I have operated a lab-built optical coherence tomography (OCT) camera and imaged over 20 AMD patients to obtain evidence of whether these drusen are simply pointed the wrong way or if they are also unhealthy. Based on an analysis of the data conducted by programs I wrote, we have gained evidence that these cells are not only reoriented but are likely also degenerating.

The VSRI Laboratory conducts revolutionary research on imaging the choriocapillaris, the complex network of blood vessels behind the eye. Seeing an opportunity to use these images to identify novel biomarkers, I invented a robust algorithm that I have coined “linear-filter local min-max normalization” to resolve and trace the choriocapillaris images. The traces from my algorithm allowed me to generate the first OCT-derived direct measurements of a slew of biometrics including flow-void radius, vessel radius, and vessel branching rates. While it’s a long way off, I hope that I have made the first step toward developing a new diagnostic tool to aid physicians in diagnosing retinal disease.
SPECIAL RECOGNITION TEACHING AWARD
Tyrone Glover, M.D.

Volunteer Clinical Faculty member Dr. Glover was recognized by the UC Davis School of Medicine for his excellence in teaching and significant contributions in the field of medicine.

YOUNG OPTOMETRIST OF THE YEAR AWARD
Heidi Miller, O.D., F.A.A.O.

Dr. Miller was selected as one of the 2018 California Optometric Association’s Young Optometrists of the Year.

The Eye Center proudly applauds our friends at Society for the Blind for their receipt of the Sierra Sacramento Valley Medical Society’s Medical Community Service Award. This award was given to recognize Society for the Blind’s provision of services and empowerment of individuals living with low vision or blindness to discover, develop and achieve their full potential.
CONGRATULATIONS TO ALA MOSHIRI, M.D., PH.D., AND SARA THOMASY, D.V.M., PH.D.!

They are part of a dual-institution research team with three colleagues from Baylor University who are among select group of recipients to receive a grant from the National Eye Institute’s Audacious Goals Initiative. This team will explore cases where animals have naturally occurring ocular diseases. The clinical implications of this research in non-human models is that if the treatment is successful, there is the potential that this stem cell-based therapy could be translated into ophthalmologic practice to restore vision in many forms of blinding retinal disease.

VISION SCIENTIST ANDREW ISHIDA AND A TEAM OF RESEARCHERS FROM UC DAVIS HAD THEIR IMAGE SELECTED AS BRAINFACS.ORG’S IMAGE OF THE WEEK.

The optic nerve contains the elongated extensions of cells that send electrical signals from the eye to the brain. The UC Davis vision science laboratory provided the first-ever evidence that the protein pCaMKII regulates the speed at which these signals travel and the first-ever visualization of pCaMKII in individual optic nerve fibers. The cyan color (flanked by magenta) in the image on the front of this card illustrates this localization in a high magnification view of a length-wise slice through an optic nerve.
“When we stop taking risks is when we stop being competitive.”

For the Burns family, these words from Intel co-founder Gordon Moore apply beyond the boardroom and into their personal lives. Claire Burns, a longtime patient of Dr. Mark Mannis, needed a corneal transplant in a complex set of circumstances. Reflecting on Moore’s words, the Burns family made the decision to make a gift to the department to fund a research of a unique variety. Establishing the Claire Burns Cornea Research Support Fund, their contributions are a resource to scientists like Dr. Min Zhao who are taking radically novel approaches to treat the cornea. Through this same fund, the Eye Center also developed the Claire Burns Audacious Grants program to fund proposals that demonstrate out-of-the-box thinking for cornea research. From the Burns family: “We cannot know the likelihood of success with this research, but if the thought process is good, that is significant, too, even if the research fails. It takes courage to take that risk.”

The research projects described on this page have been made possible by the Burns Family’s gift. The Eye Center considers it a privilege to care for Claire and is humbled by the family’s generous and thoughtful recognition.

