

Fall/Winter 2014

# enVISION



News From the UC Davis Eye Center

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A Conversation With  
Dean Freischlag

# From the Chair's Desk: The Final Frontier



Like the starship Enterprise in Star Trek, venturing into the final frontier, the Eye Center is about to commence an audacious new program to unlock the secrets of the optic nerve in health and disease. The optic nerve, a coaxial cable of delicate nervous tissue that links the eye to the brain, is the one part of the eye that has largely eluded successful attempts at treatment. Optic nerve dysfunction can be the result of hereditary disease, trauma, tumors, infection, inflammation, metabolic or nutritional disorders, and, of course, glaucoma—one of the most common causes of blindness the world over. Because this nerve is neural tissue with its intricately complex connections and distinct healing characteristics, we have been unable to manipulate this tissue once it has been altered by disease.

Through a generous gift from Ernest Tschannen, a grateful patient here at the Eye Center, we will embark on a research voyage into the physiology and function of the optic nerve using stem cell technology, gene therapy, and high resolution imaging, among other tools. Our goal is to unlock the neural secrets of the visual system so that patients faced with diseases like glaucoma can have the hope of effective treatment and disease prevention.

It is a daunting challenge that will take the dedicated teamwork of clinicians and basic scientists. We thank Mr. Tschannen for his foresight and generosity as well as for his trust in us to undertake this challenge.

Mark J. Mannis, MD, FACS  
Professor and Chair  
UC Davis Eye Center

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

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## 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.

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

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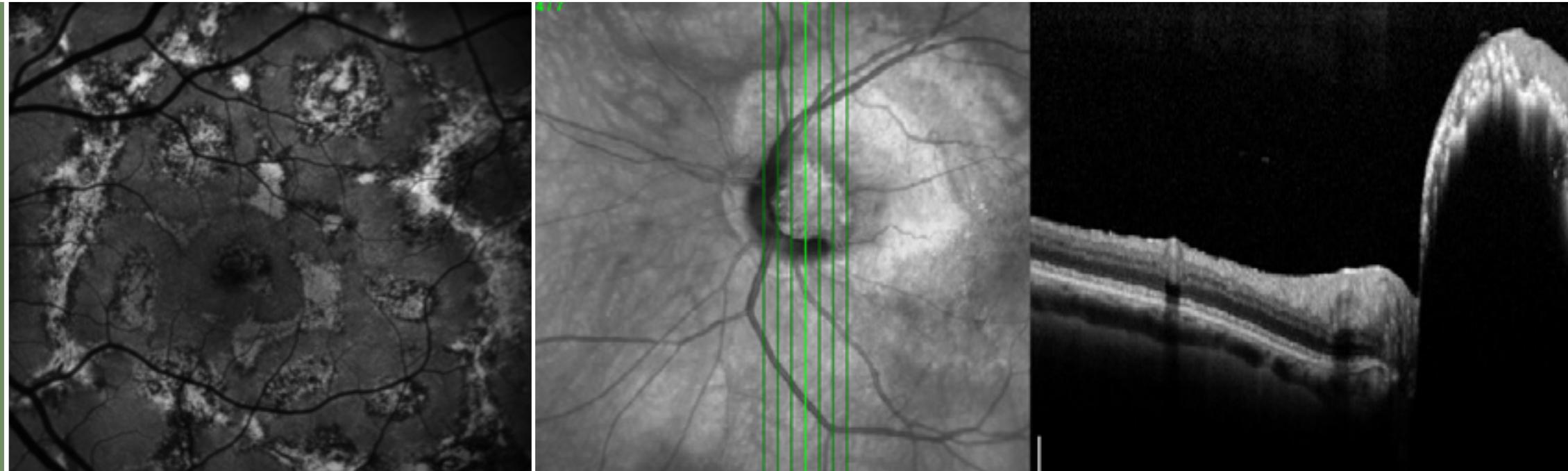
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(916) 734-6650 (Lasik)

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# ERNESTE. TSCHANLEN

PROVIDES  
\$1.5 MILLION  
GIFT



## TO ADVANCE OPTIC NERVE RESEARCH

by: Carol Gan and Michele C. Lim, MD

Four years ago, Ernest Tschannen's (pronounced 'channen') eyesight was failing. As someone who walks six miles every day and cherishes his time outdoors, losing his sight to glaucoma was a frightening prospect. Referred by his optometrist to the UC Davis Eye Center, Tschannen underwent surgery

with Dr. Michele C. Lim, one of the Eye Center's glaucoma specialists, to improve his vision and manage his glaucoma, a disease that damages the eye's optic nerve and can result in vision loss and blindness when untreated. "I am grateful for their work, and I am very much impressed with the results," said Tschannen, an engineer from

Switzerland who moved to the United States in the 1950s and now lives in Sacramento County.

