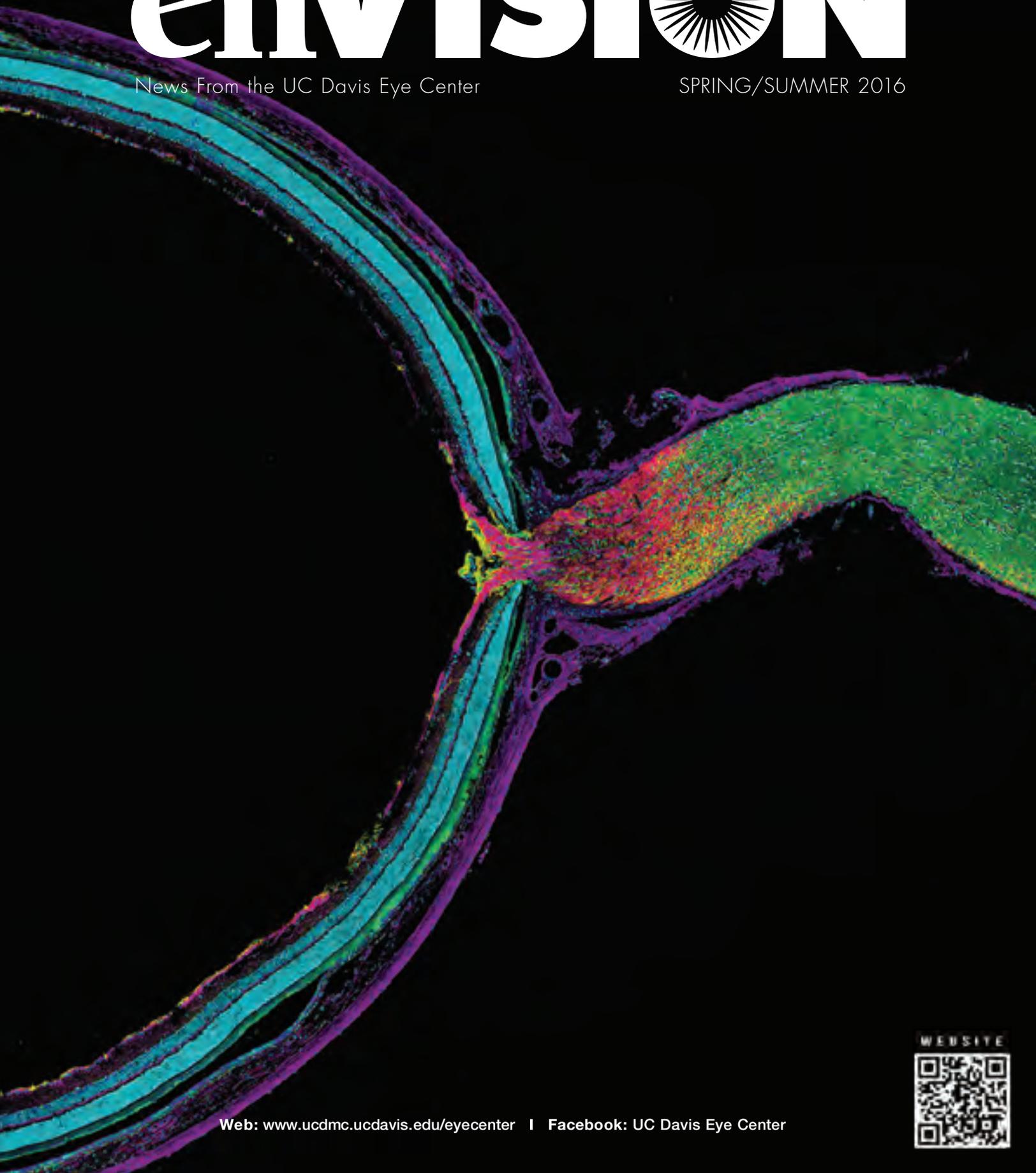


enVISION

News From the UC Davis Eye Center

SPRING/SUMMER 2016



WEBSITE



Web: www.ucdmc.ucdavis.edu/eyecenter | Facebook: UC Davis Eye Center

Our Vision

Our vision is to be the world's transformational leader in collaborative vision research and in 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.

From the Chair's Desk

There is a definite air of excitement among those of us busy at work at UC Davis, and 2016 promises to be a year of growth and accomplishment for the UC Davis Eye Center.

Our dedicated faculty continue to provide the highest quality care to our patients; a premier educational experience for our students, residents, and fellows; and a vibrant array of research, both basic and clinical, that will provide lasting contributions to vision science. And with all this, 2016 brings yet new and exciting possibilities.

Our developing partnership with Orbis International will grow our already robust program of international outreach in ophthalmic education. Under the skilled leadership of James Brandt, Vice Chair for International Programs and New Technology, the emphasis on global ophthalmology and the application of new technology to international outreach will create an important niche for the department. We envision a continually broadening sphere of educational influence across the Americas and around the globe as UC Davis employs the very latest technology in telehealth.

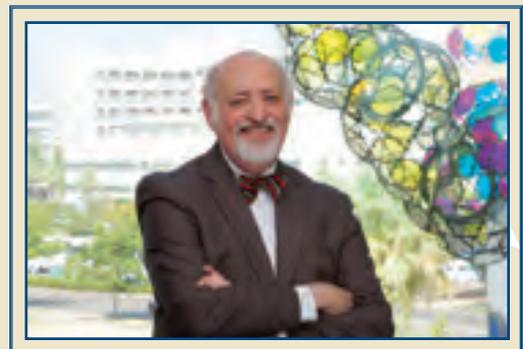
We anticipate significant new additions to the investigational faculty. Two of our junior faculty are now pursuing focused research careers to bridge the laboratory to the clinic through the study of retinal diseases. With the support of the Barr Family, collaboration between Eye Center and campus investigators will pursue the investigation of retinal disease from a variety of aspects that will provide a well coordinated approach to understanding retinal pathology. And the partnership between the Eye Center and veterinary ophthalmology will continue to spawn important collaborative research. Moreover, through the great generosity and vision of Ernest Tschannen, we look forward to the addition of Nicholas Marsh-Armstrong, Ph.D. to our basic science faculty. His team will train their investigation on unraveling the secrets of the optic nerve in health and disease.

And finally, we anticipate that on the horizon of 2016, we will unfold plans to build a new state-of-the-art eye center on the medical campus in Sacramento that will be a beacon of hope to the region.

It is, indeed, a year to look toward with great anticipation.



Mark J. Mannis, M.D., F.A.C.S.
Pesse Endowed Chair in Vision
Science Research
Professor and Chairman
Department of Ophthalmology &
Vision Science
University of California Davis, Eye Center



is published by the UC Davis Eye Center. For more information about ophthalmology services and vision research at UC Davis, visit our website at: www.ucdmc.ucdavis.edu/eyecenter or call (916) 734-6435.

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UC DAVIS

EYE CENTER

Faculty & Alumni Honors & Awards:

Melissa Barnett, O.D., FAAO, FSLs

2016 President of the Scleral Lens Education Society

James D. Brandt, M.D.

2015 Life Achievement Honor Award
American Academy of Ophthalmology

Marie E. Burns, Ph.D.

Faculty Service Award
UC Davis Neuroscience Graduate Group

Mark A. Greiner, M.D.

2015 Troutman Cornea Prize for Young Clinician Investigators

Michele C. Lim, M.D.

2015 Life Achievement Honor Award
American Academy of Ophthalmology

Yao Liu, M.D.

2016 Young Clinician Scientist Award
American Glaucoma Society
KO8 Career-Development Award

Mark J. Mannis, M.D.

UC Davis Faculty Stewardship Award
2015 Secretariat Award American Academy of Ophthalmology

Glenn C. Yiu, M.D., Ph.D.

E. Matilda Ziegler Foundation for the Blind, Inc. Award
KO8 Career-Development Award
Inaugural Allergan FIRST (Fostering Innovative Retinal Stars of Tomorrow) program
Alcon Research Institute Young Investigator Grant



Nicholas Marsh-Armstrong, Ph.D.

Nicholas Marsh-Armstrong, Ph.D.