Brian Leonard, DVM, PhD, DACVO

Dry eye disease is one of the most common diseases for which patients seek an ophthalmologist with an overall prevalence of 6.4% of the US adult population, affecting nearly 16.4 million individuals. Our research is focused on a novel approach to therapy for dry eye disease patients, through the engineering of the tear film to improve wettability and hydration of the eye. This approach is very unique since it would be applicable to all patients with dry eye disease, regardless of the underlying cause.
Andrew Minella, DVM, PhD

Corneal haze and scar tissue development is a significant and sight-threatening complication of corneal wound healing, including the healing that occurs following common corneal surgeries such as LASIK. We hypothesize that inhibiting tissue transglutaminase 2 (TGM2), a compound with established involvement in scar tissue formation, we can decrease or eliminate this complication during corneal wound healing. We have shown the ocular safety of this method via in vitro and in vivo toxicity trials (Figure 1), and we propose in vivo efficacy trials in a rabbit model of corneal wounds to test these compounds. Ultimately, we aim to provide the data needed to lead to the development of an eye drop to prevent corneal scarring during healing.

**Figure 1: Safety of TGM2 inhibition on wounded rabbit cornea. A:**

Four-time daily application of TGM2 inhibitor cystamine dihydrochloride to wounded rabbit corneas did not impede epithelial healing at all doses tested. B: Grading of inflammation (“SPOTS” scoring) shows decreasing inflammation consistent with normal healing with no difference between drug test eyes (OD) and control eyes (OS).
Sara Thomasy, DVM, PhD

Worldwide, there is a shortage of donor tissue for corneal transplantation, which is critical for the treatment of diseases such as Fuchs endothelial corneal dystrophy and pseudophakic bullous keratopathy. We hypothesize that an injection of human adult corneal endothelial stem cells (hCESCs) may potentially regenerate the inner layer of the cornea that is damaged by these two diseases. We propose to determine safety and efficacy of hCESCs in a rabbit endothelial cryoinjury model, which if successful, could allow us to transition to human subject testing, and ultimately make treatment widely available while also significantly reducing costs.

In a rabbit transcorneal cryoinjury model, variability in endothelial cell size and shape can be observed at Days 7 (left) and 15 (center) post-wounding using in vivo confocal microscopy with a Heidelberg Rostock Corneal module (left) or Nidek Confoscan 4 (center). These non-invasive corneal imaging techniques provide very similar information as staining of the cells with Alizarin red post-mortem (right). We will use all 3 imaging techniques to determine if the efficacy of human adult corneal endothelial stem cells (hCESCs) at regenerating the endothelium post-injury in this rabbit model.
Min Zhao, MD, PhD

We are using electrical stimulation to target and precisely control intracellular signaling pathways that are important for corneal biology. To regulate electrically intracellular signaling pathways, corneal epithelial sheet migration offers an exciting and novel approach to treat diverse corneal diseases, like chronic and non-healing corneal wounds. In collaboration with engineers and physicists, we are developing a contact lens with microelectrode arrays for potential clinical use.

Prototype of microelectrode arrays to deliver electrical stimulation.

Team members (from the left to right): Shenzhou Shan, Dr. Brian Reid, Dr. Adam Contreras, Beiyao Gao
With gratitude to the following donors who have provided sustaining support to the UC Davis Eye Center since inception.

HERITAGE CIRCLE
It is with deep gratitude that the UC Davis Eye Center recognizes the following individuals for making us a part of their estate plans.

Fiore Ai
Curtis and Amy Chiuu
Phyllis Christopher
Eileen Doran
Patricia Ekstam
Barbara Fingerut
Jill Frechette
Francisco Garcia-Ferrer, M.D.
Virginia Goodman
Barb and Jim Griffin
Arthur and Luann Hawkins
Mary Kay and Larry Hjelmeland, PhD
Nancy and John Keltner, M.D.
Eugene and Judy Marquet
Susan and Gerald Meyers
Sonia and Bob Miller, M.D.
David Motes and Charlene Woodward
Debbie and Robert B. Price, IV
Thomas Purcell, MD
Alan M. Roth, M.D.
Shelly and Michael Schermer, M.D.
Jim and Mary Jo Streng
Ernest Tschannen
David H. Warren, PhD
Rita Wilcox
Michael and Karen Zaharas, R.N.