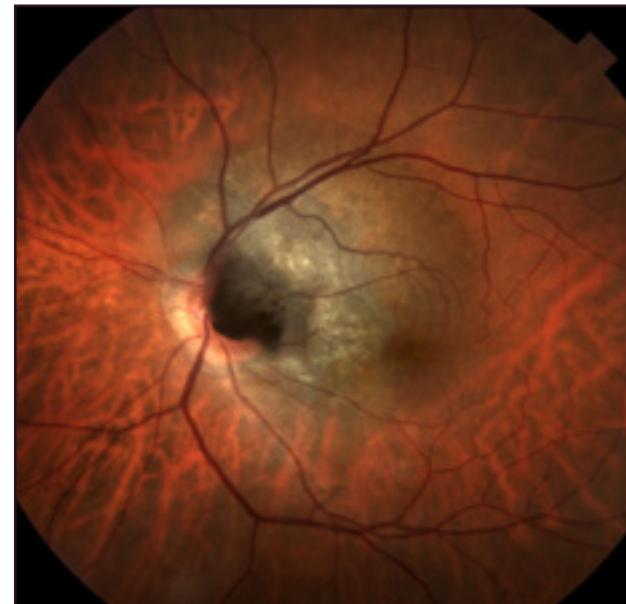
His experience at the Eye Center inspired him to donate \$1.5 million to UC Davis Eye Center to advance research on the optic nerve and to help find a cure for glaucoma and other eye diseases. The optic nerve consists of a bundle of more than 1 million nerve fibers that form a direct connection between the retina, located at the back of the eye, and the brain. The retina receives light and sends visual messages to the brain through the optic nerve. A healthy optic nerve is necessary for good vision.

Tschannen's gift has the potential to help some of the 52,000 patients who seek care at the eye center every year. The funds will be used to hire a retinal stem cell biologist and support an interdisciplinary research team focused on gaining a better understanding of how to stimulate the repair and regrowth of the optic nerve. At this point in time, although we can transplant the cornea (the clear window of the eye), we cannot transplant the optic nerve because of its intricate connection to the brain. Vision researchers using stem cells as well as optic nerve growth factors to encourage the re-growth and connection of the optic nerve axons with the brain are

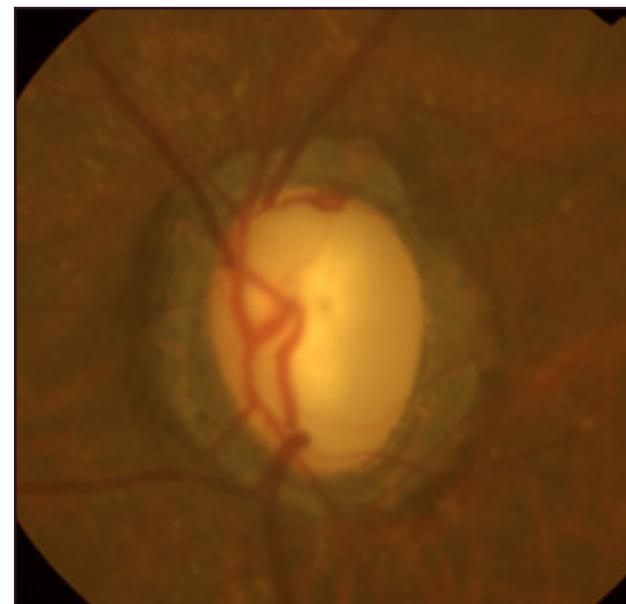
*"Mr. Tschannen's gift is inspiring Eye Center physicians and scientists to find innovative treatments for patients with disabling eye disease."*

doing promising work. But we are not there yet, and it will require intensive work by our scientists to make this a reality. Mr. Tschannen's gift will ignite an effort here at UC Davis to become a center of excellence in this important area of research. "While there are many diseases that interrupt the visual system's ability to receive, transmit and interpret visual signals and cause loss of vision, those that affect the optic nerve are among the most difficult to address," according to Mark J. Mannis, Chair of Ophthalmology and Vision Science. These problems include inflammatory diseases, infections, neurologic disorders, trauma, vascular disease and glaucoma.