Optic Nerve Researcher joins the UC Davis Eye Center

Nicholas Marsh-Armstrong was born in Malaga, Spain. The son of American artists who made this idyllic Mediterranean setting their home, he spent his first 14 years living in a rustic coastal town before coming to the United States for high school. The only one in his family inclined toward science and math, he got his first taste for research during his junior year of high school, thanks to an exam competition sponsored by the American Heart Association. He was rewarded with a summer internship in a neuropharmacology lab at Georgetown University. He returned to this position every summer throughout college. At Haverford College, from where he would graduate summa cum laude, he was torn between exploring simple molecules and the big questions in life, and obtained majors in both chemistry and philosophy. However, it was his passion for the brain that won, taking him to graduate school at Harvard University, where he obtained a Ph.D. in Neuroscience. For his doctoral dissertation, he trained under Nobel laureate Walter Gilbert and the pre-eminent retina biologist John Dowling. His graduate work focused on the role that retinoids

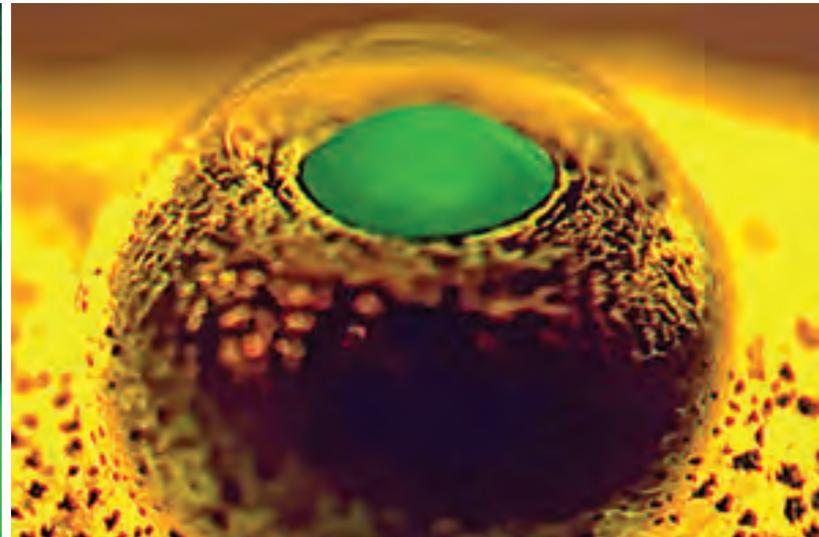
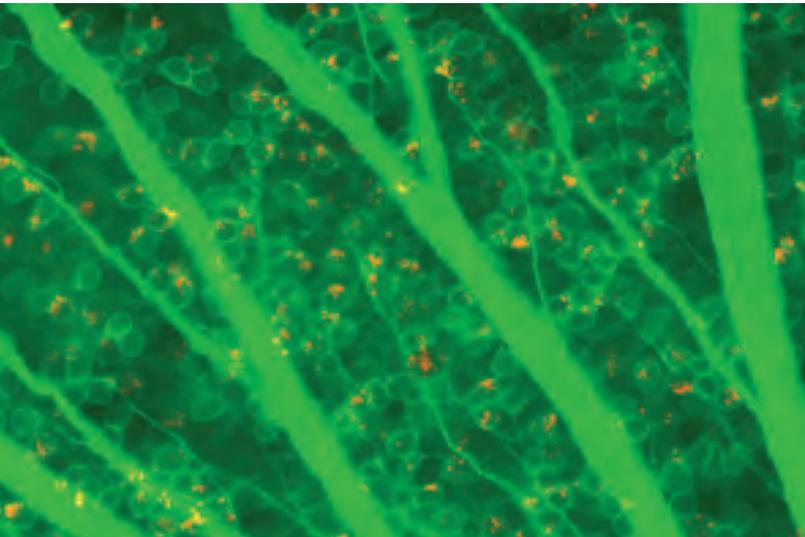
play in patterning the eye during development, using what was then a new vertebrate genetic system, zebrafish. It was this training that started a lifelong passion for the sensory organ that mediates vision, the retina.

For his post-doctoral training, Dr. Marsh-Armstrong went to the laboratory of acclaimed molecular biologist, Donald Brown, at the Department of Embryology of the Carnegie Institution for Science (located on the campus of Johns Hopkins University in Baltimore). There, he continued his work on the retina, now focusing on the stem cells that enable frogs to grow and repair their retinas throughout their lifespans. In addition to answering a long-standing question regarding these stem cells, he was also the first to publish the generation of lines of genetically engineered frogs.

In 2001, Dr. Marsh-Armstrong joined the faculty of the Department of Neuroscience of Johns Hopkins University School of Medicine and set up a laboratory at what later would be renamed the Hugo Moser Research Institute at Kennedy Krieger. He continued his work on the development and molecular biology of the retina,

and early in his career as an Assistant Professor, he received an award from the San Francisco-based Glaucoma Research Foundation. This profoundly affected his research direction. First through a small pilot grant, and then through additional years of significant funding, and together with three other laboratories, he was part of the Catalyst For A Cure Consortium dedicated to using neurobiology to tackle the second leading cause of blindness worldwide, glaucoma. Enabled by that initial funding, and through subsequent grants from the National Eye Institute of the National Institutes of Health, he has made a number of significant contributions to understanding glaucoma. While he started studying this disease without a personal connection, he now has two close family members afflicted by this insidious thief of vision.

Arguably his most significant contribution to understanding glaucoma was his team's recent discovery that damaged parts of axons, the cables that carry vision to the brain, are normally continuously being repaired by other cells at the optic nerve. This finding garnered much attention not

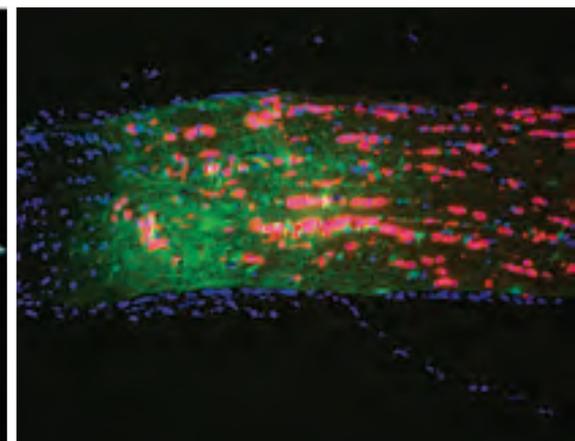
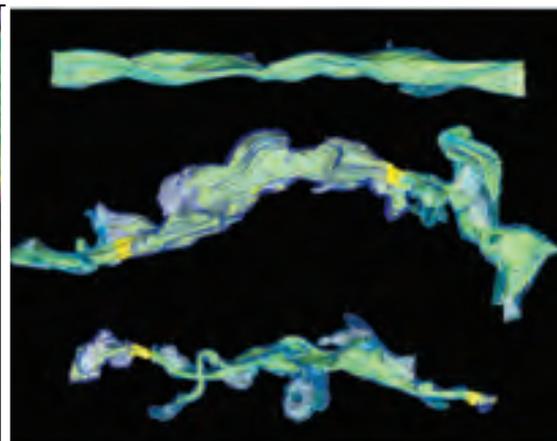
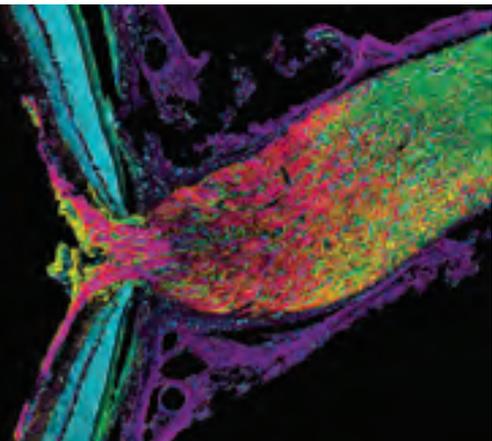