TSCHANNEN SOCIETY
$2,500,000 or more
Barbara Fingerut
Alan Roth, M.D.
Ernest Tschannen

2020 SOCIETY
$1,000,000 or more
Lanie Albrecht Foundation
The Burns Family
Natalie Fosse
Barb and Jim Griffin
MJ and Neil Kelly, M.D.
Research To Prevent Blindness
Charlene Woodward and David Motes, C.P.A.
Karen Zaharas, R.N. and Michael Zaharas

CHAIRMAN’S COUNCIL
$500,000 or more
Melza M. and Frank T. Barr
Sonia and Robert Miller, M.D.
Wylda Nelson, M.D., and Thomas Nelson, M.D.
Shelly and Michael Schermer, M.D.
Washington University in St. Louis

INNOVATORS SOCIETY
$250,000 or more
Allergan Pharmaceuticals, Inc
California HealthCare Foundation
Foundation Fighting Blindness
Agnes Russfield, M.D.
Mary Jo and Jim Streng
St. Lukes Roosevelt Institute for Health Sciences
Helen and Jerome Suran

FOUNDERS SOCIETY
$100,000 or more
Barbara Arnold, M.D. and Henry Go, M.D.
Charlotte Dunmore
Patricia Ekstam
Glaucoma Research Foundation
Dixie Henderson
Icahn School of Medicine

VISIONARY SOCIETY
$50,000 or more
International Retinal Research Foundation
Sierra Health Foundation
Stephen C. Moore
Mount Sinai School of Medicine
Nancy and John Keltner, M.D.
Lawrence Family Trust
Macular Degeneration Foundation, Inc
Northern California Lions Sight Association, Inc.
Mary Beth Tasker, M.D.
David Warren, Ph.D.
E. Matilda Ziegler Foundation
Carl Zeiss Meditec, Inc
Zeiter Eye Ophthalmology

Gratitude – Progress – Hope
SOCIETY OF HOPE

$25,000 or more
ARVO Foundation for Eye Research
Bausch & Lomb
Karen and James Brandt, M.D.
Phyllis and Byron Demorest, M.D.
Cal Aggie Foundation
Cameron Park Optimist Club
Jorge Dairy
Marcia and Ronald E. Foltz, M.D.
Sherrin Grout and Donn Marinovich
Iolab Corp
Mary and Ronald Kalayta, M.D.
Ann and Thomas Kerr
Robin and Richard Lewis, M.D.
Michele Lim, M.D. and Christopher Sanders, J.D.
Judy and Mark Mannis, M.D.
Massachusetts Eye and Ear
Natl Society to Prevent Blindness Inc.
Ophthalmology Agency Account
Orthopaedic Trauma Association
Pennsylvania State University
Pfund Family Foundation
Roche Vitamins Inc
Fredric Sause
Joseph T. Zeiter, M.D., F.A.C.S.

$20,000 or more
Society of Hope
ARVO Foundation for Eye Research
Bausch & Lomb
Karen and James Brandt, M.D.
Phyllis and Byron Demorest, M.D.
Cal Aggie Foundation
Cameron Park Optimist Club
Jorge Dairy
Marcia and Ronald E. Foltz, M.D.
Sherrin Grout and Donn Marinovich
Iolab Corp
Mary and Ronald Kalayta, M.D.
Ann and Thomas Kerr
Robin and Richard Lewis, M.D.
Michele Lim, M.D. and Christopher Sanders, J.D.
Judy and Mark Mannis, M.D.
Massachusetts Eye and Ear
Natl Society to Prevent Blindness Inc.
Ophthalmology Agency Account
Orthopaedic Trauma Association
Pennsylvania State University
Pfund Family Foundation
Roche Vitamins Inc
Fredric Sause
Joseph T. Zeiter, M.D., F.A.C.S.