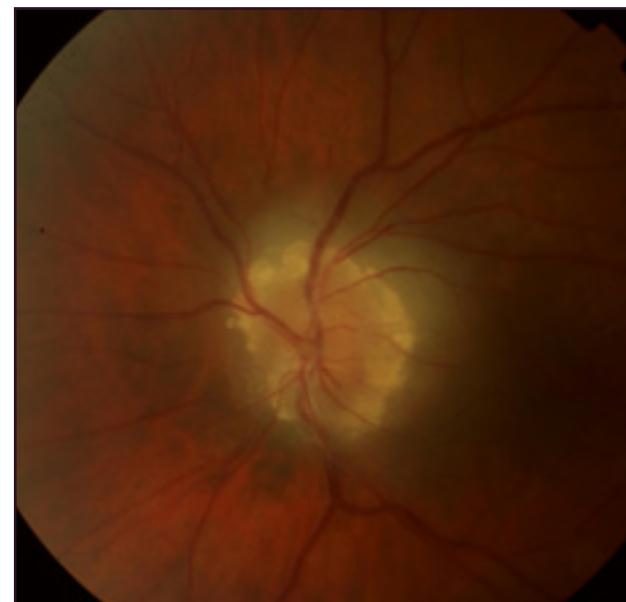
"Mr. Tschannen's gift is inspiring Eye Center physicians and scientists to find innovative treatments for patients with disabling eye disease," Mannis said. "He is giving a gift that will profoundly affect the lives of patients for generations to come." Ophthalmology professor Michele C. Lim, who performed Tschannen's surgery, agreed: "It takes a great deal of foresight and vision to dedicate this gift to optic nerve regeneration research. Mr. Tschannen's generosity is an example of how one person can ignite a research effort that will eventually benefit thousands of patients in the future."



**Melanocytoma:** A benign pigmented ophthalmic tumor that occurs on the optic nerve and extends into the peripapillary retina. Melanocytomas of the optic nerve appear dark brown or black, without a racial predilection and are typically detected in individuals age fifty and above. Typically benign, 1-2 percent will become malignant. Similar tumors include choroidal melanomas and metastatic melanomas of the optic disc. Up to 90 percent of eyes will have visual field defects and up to 25 percent will have mild vision loss.



**Glaucoma:** A group of diseases that damage the optic nerve and may result in vision loss and/or blindness. Typically, the cause for damage is secondary to fluid within the eye not draining appropriately. The risk of glaucoma increases with age, family history, and certain ethnic populations. Symptoms vary, but typically, one will have slow, painless, loss of peripheral vision. By detecting glaucoma early, disease progression can be managed using drops, oral medications, laser or incisional surgery.