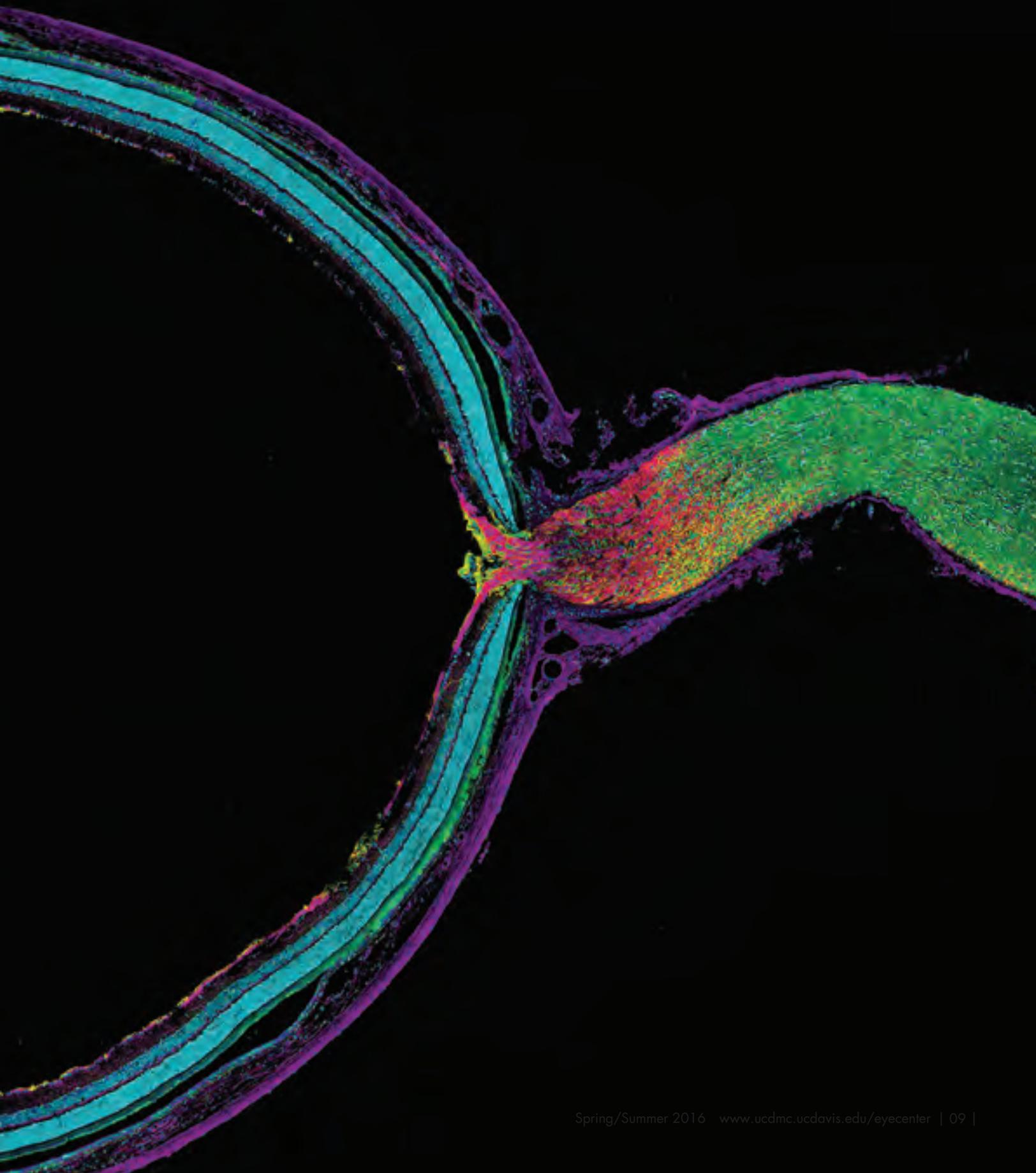
only because of the unusual biology involved, but also because it was occurring most at the precise location where axons are irreversibly damaged in glaucoma, the optic nerve head. The laboratory is now focused on understanding how and why such repair mechanisms exist, and most importantly, whether they may become dysfunctional in glaucoma. Most recently, he launched an ambitious project to learn from lower species that can regenerate their visual systems in order to do the

same for people who have lost their vision to glaucoma and other blinding diseases.

Thanks to the generosity of Sacramento philanthropist Ernest Tschannen, Dr. Marsh-Armstrong was recruited to the Department of Ophthalmology and Vision Science at the University of California Davis. He is excited to synergize with other pre-eminent vision science research programs in development, genetics and imaging of the retina at UC Da-

vis, in order to continue his quest to understand the basic science underlying glaucoma, with the ultimate goal of better diagnosing and treating those afflicted. Dr. Marsh-Armstrong and his wife, Kara (a patent attorney and special educator) enjoy the outdoors and look forward to exploring the beauty of northern California with their teenage daughter, Auden. ●







Center for Vision Science Symposium

By Paul FitzGerald, Ph.D.

The Center for Vision Science, which includes more than 40 UC Davis faculty from all parts of the campus, held its annual symposium on January 8, 2016. The event is a chance to showcase the remarkable breadth of Vision Research that occurs at UC Davis. Some of the highlights: Rebecca Belone, Ph.D., a faculty member from the School of Veterinary Medicine, described her work in the genetics of ocular disorders. Susan Rivera, Ph.D., from the Department of Psychology, described how the processing of visual information is affected by autism. Glen Yiu, M.D., Ph.D., a clinician-scientist in the Department of Ophthalmology, presented his work on the imaging of the choroidal vasculature in living human patients, and how it may be affected by macular degeneration. Vivek Srinivasan, Ph.D., from the Department of Biomedical Engineering, described work on developing tools for advancing

our ability to image ocular blood flow and metabolism. The event also included presentations from Graduate Students in the UCD Neurosciences Ph.D. program, who are conducting their doctoral dissertation research in the field of vision biology. There are very few institutions in the world that could present vision research grounded in so many different disciplines. The multidisciplinary nature of Vision Research at UC Davis is among its most distinguishing features.

The day was highlighted by the presentation of two Lectureships to visiting speakers. The John Keltner Lectureship was presented by Satinderpall Pannu, Ph.D., Section Leader for Micro and Nano Technology, Center for Micro and Nano Technology at the Lawrence Livermore National Laboratory. Dr. Pannu described his work on the artificial retina, an electronic implant that can restore at least some level of



visual perception in individuals who have lost their sight. Ron Mangun, Ph.D., presented the Center for Vision Science Lectureship to Jack Gallant, Ph.D., Chancellor's Professor of Psychology at U.C. Berkeley, who described his work on understanding how the brain deciphers input from the retina.

The next Center for Vision Science Symposium will be held Friday, January 6, 2017. Details will be posted at the CVS website (<https://basicscience.ucdmc.ucdavis.edu/cvs>) or search for "CVS UCD." ●

Photo 1: Glenn Yiu, M.D., Ph.D. Edward Pugh, Ph.D.

Photo 2: Sara Thomsay, D.V.M., Ph.D., Glenn Yiu, M.D., Ph.D., Susan Rivera, Ph.D.

Photo 3: CVS Lecture

Photo 4: John Werner, Ph.D., Khizer Khaderi, M.D., M.P.H.

Photo 5: Nathaniel Gebhard, M.D., Sam Abbassi, M.D., Kimberly Gokoffski, M.D., Ph.D., Jolene Rudell, M.D., Ph.D.

Photo 6: Paul FitzGerald, Ph.D., Jack Gallant, Ph.D., Ron Mangun, Ph.D.

ENDOTHELIAL KERATOPLASTY:

The New Frontier for Corneal Transplantation

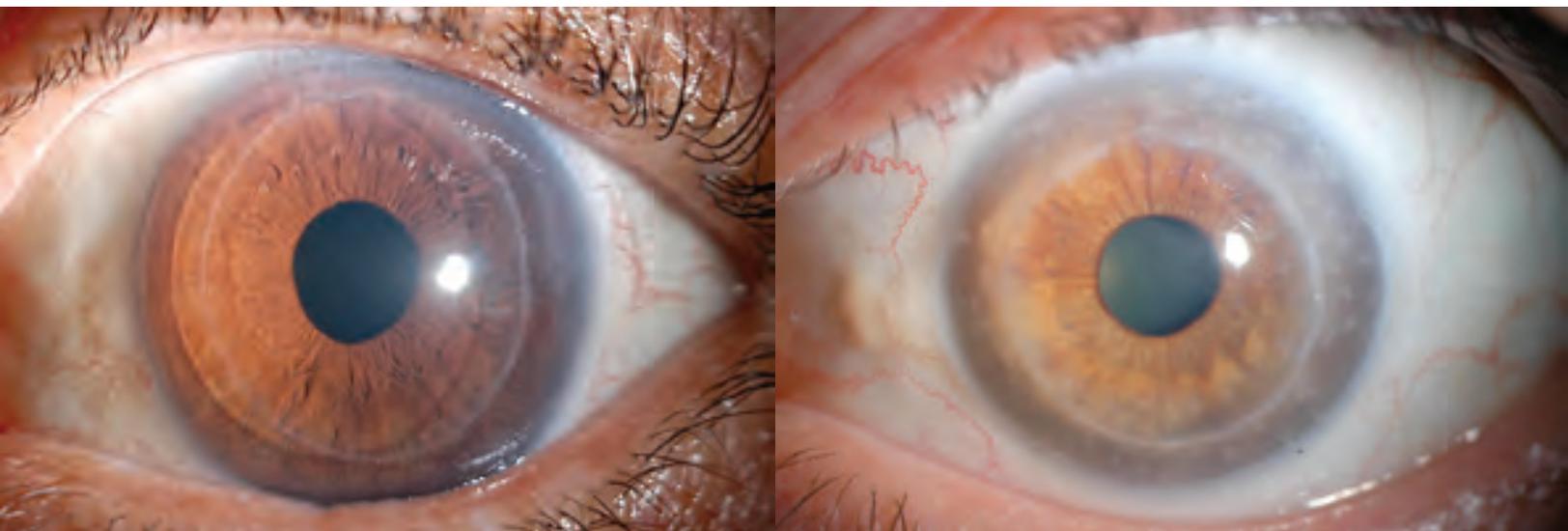
By Jennifer Li, M.D.