Gifts of $1,000 or more
John Barnhardt and Sally Bates
Erin Bauer and Rich Baranowski
Charles Bradbrook, M.D.
Bonnie and Bob Dale
Patricia Diepenbrock
Jennie Do
John and Sandra Evans
Ronald Foltz, M.D. and Marcia Foltz
Gustavo Foscarini
Jill Frechet
Tyrone Glover, M.D. and Thomaysa Glover
Phyllis Hammer
Richard and Lucille Harrison
Andrew Hemphill
Olga Hermosillo-Fischer and Carl Fischer
John Hills, M.D. and Barbara Hills, R.N.
Ijaz Jamall, Ph.D., D.A.B.T.
David Katz, Ph.D. and Cynthia Ann Toth, M.D.
John Keltner, M.D. and Nancy Keltner
Clement and Mindy Kong
Joe and Janice Lawrence
Virginia Lehman, Ph.D. and Richard Lehman
Michele Lim, M.D. and Christopher Sanders, J.D.
Lions International District 4-C5
Lyn Livingston
Ching Lu
Judy and Mark Mannis, M.D.
Donn Marinovich and Sherrin Grout
John and Nancy McDougall
James and Charlene Meenan
Susan and Gerald Meyers
Robert Miller, M.D. and Sonia Miller
Lynn Morehead and Manraj Johl
Ala Moshiri, M.D., Ph.D. and
Naseem Arfai, O.D.S.
Jon Overholt, M.D. and Brigitte Overholt
Susanna Park, M.D.
Carol and Gerhard Parker, Ph.D.
Joanne Paul-Murphy, DVM and Christopher Murphy, D.V.M., Ph.D.
Claudia Pinilla, M.D. and Barry Latner, M.D.
Dona Platt
Jerry Poulack and Joan Gustin
Debbie and Robert Price, IV
Paul and Susan Prud’er
Shelly and Michael Schermer, M.D.
Hagen Schroeter, Ph.D.
Christian Serdahl, M.D. and
Clarissa Tendero, M.D.
Jim and Mary Jo Streng
David Telander, M.D. and Keri Telander
John Werner, Ph.D.
Rose Mary Williams
Michael Zaharas and Karen Zaharas, R.N.

Gifts of $100 to $999
Hamid Ahmad
Faeza Al Rubaye
Larre and Thomas Allen
Bruce Anderson, Ph.D. and Christine Anderson
Roger and Donna Anderson
Robert and Patricia Bateman
Sally Bates and John Barnhardt
Larry Bauer, III and Donna Bauer
Robert and Bonnie Berry
Jack Blanks, Jr.
Gayl Bocchi
Frederick Bohmfalk, USAF Ret. and Julie Bohmfalk
Donna Borrell and Roger Borrell, J.D.
Richard Bower, J.D.
Franklin and Ursula Boyd
James Brandt, M.D. and Karen Brandt
Bart Broadman, Ph.D. and
Valerie Broadman, O.D.
John Bruhn, Ph.D. and Christine Bruhn, Ph.D.
Lawrence and Kathryn Burns
Margaret Cardoza
Eileen Chapin and William Sturdy
Certified Asphalt Paving Seal Coating
Kimber and Rey Chavez
Flora and Paul Chung
Katherine and Michael Clay
Margery Cline
Erin and Lisa Countryman
Noreen Crowley
Lamar and Renee Daniels
James and Emily Dawson
Patrick and Mary Day
Jonalyn Dela Cruz
Michael Delleney and
Mary Ann Delleney, R.N., B.S.N., M.B.A.
George and Claire Deubel
Serge Doroshov, Ph.D. and Julia Doroshov
Richard and Christine Elvrom
Marian Fargo
Daniel Flandrin
Sidney Finks
Colleen Firchau
John and Susan Firchau

With gratitude to the following donors who have provided support to the UC Davis Eye Center from January 1, 2018 through December 31, 2018.