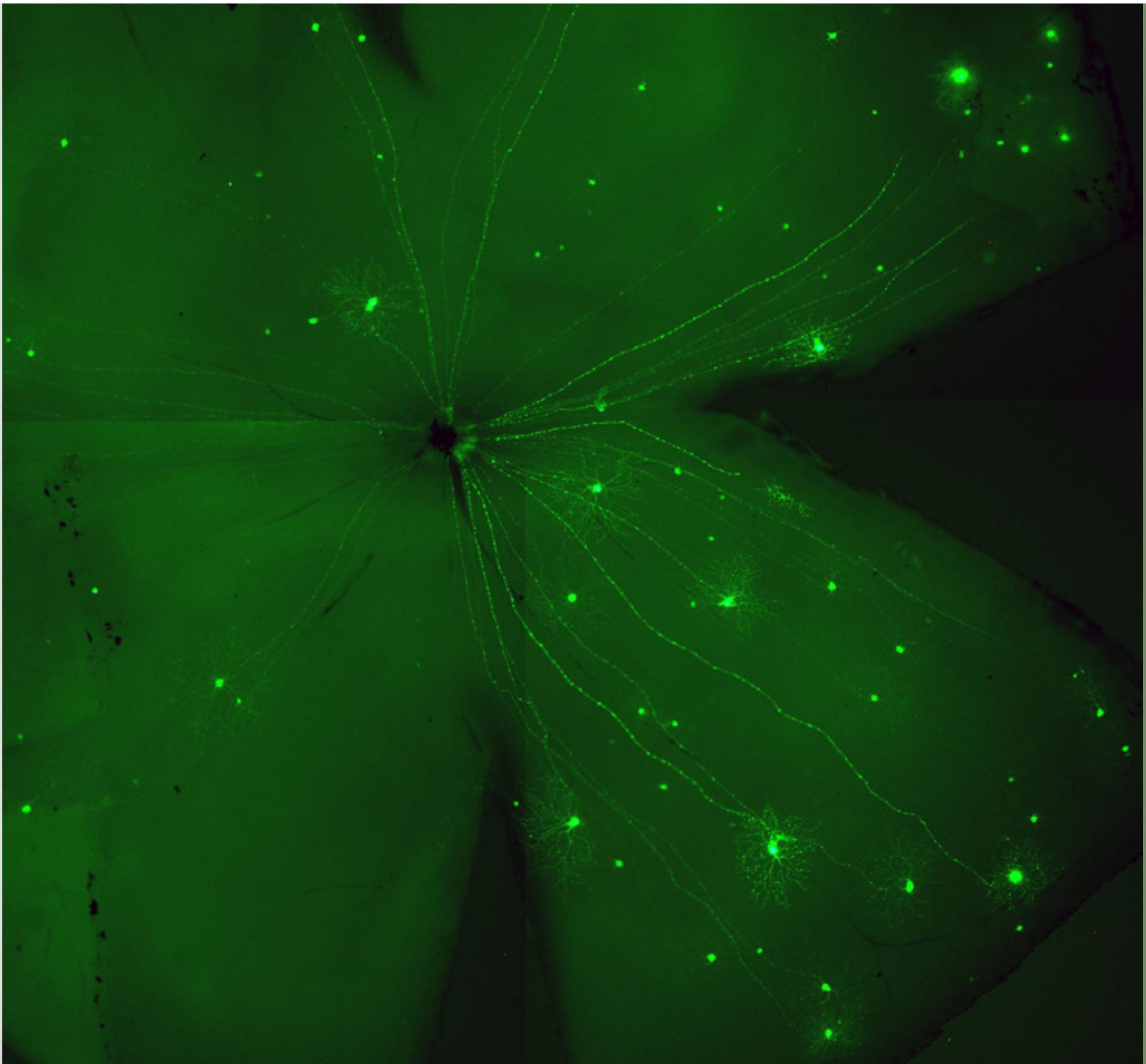
**Optic Nerve Head Drusen:** Optic nerve head drusen are abnormal deposits of protein-like material in the optic nerve. They occur in about 1 percent of the population, most common in Caucasians and affect both eyes 75 percent of the time. Though present at birth, the drusen are not apparent, "buried" until typically age 12, as the deposits become calcified. On exam, they appear as a swollen nerve, or "lumpy" when unburied. Up to 70 percent of eyes will experience a loss of peripheral vision.

# Review

Paul Fitzgerald, Ph.D.

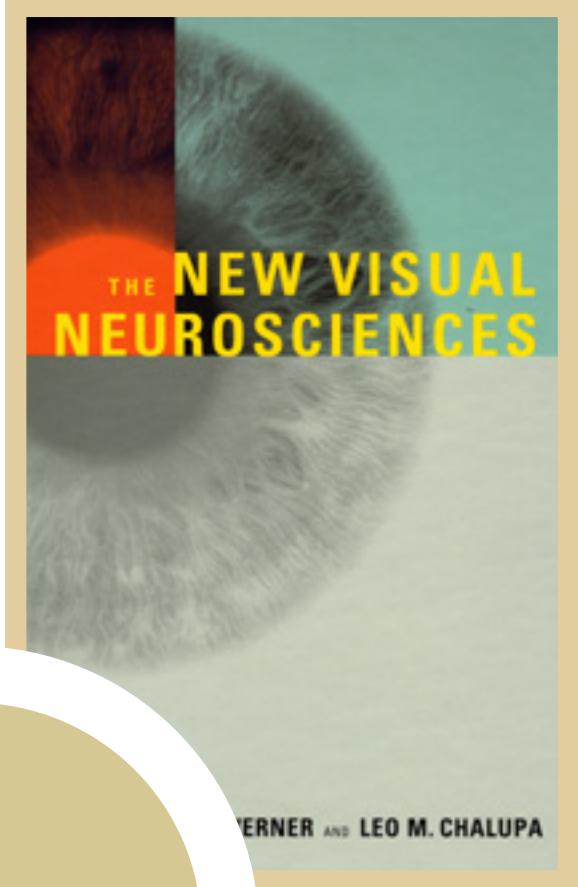


When light strikes the retina, it excites rods and cones, which then relay information through a network of other retinal cells, and finally to a retinal ganglion cell (RGC). This retina was genetically engineered to have a subset of RGCs synthesize a yellow fluorescent protein. Thus, while this image includes literally millions of cells, only the engineered RGCs are visible using fluorescence microscopy. Each RGC has an array of fine branches or dendrites radiating from the round cell body, and one long fiber-like axon. RGC axons all converge on the optic nerve head, giving rise to the optic nerve. The dendrites collect input from multiple cells, integrate it, then send an impulse through the axon which ultimately connects to the brain.