The cornea is the clear window in the front of the eye that allows light to pass into the eye unobstructed. Unfortunately for some, injury, infection or inherited disorders can lead to a clouding or scarring of the cornea and a loss of vision. For more than a century, eye surgeons have attempted to replace diseased corneas utilizing different techniques in order to restore vision for their patients.

The first successful corneal transplantation surgery was performed in 1905 by Eduard Zirm. Since that time, advances in medicine, technology, surgical instrumentation, and anesthesia have made corneal transplantation a routinely successful procedure. The development of eye banks in the 1940s resulted in another revolution in corneal transplantation sur-

gery. With improving tissue quality and availability, corneal transplantation was able to develop into what we have today. Corneal transplantations in the United States are now a scheduled, outpatient procedure with excellent long-term survival.

Over the past decade, another revolution in corneal transplantation has occurred. We have moved away from performing full corneal transplantations, where all five layers of the cornea are removed and replaced with donor tissue. Instead, corneal surgeons are able to target specific layers of the cornea that are diseased to remove and replace with donor tissue. An example of this is endothelial keratoplasty, which is a corneal transplantation procedure that removes and replaces the inner two

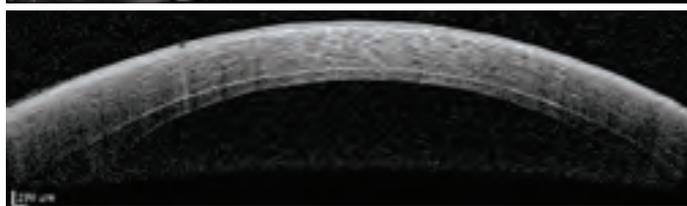
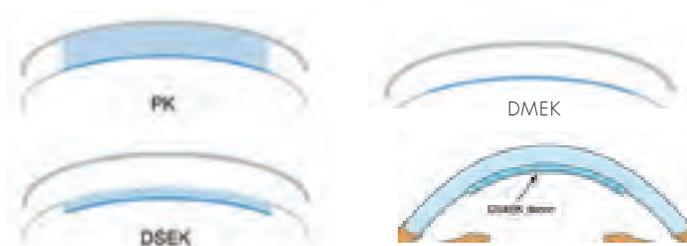


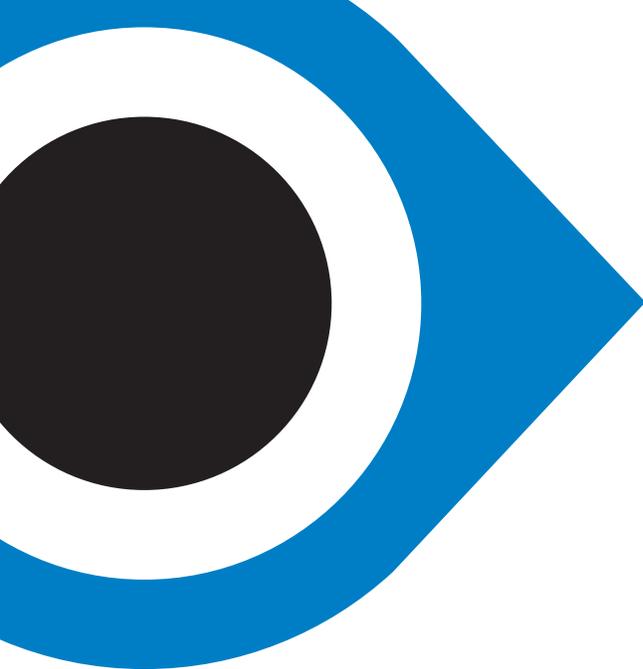


These elegant procedures have transformed the management of certain corneal diseases and are the new gold standard for treatment of all types of corneal endothelial dysfunction.

layers of the cornea: Descemet's membrane and the endothelium. Combined, these two layers are generally less than 20 microns thick. The endothelium, in particular, is essential for maintaining the clarity of the cornea. Patients with diseases of the endothelium can develop swelling of the cornea that ultimately results in vision loss. Endothelial keratoplasty procedures such as Descemet stripping automated endothelial keratoplasty (DSAEK) and Descemet membrane endothelial keratoplasty (DMEK) help replace the diseased layers of the cornea while preserving the patient's remaining cornea. Compared to traditional corneal transplantation, these surgeries have fewer intraoperative and postoperative risks, faster visual recovery, decreased risk of donor rejection episodes and higher long-term graft survival.

These elegant procedures have transformed the management of certain corneal diseases and are the new gold standard for treatment of all types of corneal endothelial dysfunction. While we thank the pioneers in the field of corneal transplantation throughout the generations for the advances that we have today, we must never forget the generosity of those who help others regain sight through the priceless gift of corneal donation. Without them, we could never have reached these new frontiers in corneal transplantation. ●





OrCam

A Portable Artificial Vision Device Useful for Patients with Low Vision

By Elad Moisseiev, M.D.

Department of Ophthalmology & Vision Science, University of California Davis Eye Center, Sacramento, CA

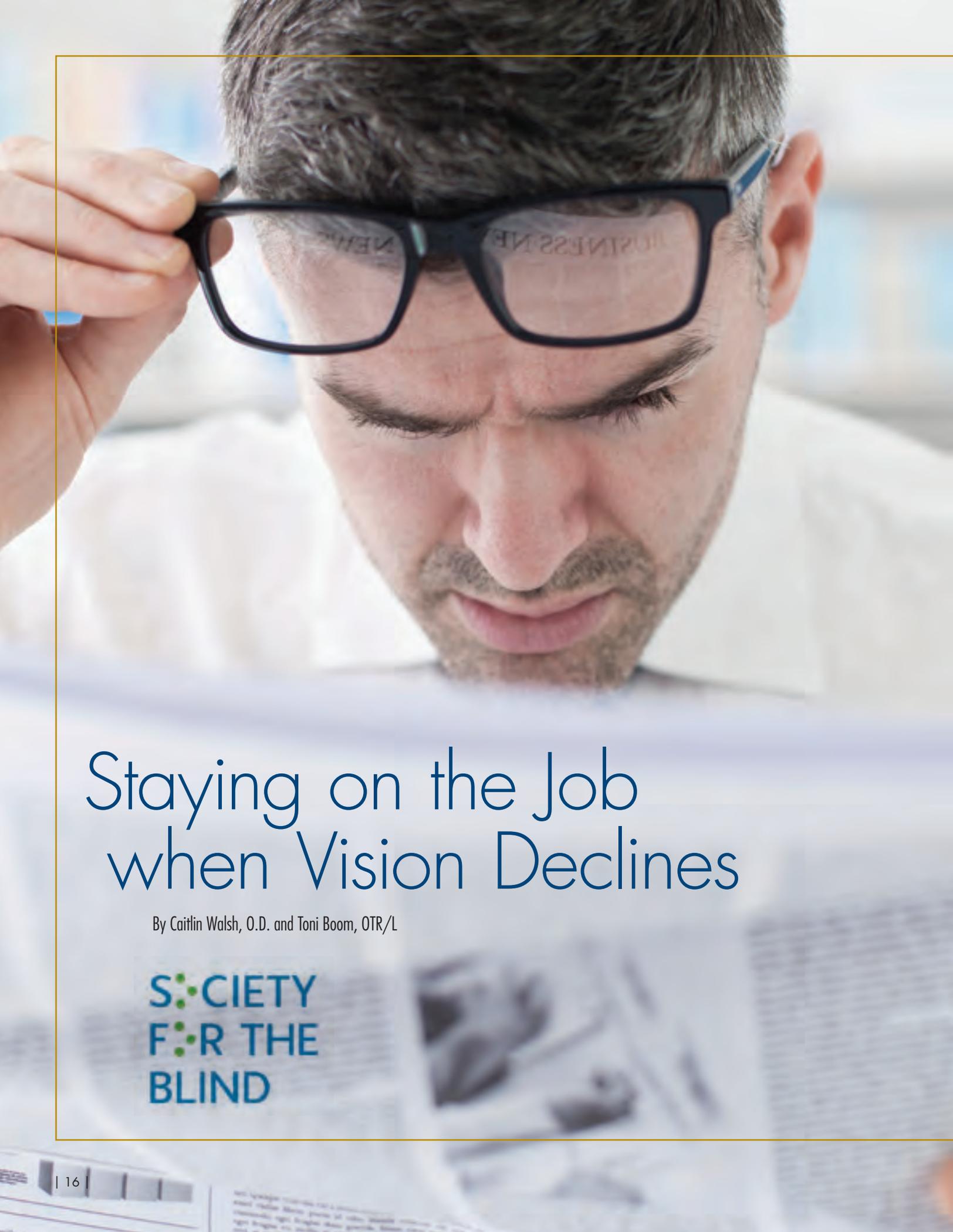
—Low vision is a major handicap and has significant implications on patients' occupational and social life. Despite constant innovations in medical and surgical treatments for ophthalmic conditions, for some patients there are no measures to improve vision. Dealing with low vision is often frustrating for both patients and ophthalmologists, and although it is a common issue shared by all subspecialties in ophthalmology, it has received relatively little research attention. Such patients are often dependent on hand-held or electronic magnifiers, which may be somewhat cumbersome to ambulate with and use.