Gifts of $100,000 or more
The Burns Family
Barbara Fingerut
Icahn School of Medicine
Stephen Moore
Mount Sinai School of Medicine
Alan Roth, M.D.

Gifts of $50,000 or more
Barbara Arnold, M.D. and Henry Go, M.D.
Greater Baltimore Medical Center

Gifts of $10,000 or more
Jacque and Wayne Bartholomew
Phyllis and Gene Christopher
Leonard Hjelmeland, Ph.D. and Mary Kay Hjelmeland
Daniel King, M.D. and Sherry King, R.N.
Ann Kohl
Barbara Monroe

David Motes, C.P.A. and Charlene Woodward
Northern California Lions Sight Association, Inc.
Michael Schermer, M.D. and Shelly Schermer
Jim and Mary Jo Streng
Donors

Norine Folck
Howard and Carol Frank
Kathleen and Clifford Freeman
Tommy Fujinaka
Tom and Ichiko Fujishima
Susan Garcia
Gary Gathman, M.D. and Richard Riley
Vinicius Ghanem, M.D.
Rose Marie Gonzales
Jim and Barb Griffin
Erich Groos, Jr., M.D. and Jane Groos
Terrie Gross
Raquel Grossman
Cheryl Hagen
Donald and Judy Hair
Maria Hajgato
Tania Hashmi
John and Michelle Henskens
Frances and Dorsey Hoffman
Lynne Hourigan
Jim Hsu
Megan Hughes-Salaber
Ronald and Sandra Hults
Andrew Ishida, Ph.D. and Shizuko Ishida
Frank and Lee Ismail
Tommy Jacobs
JAEB Center for Health Research
Lois James
William and Jeanne Janis
James and Rebecca Jerwers
Josefina Jimenez
Barbara Juenger
Janean Kelling
Shamina Khan
Thomas Kidwell, M.D. and Rebecca Kidwell
Walter Kwiatek
Prem and Katherine Laumas
Derek Ledda
Marc Levinson and Mary Jane Large
Gus London and Sara Rogers London
Jennifer Long, M.D. and John Long
Leslie Lopez
Betty and Melvin Lowe
Edward and Noriko Lyman
Jesse Lythgoe
Dennis and Patricia Manzer
Linda Margulies, M.D. and James McDonnell
Gordon Marshall and Harriet Culley
Nicholas Marsh-Armstrong, Ph.D. and Kara Marsh-Armstrong
Robert and Eileen Masullo
Bethany McFarland
Kristina Mejia
Christine Mendoza
Anne Marie Messano Petrie and Geoffrey Petrie
Bernie Mikell, Jr. and Victoria Horton
Miraflex Glasses
Evelyn Mizoguchi
Clentis Murphy
Mickey and Robert Nevins
Michael Nguyen and Diane Diep
Judith and James Olson-Lee
Carol and Ronald Peek
Bruce Pfeffer
PG&E/YourCause
Michelle and Scott Poesy
Jerry Pollack and Joan Gisinow
Brenda Sherrel
Carolina Reg
Kerstin Renner
Annie and Isaac Ricard
John Rich
Kiyono Roach
Jeffrey Robin, M.D. and Barbara Robin
Kevin and Nancy Rogers
Walter and Patricia Rothe
Judith Sabah, M.D., Ph.D.
Moore and Jose Salazar
Yolanda San Miguel
Ronald and J Sato
Carol Sconyers
Richard Seader
Harry and Leila Sen
Hiroko Sherrel
John and Ai-Ling Shiels
Indarjit and Gurcharan Sidhu
Sierra Health Foundation
Susan and Stanley Silva
Calvin and Josephine Skancke
John Thomas Small
Marguerite Smart
Lynda SooHoo
Sharon and William Sousa
Ryan Sponsler
Frederick Stannard, II
Henry Stanton
Christianna Stuber, M.D.
Gang Sun, Ph.D. and Daehua Yao
Joel and Susan Swift
Ernest Tark, III, M.D.
Francie Teitelbaum
Joseph Todoroff
Frederic Troy, II, Ph.D. and Linda Troy
Ramona Trujillo
Turlock Eye Physicians Medical Group
Joe Valadez, Jr.
Virginia Vigo-Henggeler
Noble and Susan Vosburg
Du Vu
Daniel and Doris Walters
Karim and Craig Ward
Donald Warner, USAF Ret. and
Gwendolyn Warner
Charles Weber, M.D. and Lana Weber
Duane and Cheri Werth
Robert Wing, M.D.
Wendy Wood-Kjelvik
David Woods, M.D. and Alison Woods
Yuen Yu