One of the challenges faced in attempting to use animal models to study disease processes is the difficulty of imaging a single cell against the backdrop of millions of cells. The image at left, taken by Myung-Soon Moon, PhD in the laboratory of Nadean Brown, PhD, highlights the power of genetic engineering in combination with advanced imaging. The fluorescent yellow protein highlights a subpopulation of Retinal Ganglion Cells, the cells hit hardest by glaucoma. This image is taken from an isolated retina, but we now have the power to image such cells in the living animal. This creates the opportunity to follow the progression of glaucoma, and to monitor the efficacy of approaches which attempt to slow its progression, all in the living animal.

# Faculty Awards



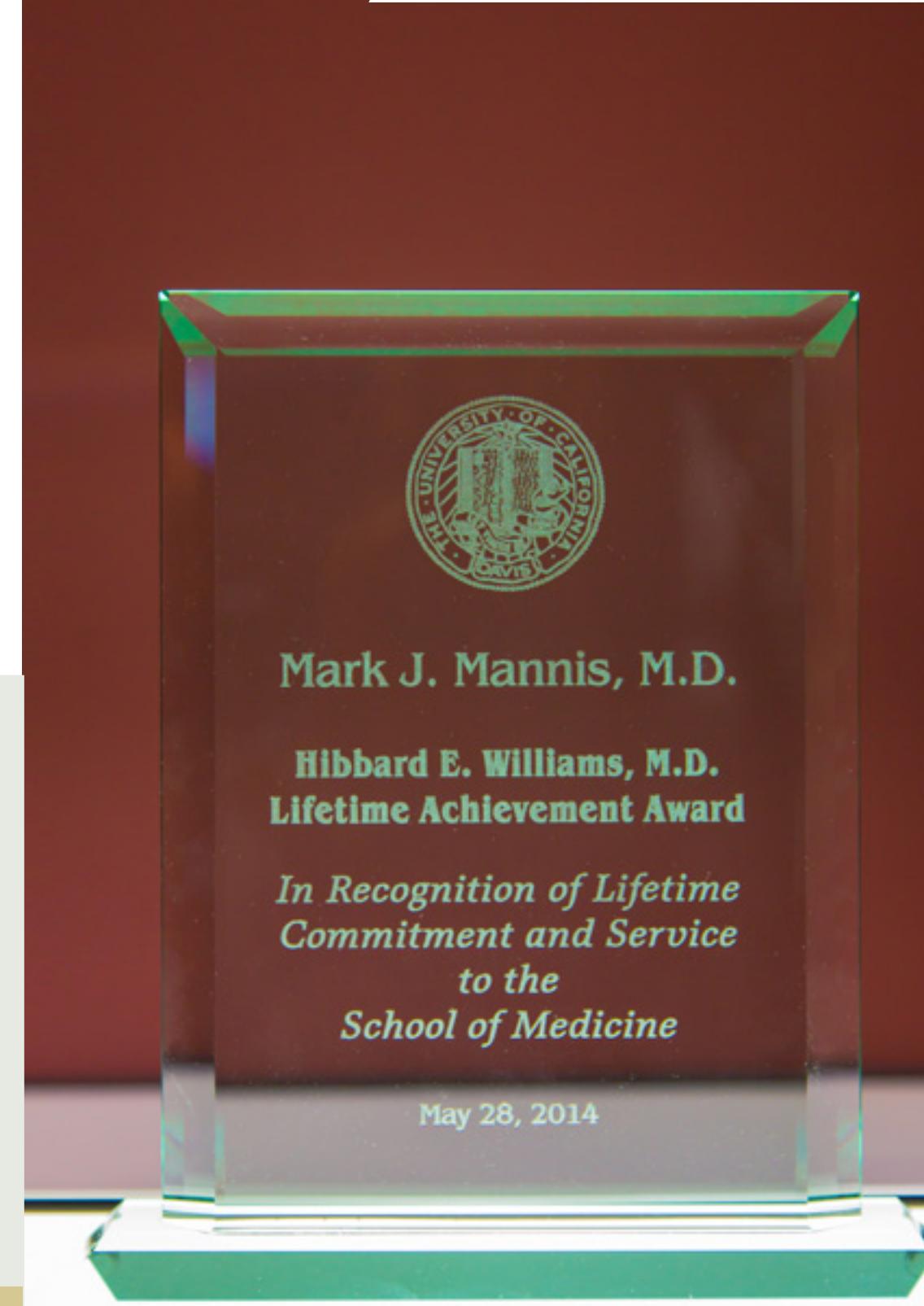
John S. **WERNER**

"The New Visual Neurosciences is a unique resource for students, clinicians, and investigators with an interest in the visual system and its disorders."