A recent technological innovation attempts to improve the functional independence of patients with low vision – the OrCam™. It is an optical character recognition device that includes a miniature camera and a bone conduction ear-piece that can be mounted simply to the right side of any spectacle frame (See picture). A cord connects the unit to a pack that houses the device's battery and computer, which can be held in the user's hand, clipped on a belt or put in a pocket. The OrCam™ is activated by pressing a button or simply pointing at a target, and then reads to the user any text found in front of it. In addition to reading text, it can also recognize monetary bill denominations and can be programmed to recognize faces and products.

The UC Davis Eye Center has recently completed a preliminary evaluation study of the OrCam™ in 12 legally blind patients who were asked to perform 10 daily life activities, such as reading a letter, finding a specific story in the newspaper, recognizing different brands of cereals and reading signs. Our results demonstrated that the OrCam™ significantly improved their functionality and enabled them to perform independently daily tasks for which they usually require assistance. The device was intuitive to understand and use, and participants reported high rates of satisfaction with it.

OrCam™ was recently made commercially available in the US. For more information, visit: <http://www.orcam.com>. ●



A close-up photograph of a man with short, dark hair and a light beard, wearing black-rimmed glasses. He is looking down intently at a document he is holding. His right hand is visible, adjusting the left side of his glasses. The background is blurred, showing what appears to be a computer monitor and office environment. The overall tone is professional and focused.

Staying on the Job when Vision Declines

By Caitlin Walsh, O.D. and Toni Boom, OTR/L

**SOCIETY
FOR THE
BLIND**



As the average lifespan increases, so does the age of retirement, which means more people will develop vision challenges while still employed. According to the National Eye Institute, the estimated number of people affected by the most common eye diseases will double between 2010 and 2050.

Along with loss of vision comes fear of job loss. It can be overwhelming to decide when or how to disclose vision impairment to an employer. Medical practitioners can refer patients with vision loss to Society for the Blind so they receive the training they need to continue earning a paycheck. Here are the steps we take in our Low Vision Clinic and occupational therapy program to help people with vision challenges stay employed.

STEP 1: Work through details.

We talk with patients about their job requirements and work environment.

STEP 2: Vision loss is not the same as blindness.

Our evaluation determines what vision is still functional – detail, contrast, color, light, peripheral and central.

STEP 3: Tools empower.

We prescribe low-vision devices to help patients perform specific tasks at work – prescription

glasses, tints for light sensitivity, telescopic devices, optical or electronic magnification devices, and adaptive software for computers.

STEP 4: Use that functional vision.

Our occupational therapists teach patients how to use remaining vision through environmental changes, special equipment and activity adaptations. From changing lighting to adapting computers and learning new reading skills, people with vision challenges learn how to function at work and in their everyday lives.

At Society for the Blind, our goal is to make sure all people with vision challenges can safely and efficiently perform the requirements of their jobs – an important part of our mission to empower people with vision loss to discover, develop and achieve their full potential. To learn more, visit www.SocietyfortheBlind.org.

VETERANS AFFAIRS SACRAMENTO EYE CLINIC:

A New Era

By Annie K. Baik, M.D.

It's another day at the Sacramento VA Eye Clinic at Mather Field and the waiting room is bursting with patients. Familiar conversations start: *"What branch were you in?" "Where did you serve?"* Frequently heard are Veterans saying to fellow Veterans, *"Thank you for your service."*

From a World War II army nurse to a Marine who served in Afghanistan, each day brings a diversity of patients and stories – each encounter an important opportunity to learn about extraordinary sacrifices made by ordinary Americans and issues faced by Veterans upon their return to civilian life. Each day also brings the challenge of caring for a high census of patients with complex ophthalmic disease.

The Northern California Eye Care network, helmed by Chief Linda Margulies, M.D., consists of outpatient clinics serving a catchment area in which over 400,000 Veterans reside. Care is delivered at multiple sites, including Redding, Martinez, Oakland, McClellan in North Sacramento, and Mather Field in Sacramento. The Mather Eye Clinic offers both primary and subspecialty care, with

optometry, comprehensive ophthalmology, glaucoma, cornea, and retina services. It serves as a major training site for the UC Davis Ophthalmology Residency Program, where residents provide comprehensive medical care and perform high-volume cataract surgery under the supervision of four faculty members. In addition, physicians in the UC Davis Retina Fellowship also spend a significant portion of time at the Mather Eye Clinic.

After a thoughtful search and recruitment process, the VA and UC Davis proudly welcomed back two alumnae of the UC Davis Ophthalmology Residency in September 2015. Roma Patel, M.D., the new Chief of the Mather Eye Clinic, completed her residency at UC Davis in 2014. Dr. Patel continued her subspecialty training in glaucoma at Duke University Eye Center. As a graduate of the Baylor College

of Medicine and Rice University MD/MBA program, she has skillfully taken the reins of an eye clinic that boasts over 22,000 patient visits annually. Vivian Lien, M.D., also a 2014 graduate of the residency at UC Davis, returns to the area after completing cornea fellowship at the Cullen Eye Institute at Baylor College of Medicine. Dr. Lien offers cutting-edge medical and surgical management of anterior segment disease and also specializes in high complexity cataract surgery. In addition, Drs. Patel and Lien serve on the faculty of the UC Davis Eye Center, serving as mentors and educators to the next generation of ophthalmologists.

In the face of a growing patient population with multifaceted needs, we continue to raise the level of ophthalmic services to Veterans of northern California. Plans for the future include expansion to a new Mather clinic facility in 2019 and further expansion of optometric and ophthalmic staff. Through the preservation of vision, we strive to give thanks to all who have defended our freedom, and to honor those who have made the ultimate sacrifice in service to our nation. ●



THE VA NORTHERN CALIFORNIA EYE CARE TEAM

Martinez/Oakland:

David Chu, M.D. (*comprehensive ophthalmology*)
 Rita Hannum, O.D. (*optometry*)
 Linda Margulies, M.D. (*Chief of Northern California Eye Care Services and retina specialist*)

Julene Pena, O.D. (*optometry*)
 Stephen Puckett, O.D. (*optometry*)
 Ernest Tark, M.D. (*comprehensive ophthalmology*)
 Pamela Tong, O.D. (*optometry*)

Mather/McClellan:

Annie Baik, M.D. (*glaucoma specialist*)
 Crista Corbett, O.D. (*optometry*)
 Vivian Lien, M.D. (*cornea specialist*)
 Fred Meyer, O.D. (*optometry*)
 Ala Moshiri, M.D., Ph.D. (*retina specialist*)

Wesley Ota, O.D. (*optometry*)
 Roma Patel, M.D. (*Chief and glaucoma specialist*)
 Gina Wong, O.D. (*optometry*)
 Tiffany Wong, M.D. (*comprehensive ophthalmology*)

Redding:

Jeffrey Robin, M.D. (*comprehensive ophthalmology*)

William Howell, O.D. (*optometry*)

ALUMNI, VCF & FRIENDS RECEPTION Las Vegas, Nevada

We had a strong turnout this year at our American Academy of Ophthalmology Alumni, VCF and Friends Reception in Las Vegas. The event, held at the Mirage Hotel on Sunday, November 15, 2015, was a great opportunity for alumni to come together and visit with faculty, staff, current residents and fellows.

Michele C. Lim, M.D., Vice Chair, provided an update on the new Eye Center building project and announced that Mark J. Mannis, M.D. has been named the Fosse Endowed Chair in Vision Science Research. Dr. Lim also announced that we recently recruited Nicholas Marsh-Armstrong, Ph.D. from John Hopkins.

Robert B. Miller, M.D., Alumni Program Chair shared the impact that the UC Davis Eye Center Alumni Fund for Educational Excellence has had on our residency program this past year. Generous funds from alumni have enabled the Eye Center to provide resident and fellow travel; purchase microscopes, books, and a projector; and support unfunded laboratory staff personnel. Dr. Miller announced the spring launch of our Eye-to-Eye alumni mentoring program.

Jeffrey C. Caspar, M.D., Residency Program Director, provided an overview of the resident training program and shared the goals for the program. Dr. Caspar expressed the importance of alumni involvement and philanthropic support to the training program.

Thank you for your support and the enhanced experience you've provided for our resident and fellow training programs. We look forward to celebrating with you all in Chicago in the fall. ●



Photo 1: Kimberly Gokoffski, M.D., Ph.D., John Keltner, M.D., Kimberly Wings, M.D.