Gifts up to to $99
William and Jerry Adams
Holland Adams and Christopher Lattin
Joseph Anglesio, Jr. and Wanda Anglesio
Lynn Armstrong
Melissa Barnett-Erickson, O.D., F.A.A.O., F.S.L.S.
Petr and Vera Baydak
M.B. Bernard
Annette and Ken Bertolini
Paul and Patricia Bianucci
Laureen and Warren Blum, Jr.
Susan Boamah
Eugene and Olga Bochkarev
Joyce Boehm
Christine Brown
Miguel and Eva Calilan
Gwendolyn Caramanica
Roger Carling
Bryan and Rebecca Casey
Edith Cassidy
Paul and Harumi Chaffee
Michael Colvin
Lualhati and Danalbino Dano
Leonila de Guzman
Hind De Souza
Steven Delgado
Ilona Derosa
James and Elaine H. Dierberger
Charles Dills
John and Sara Doke
Douglas and Lois Dollarhide
Robert Dulak
Paula Dulak
Richard and Patricia Dumas
Maggie Dunaway
Mary Ellen Ferguson
Grace Fong
Steven and Rhonda Franks
David and Cheryl Freeman
Thank you to those who participated in Bonnie Dale’s Give Day challenge to support the Childhood Glaucoma Initiative at the UCDH Eye Center. Bonnie’s goal was to inspire 50 gifts to help children like Leo. Through the overwhelming generosity of individuals like you, we received more than 70 gifts and raised $21,795 to support this initiative led by Dr. James Brandt!
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

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
Professor, Comparative Ophthalmology

FACULTY

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

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

Jeffrey J. Caspar, M.D.
Director, Cataract and Refractive Surgery
Professor, Comprehensive Ophthalmology and Refractive Surgery

Ravi S. Jonnal, Ph.D.
Assistant Professor, Vision Science and Advanced Retinal Imaging

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

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

Lily Koo Lin, M.D.
Professor, Oculoplastic Surgery
Allison Liu, M.D., Ph.D.
Assistant Professor, Neuro-Ophthalmology

Zeljka Smit-McBride, Ph.D.
Associate Adjunct Professor, Vitreoretinal Research Lab
Research Interests: Genomics and epigenetics of aging and age-related eye diseases, age-related macular degeneration and diabetic retinopathy

Ala Moshiri, M.D., Ph.D.
Associate Professor, Vitreo-retinal Surgery

Roma Patel, M.D., MBA
Chief of Ophthalmology and Eye Care Division, Sacramento Veterans Affairs Hospital
Assistant Professor of Ophthalmology, UC Davis Eye Center

Sara Thomasy, DVM, 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

Glenn C. Yiu, M.D., Ph.D.
Associate Professor, Vitreo-retinal Surgery

Nick Marsh Armstrong, Ph.D.
Professor, Glaucoma Basic Research

Lawrence S. Morse, M.D., Ph.D.
Director, Retina Service
Professor, Vitreo-retinal Surgery and Uveitis