Photo 2: Robert Miller, M.D., Nancy Keltner, Ashley Lesley, M.D.



3



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UC DAVIS

EYE CENTER

Photo 3: Cathy Fong, Karishma Chandra, Jayme Forner, Ellen Redenbo, Megan Hughes-Salaber, Leslie Lopez-Martinez

Photo 4: Kimberly Gokoffski, M.D., Ph.D., Mazen Choulakian, M.D., Nathaniel Gebhard, M.D.

Photo 5: Annie Baik, M.D., Melissa Tong, M.D., Ashley Lesley, M.D.

Photo 6: Erin Bauer, Holland Adams, Amy Chiuu, Angel Hanson

Photo 7: Jacob Reznik, M.D., Khizer Khaderi, M.D., Alena Reznik, M.D.



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Photo 8: Michele Lim, M.D., Ashley Lesley, M.D., James Brandt, M.D., Angel Hanson

Photo 9: Angel Hanson, John Sergent, Frank Garcia, M.D., Amy Chiuu

Photo 10: Claudia Pinilla, M.D., Clarissa Tendero, M.D.



Photo 11: Alena Reznik, M.D., Kimberly Wings, M.D., Ashley Lesley, M.D., Jeffrey Caspar, M.D.

Photo 12: Christian Serdahl, M.D., Ronald Tamaru, M.D., Richard Jones, M.D., Daniel Rich, M.D.

Photo 13: Cathy Fong, Jay Bradley, M.D., David Chu, M.D.

UC DAVIS EYE CENTER

Donor Recognition Reception

OCTOBER 22, 2015

The UC Davis Eye Center donor recognition reception was held on October 22, 2015 and was attended by faculty, staff and donors celebrating the wonderful stories of three grateful patients at the Eye Center. It was a superb evening and we thank you all for your continuous support!

Teddy Reynolds was born blind with congenital cataracts in both eyes. At two months old, Dr. Mary O'Hara performed his first eye surgery, and he was fitted for special contact lenses. Thanks to the great care he's received at the UC Davis Eye Center, Teddy enjoys swimming, soccer, Taekwondo, video games and learning to surf.



Photo 1: The Reynolds Family and Mary O'Hara, M.D.

Photo 2: Dr. Mannis meeting Teddy Reynolds

Photo 3: Mark J. Mannis, M.D., Harriet Marshall, Gordon Marshall

Photo 4: Natasha Kye, M.D., Sara Thomsay, D.V.M., Ph.D., Kimberly Gokoffski, M.D., Ph.D., Howard Frank, Carol Frank

Photo 5: Annie Baik, M.D., Bonnie Dale

UC DAVIS EYE CENTER Donor Recognition Reception

Nikon Sandulyak waited 38 years for medical science to advance enough to reverse blindness caused by severe chemical burns. Blinded in 1966 while working with lye, he never gave up hope that one day he would see. In October 2003, he received his lifelong wish and met with renowned corneal specialist Mark J. Mannis, M.D., professor and chair of the Eye Center. Dr. Mannis successfully implanted an artificial cornea into Mr. Sandulyak's eye, the first artificial cornea implanted in northern California.



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Photo 6: Judy Mannis, Mark J. Mannis, M.D., Nikon Sandulyak, Klvdiya Sandulyak, Nina Deweese

Photo 7: Michelle Henskens, John Henskens

Photo 8: Sheri Retzlaff, Mike Retzlaff, Cecille Baylon, Kumar Kalagara, Derek Ledda, Mark J. Mannis, M.D.

Photo 9: Shawna Perlman, Robert B. Miller, M.D.

Photo 10: Wayne Bartholomew, Esq., Marsha Mannis, Stephen Mannis, M.D.

Photo 11: Mark Schaal, Jim Streng, Mary Jo Streng



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Virginia Bane’s sight was affected when age-related macular degeneration stole her central vision after retirement. She naturally welcomed an innovative solution, the IMT (Implantable Miniature Telescope). It’s a first-of-its-kind procedure for northern California. The UC Davis Eye Center faculty implanted a pea-sized telescope, and it gradually restored her ability to see faces, color and print. Three years later, 92-year-old Virginia still enjoys reading, seeing friends and living independently, thanks to her “bionic eye” and the care she received at the UC Davis Eye Center.

Photo 12: John Firchau, Harvey Firchau, Jeffrey J. Caspar, M.D.

Photo 13: Cambria Reynolds, Steven Reynolds, Lana Reynolds, Teddy Reynolds

Photo 14: Mark J. Mannis, M.D., Anne Marie Jauernig

Photo 15: Esther Kim, M.D., Linda Meyers, Frederick J. Meyers, M.D., M.A.C.P.

Photo 16: Esther Kim, M.D., Virginia Hummel

Photo 17: Sheri Welles, Jennifer Li, M.D., Virginia Bane, Mark J. Mannis, M.D., Bruce Bane

Devoted to family, community arts and providing Eye Care for the underserved

By Joy C. McKee, ACFRE

Onstage at the United Congregational Christian Church, look right at the center of the string section and you will find Helena Wilcox—she likes to be called Rita—beaming with pride as the Valley Community Orchestra of San Joaquin County successfully wraps up an entertaining evening of American Soundscapes.

Rita Wilcox has been a music teacher for over 30 years, and to this day is a Suzuki violin instructor at three charter schools and a community college in the Stockton area. In many ways, the collection of musicians that form the local community orchestra are due, in part, to her strong commitment to provide music to the public and asking people to join her. She houses ensemble practices in her sunroom among birdcages, thriving plants and multiple displays of her personal

art on the walls. “My personal passion is the arts, but I’ve chosen this path because I just know my daughter would have wanted to continue to make an impact on helping people who struggle to gain access to eye care,” says Wilcox.

She is referring to the gift she made to the UC Davis Eye Center in memory of her daughter Marguerita Elaine Wilcox Long, who was lost in an aviation accident soon after founding the

USA Eye Foundation. Margie (as her friends and family called her) believed in the goodness of human nature and gave her attention, bubbly good nature, love, laughter, and her creativity freely. While working as a travel agent, she and her husband bought their first hot air balloon. That single balloon burgeoned into her now acclaimed ballooning company, Hot Air Expeditions, which is now owned and operated by her daughters, Stephanie and Amanda Long.





The Marguerita Elaine Wilcox Long memorial fund is designated to support UC Davis Children's Hospital's Pediatric Ophthalmology research. It was Wilcox's intention to continue her daughter's legacy through ongoing financial support for keeping fellowship-trained pediatric ophthalmologists informed of breakthroughs in child and adolescent eye disorders, through involvement in academic societies, and by participation of ongoing research on a range of emerging new treatments for visual disturbances. This ongoing support ensures a future of treatment, care and sight for young patients who, without the help and support of the UC Davis Eye Center, may face blindness with no solutions.

Heading up the hospital's Pediatric Ophthalmology Service team is Professor Mary O'Hara, whose clinical interests focus on the treatment of amblyopia and strabismus, as well as cataracts and other anterior segment disorders. A member of both the American Academy of Ophthalmology and the American Academy of Pediatrics, her philosophy of care is to make sure that patients and their families are treated with respect, that all aspects of care are explained to families and that their input is elicited.

Dr. O'Hara is closely aligned with the Department of Pediatrics that has research interests that cover basic, translational, pre-clinical and clinical topics, with

a goal to enhance understanding of pediatric diseases and develop new diagnostics and therapeutics. ●

"It was an honor to meet Mrs. Rita Wilcox and to learn about her daughter. On behalf of our youngest and most vulnerable patients, I wish to thank both Mrs. Wilcox and Marguerita Elaine Wilcox Long for this transformative gift. Margie's passion and leadership in the area of pediatric eye care will live on in her endowment."

– Dr. O'Hara

Biomedical Engineering:

Retinal and Optic Nerve Imaging

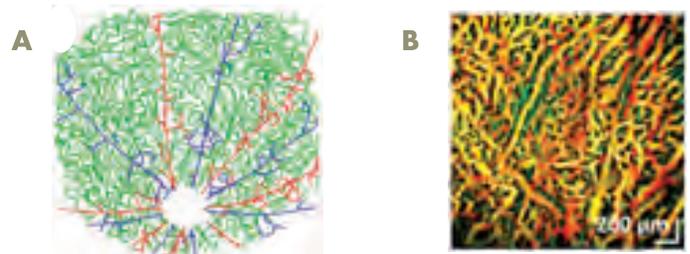
By Vivek Srinivasan, Ph.D.

Methods of diagnosing eye diseases rely on assessing structural changes in the retina or optic nerve head, which are often detectable only after irreversible damage has occurred. Dr. Vivek Srinivasan's group in Biomedical Engineering is developing new ways, based on blood flow and metabolism, to detect retinal and optic nerve head diseases earlier than is possible with current clinical practice.

The blood supply to the retina nourishes its cells, providing oxygen and other nutrients for both the photoreceptors that sense light and the neurons that relay vision signals from the eye to the brain. Due to the high activity levels of the visual system, the retina, not surprisingly, also has a high energy usage, or metabolism. The vasculature carrying flowing blood to and from the eye is important in meeting the metabolic demands of the retina. This flow may also become insufficient to meet this demand in vascular disease, as often occurs with diabetic retinopathy. Additionally, metabolism, since it is closely coupled with activity, can be used as a noninvasive measure to assess the overall health of the retina in situ.

How can we learn about the control of blood flow and metabolism in the eye noninvasively, i.e. without disturbing the eye itself? The optics of the eye (cornea, lens, etc.) is uniquely optimized to take high-resolution pictures of the environment, just like a high-end camera lens. Using these optics to our advantage, but in reverse, we can design instrumentation to take high-resolution pictures (or images) of the back of the eye, including the retina, optic nerve head, choroid and other structures involved in vision.

Dr. Srinivasan, a biomedical engineer, seeks to develop new methods to image blood flow and



metabolism in the retina. His group has developed approaches to assess the smallest vessels at the back of the eye, both in the retina and choroid, and built the first full three-dimensional model of the retinal vasculature (A). They have also developed algorithms to quantify oxygenation in the blood vessels entering and leaving the eye (flow and oxygenation together determines metabolism). Finally, they are developing ways for contrast-enhanced imaging using FDA-approved compounds, showing the tiny vessels behind the retina in the choriocapillaris with unprecedented clarity (B).

First, this research leads us towards a better understanding of the vascular system that nourishes the cells in the eye that enable us to perceive the world around us. Secondly, the retina, as part of the central nervous system, represents a window into the brain. By understanding how cellular activity and oxygen metabolism are coupled to flow in the retina, we may better understand how this coupling process works in the brain.

Lastly, and most importantly, this research has identified new and exciting biomarkers for blinding eye diseases. Dr. Srinivasan's group has built instrumentation to perform many of these measurements in human subjects and will (contingent on Institutional Review Board approval of protocol) apply them to develop better early diagnosis for glaucoma, through the Glaucoma Research Foundation Catalyst for a Cure Initiative. ●

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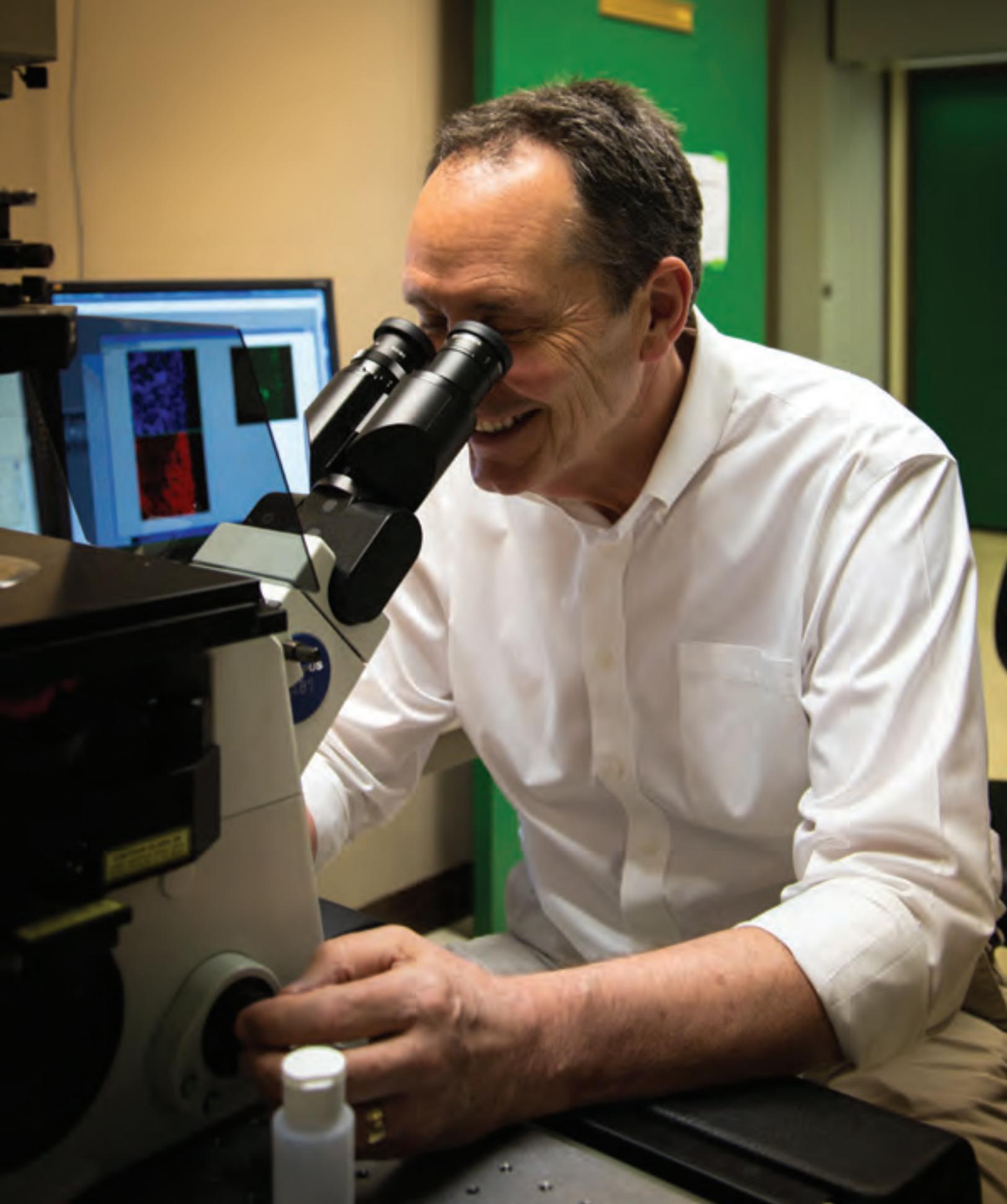
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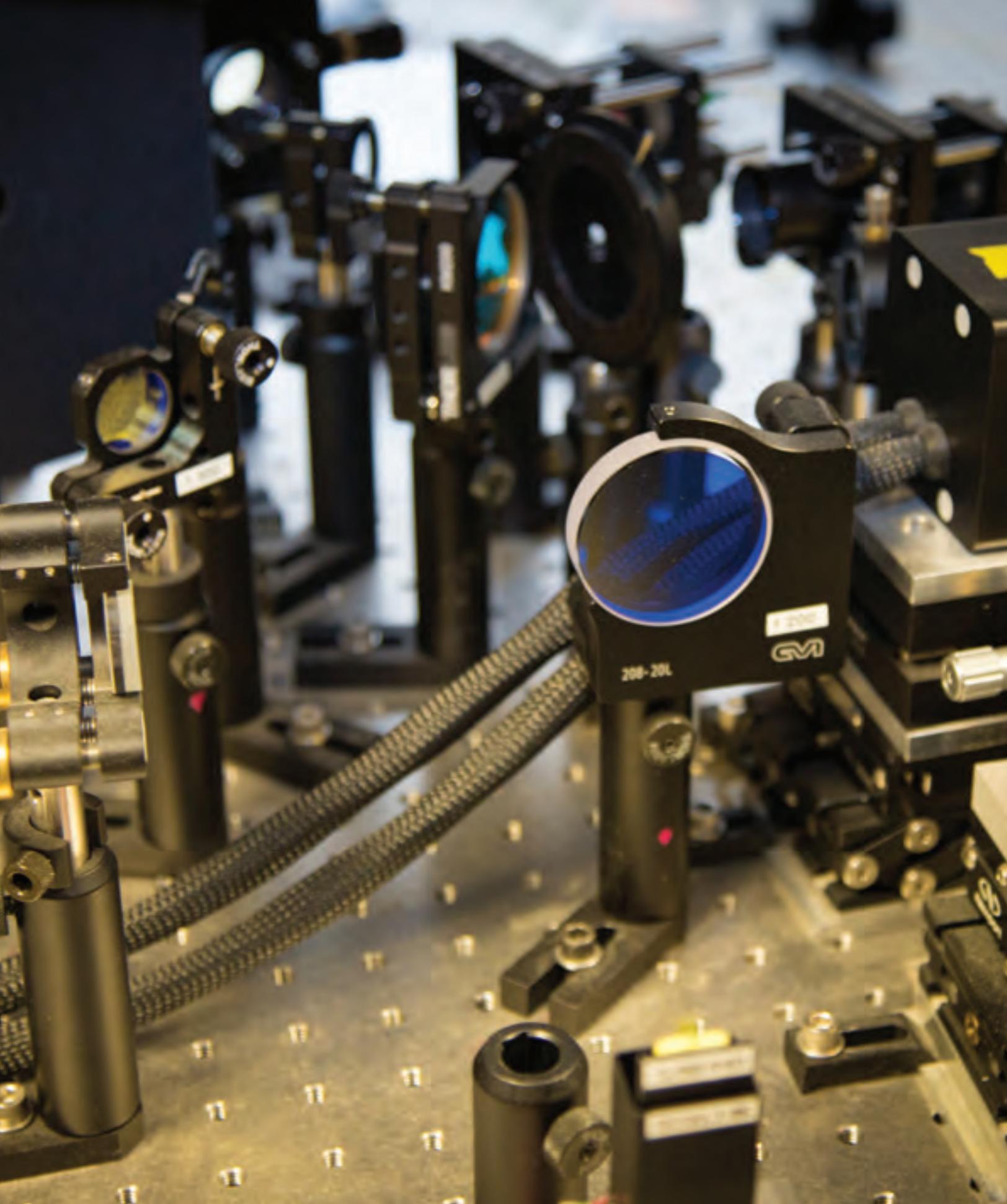
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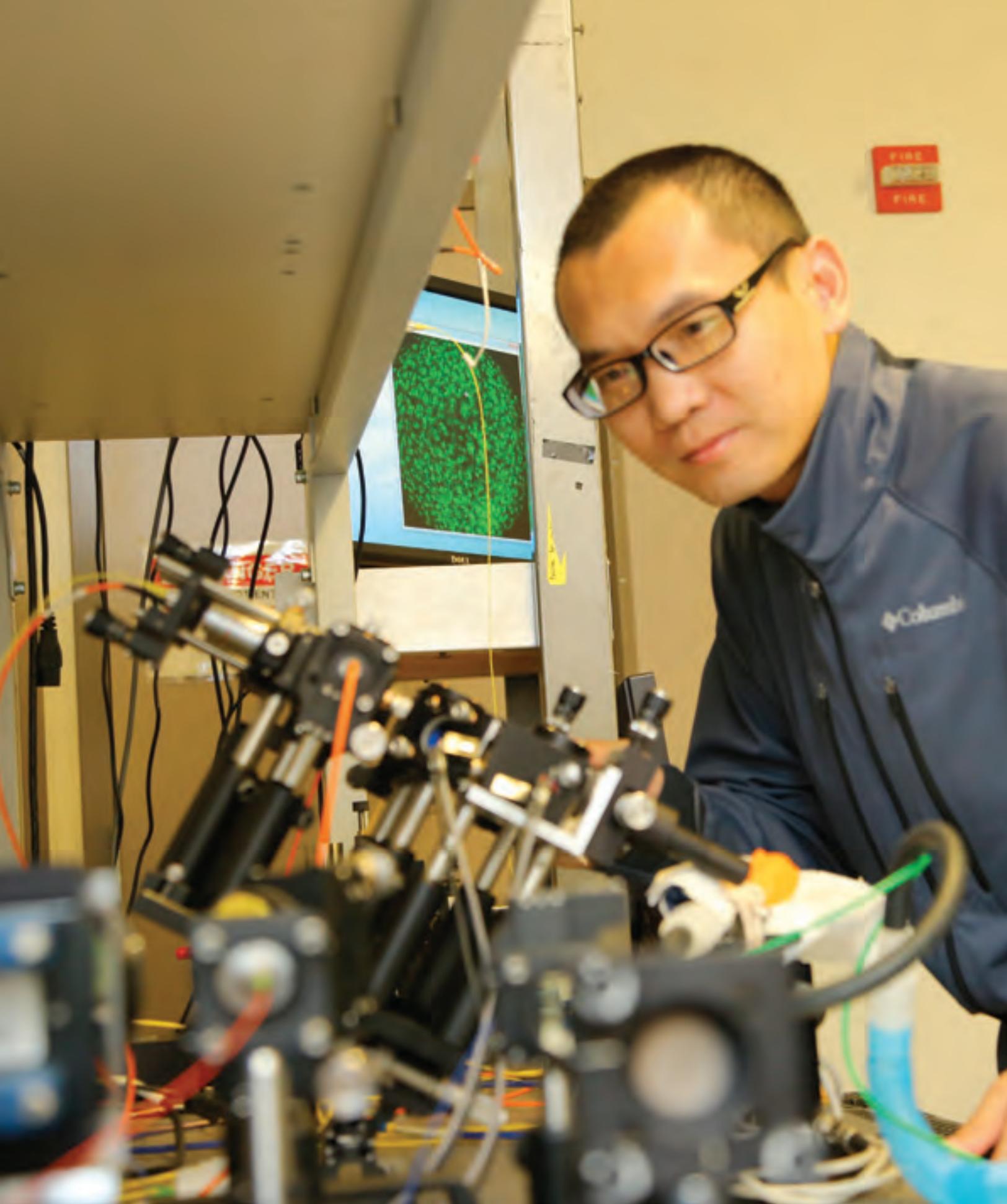
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Yang F, Xiao X, Cheng W, Yang W, Yu P, Song Z, Yarov-Yarovoy V, **Zheng J**. Structural mechanism underlying capsaicin binding and activation of the TRPV1 ion channel. 2015 *Nat Chem Biol*; 11(7):518-24.