Susanna S. Park, M.D., Ph.D.
Professor, Vitreo-retinal Surgery

Ivan R. Schwab, M.D., F.A.C.S.
Professor Emeritus, Cornea and Uveitis

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

Robert J. Zawadzki, Ph.D.
Associate Professor, Vision Science and Advanced Retinal Imaging
Leonard Hjelmeland, Ph.D.
Professor Emeritus, Molecular & Cellular Biology
Ophthalmology
Research Interests:
Senescence of retinal pigment epithelium

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

Andrew T. Ishida, Ph.D.
Professor Emeritus, Neurobiology Physiology & Behavior
Research Interests:
Modulation of retinal ganglion cell excitability

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

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

Leonard Hjelmeland, Ph.D.
Professor Emeritus, Molecular & Cellular Biology
Ophthalmology
Research Interests:
Senescence of retinal pigment epithelium

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

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

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

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

Vivek J. Srinivasan, Ph.D.
Assistant Professor, Biomedical Engineering
Research Interests: Retinal and optic nerve imaging, blood flow and metabolism

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

John S. Werner, Ph.D.
Distinguished Professor, 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
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

David Chu, M.D.  
Clinical Professor

Ronald Cole, M.D.  
Clinical Professor

Charles Cooper, M.D.  
Clinical Professor

Tyrone Glover, M.D.  
Clinical Professor

J. Charles 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

Robert Miller, M.D.  
Clinical Professor

Gary Novack, Ph.D.  
Clinical Professor

Roma Patel, M.D., M.B.A.  
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

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

Tiffany Wong, M.D.  
Assistant Clinical Professor

John Zeiter, M.D.  
Clinical Professor
Patient comments:

Dr. Ala Moshiri and his team always provide excellent care, are empathetic, and kind. I couldn’t be in better hands.

Dr. Glenn Yiu and his staff went out of their way to help me and seemed to genuinely care about my level of care — not because it was their job, but because of the kind of people they are.

Dr. Heidi Miller and staff were all very kind, helpful, and attentive. I was 100% satisfied with my visit and will recommend to friends and family.

Dr. Jennifer Li and Dr. Ralph Kyrillos provided excellent care addressing my medical issue. Dr Li is very communicative, efficient, and considerate in her patient rapport. She listens well.

The fellow, Dr. Han Kim, was outstanding in the way he explained the results of my optic nerve scan.
Emily Armstrong, M.D.
First Year Resident 2022

Evan Chang, M.D.
First Year Resident 2022

Matthew De Niear, M.D.
First Year Resident 2022

Edward Lee, M.D.
First Year Resident 2022

Jefferson Berryman, M.D.
Third Year Resident 2020

Michael Ellis, M.D.
Third Year Resident 2020

Abdala Sirajeldin, M.D.
Third Year Resident 2020

Alex Willoughby, M.D.
Third Year Resident 2020

Colin Bacorn, M.D.
Second Year Resident 2021

Ruth Tessema, M.D.
Second Year Resident 2021

Alexander Vu, M.D.
Second Year Resident 2021

Vivian Vuong, M.D.
Second Year Resident 2021

Emily Armstrong, M.D.
First Year Resident 2022

Evan Chang, M.D.
First Year Resident 2022

Matthew De Niear, M.D.
First Year Resident 2022

Edward Lee, M.D.
First Year Resident 2022
Dr. Liu has been appointed to assistant professor of Neuro-Ophthalmology at the UC Davis Eye Center.

Dr. Liu strives to develop a collaborative relationship with her patients and their families.

She believes that information sharing is essential for a joint informed decision, through which a successful treatment plan is developed and implemented.

For each patient, Dr. Liu is devoted to understanding the most important component of life that is affected by the neuro-ophthalmologic conditions and to find a cure by the best and latest treatment options, or ways to restore quality of life both in the short term and in the long run.

Dr. Liu is fellowship trained in both adult and pediatric Neuro-Ophthalmology. She provides care to children and adults with neurologic disorders that affect the eyes or manifested as eye abnormalities.