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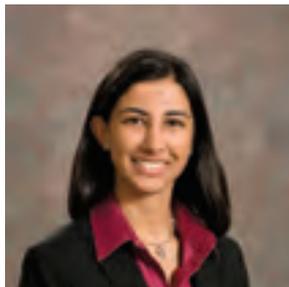
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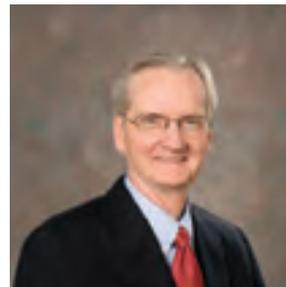
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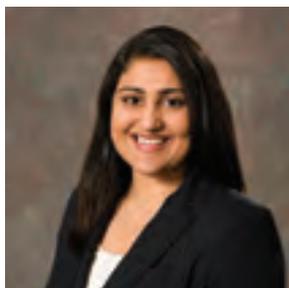
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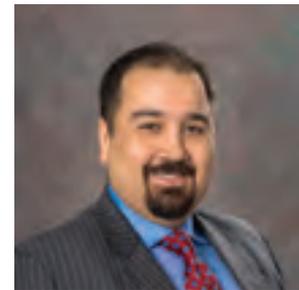
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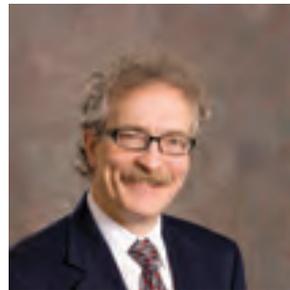
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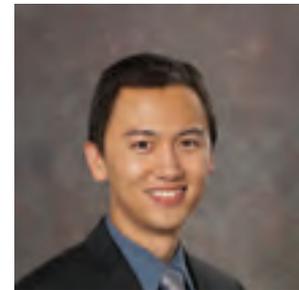
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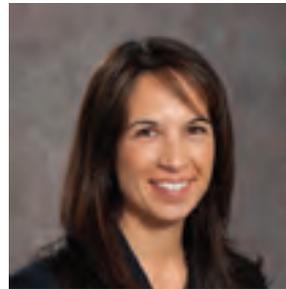
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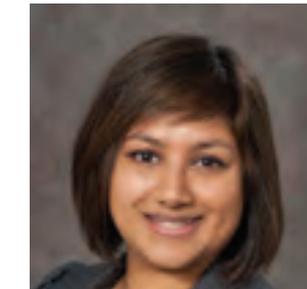
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4860 Y Street, Suite 2400
Sacramento, CA 95817

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SEPTEMBER 17, 2016

5th Annual The Eyes of a Child
Crowne Plaza Hotel
Sacramento, CA

OCTOBER 16, 2016

Alumni, Volunteer Clinical Faculty and Friends Reception
American Academy of Ophthalmology
Radisson Blu Aqua Hotel
Chicago, IL

JUNE 2-4, 2017

40th Anniversary Annual Ophthalmology Symposium
Ophthalmology Through the Generations
Napa Valley Marriott Hotel
Napa, CA

Improving the future of sight



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AGE 2

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EYE CENTER

UC Davis Eye Center donors are our visionary partners.

Visionary partners play a pivotal role in propelling our important work—advancing innovation and discoveries in vision science and touching the lives of patients and their families for generations to come,

through current and deferred gifts to support key funding priorities:

- Faculty Chairs and Professorships
- New, State-of-the-Art Eye Center Building
- Research
- Education
- Training

To explore ways to become a visionary partner, please contact:

Erin Bauer, Director of Development, (916) 734-3966 or ejbauer@ucdavis.edu