Her prior training included general pediatrics, adult and child neurology. She is board certified in both Neurology with Special Qualification in Child Neurology and General Pediatrics. These training opportunities provide a foundation that allows her to understand the basics of a broad spectrum of disorders.
OPTICAL SHOP
Ask an eye center staff member today!

UC Davis Eye Center Optical Shop
4860 Y St., Suite 2013
Sacramento, CA 95817
(916) 734-6300

UC Davis Cadillac Drive Optical Shop
77 Cadillac Dr.
Sacramento, CA 95825
(916) 734-6644

UC Davis Folsom Optical Shop
251 Turn Piuke Dr., Suite 1070
Folsom, CA 95630
(916) 357-4888

www.ucdmc.ucdavis.edu/eyecenter
The alumni of UC Davis Eye Center continue to make an impact in their practices and areas of research. We would like to highlight several success stories and congratulate our alumni for their ongoing achievements.

Michael Schermer, M.D
Resident Class of 1976
Schermer Eye Associates

Frank Sousa, M.D
Resident Class of 1979
UC Davis School of Medicine

Michael Schermer, M.D., was awarded the Ernest E. Tschannen Visionary award for his leadership and contributions to the UC Davis Eye Center and to the ophthalmic community in Sacramento. This award recognizes an individual who has shown leadership within and a commitment to the ophthalmic field. Dr. Schermer is the model recipient through his tireless volunteerism for organizations that serve blind athletes and community members, his efforts and philanthropy to advance the Eye Center, countless hours teaching and mentoring residents, and keeping the highest ethical standard for the betterment of his patients’ health.

The UC Davis School of Medicine gave Frank Sousa, M.D. ’74, RS ’79 its Special Recognition Teaching Award in February. Vice Chancellor Lubarsky and the schools of medicine and nursing present this award annually to those volunteer clinical professors who have made contributions through excellence in teaching and significant contributions in the field of medicine.
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.

Donate today at https://give.ucdavis.edu/eyes
DIRECTORY

UC Davis Eye Center
4860 Y St., Suite 2400
Sacramento, CA 95817
(916) 734-6602
Eye Center Optical Shop
(916) 734-6300

UC Davis Eye Services Folsom
251 Turn Pike Dr., Suite 1070
Folsom, CA 95630
(916) 357-4880
Folsom Optical Shop
(916) 357-4888

UC Davis Eye Services Roseville
2261 Douglas Blvd.
Roseville, CA 95661
(916) 771-0251

UC Davis Student Health Services Optometry Clinic and Optical Shop for current UC Davis students only
(530) 752-2349
https://shcs.ucdavis.edu/services/optometry

EDITORIAL COMMITTEE
Jack Blanks
James Brandt, M.D.
Mark Mannis, M.D.
Nick Marsh-Armstrong, Ph.D.
Larry Morse, M.D., Ph.D.
Roma Patel, M.D.
John Werner, Ph.D.

CONTRIBUTORS
James Brandt, M.D.
Erin Bauer
Kimber Chavez
Brian Leonard, D.V.M., Ph.D.
Mark Mannis, M.D.
Brennan Marsh-Armstrong
Andréa Minella, D.V.M., Ph.D.
Matt Moore
Ala Moshiri, M.D., Ph.D.
Mary O’Hara, M.D.
Shari Roeseler
Deanna Santana
Sara Thomasy, D.V.M., Ph.D.
Glenn Yiu, M.D., Ph.D.
Min Zhao, M.D., Ph.D.

PRODUCTION MANAGER
Matt Moore

PHOTOGRAPHY
Bhupinder Dhillon

GRAPHIC DESIGN
Symbology Creative
Design of the Ernest E. Tschannen Eye Institute has been selected!

We look forward to sharing it with you in the next issue of enVision!

To learn more about ways to partner with us to transform eye care, please contact:
Erin Bauer
Senior Director of Development
916-734-3966
ejbauer@ucdavis.edu