Barry R. Masters  
*Graefes Archive of Clinical and Experimental Ophthalmology*, 2014

"The chapter authors are a veritable 'who's who' of visual neuroscientists. Major additions to the book include sections on invertebrate vision, theoretical perspectives, molecular biology and translational vision research. Each chapter is well illustrated, with many illustrations in color. This book belongs in the collection of every serious student or researcher in vision and neuroscience."

Vasudevan Lakshminarayanan  
*Optics & Photonics News*, 2014



**Marie E. Burns, Ph.D.**  
Outstanding Graduate Mentor in Neuroscience Award

**Mark Goldman, Ph.D.**  
2014 Howard Hughes Medical Institute Professor

**Syed Khizer Khaderi, M.D., M.P.H.**  
40 Under 40 Sacramento Business Journal

**Lily Koo Lin, M.D.**  
American Society of Ophthalmic Plastic and Reconstructive Surgery

**Mark J. Mannis, M.D., F.A.C.S.**  
Cornea Society Castroviejo Medal Recipient

Hibbard E. Williams, M.D.  
Lifetime Achievement Award

**John S. Werner, Ph.D.**  
University of Cambridge, elected visiting scholar by Gonville and Caius College

Optical Society of America, Robert M. Boynton Lecture Association for Research in Vision and Ophthalmology, Gold Fellow

# EYE CENTER MUSEUM



The history of our specialty is a colorful and fascinating one. Here at UC Davis, over the past decade, we have collected artifacts including books, spectacles, optical and diagnostic devices, surgical instruments, and medications. These interesting artifacts tell us not only about how eye care was delivered over the centuries but also reminds us of how we have arrived where we are in vision care delivery. They are a key to understanding the past and the basis for future ingenuity.



1



2

**1** Morton ophthalmoscope: made by the British company Curry and Paxton, c. 1890. There are two mirrors for direct ophthalmoscopy and two for indirect. The direct mirror is angled and can be swiveled to be used for either the left or right eye. The range of lenses is

twenty nine diopters mounted in a closed chain rotated by a gear wheel. The inventor, Andrew Morton (1848-1927) worked at Moorfields Eye Hospital in London from 1875 to 1909.

Ophthalmoscopes a gift of Mr. Richard Keeler, London, UK



**2** Oldham ophthalmoscope: made by the British company Down Bros. in 1886. It is an extremely simple instrument with one mirror for indirect ophthalmoscopy and just five convex and four concave correcting lenses. The handle folds on itself and the whole instrument with condensing lens

fits neatly into a small case. Charles Oldham (1845-1907) practiced in Brighton and the Central London Ophthalmic Hospital. For many years he played first violin in an orchestra and had a collection of Stradivarius violins which he left to the British Museum when he died.

**3** One of several museum cases on display at the UC Davis Eye Center containing antique ophthalmic devices, medications, books, and surgical instruments.



## OPTICAL SHOP ASK AN EYE STAFF MEMBER TODAY!

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Optical Shop  
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Sacramento, CA 95825  
(916) 734-6644

[www.ucdmc.ucdavis.edu/eyecenter](http://www.ucdmc.ucdavis.edu/eyecenter)

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UC Davis Folsom



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# ORBIS

## UC Davis Partnership

*James D. Brandt, M.D.*

The global reach of the UC Davis Eye Center is growing, with a novel partnership with the world-renowned nonprofit organization, Orbis International. The new alliance joins Orbis with the expertise of the faculty of the Eye Center and the UC Davis Center for Health and Technology.

The World Health Organization estimates that 285 million people are visually impaired worldwide. This includes 39 million individuals who are blind and 246 million who have low vision. About 90 percent of the world's visually impaired live in developing countries, and 80 percent of all cases of visual impairment can be avoided or cured. Causes include refractive error, cataracts and glaucoma, the leading causes of visual impairment worldwide.

The first UC Davis Eye Center faculty to serve as a volunteer faculty ('VF') with Orbis was Mary O'Hara, M.D., Director of the Pediatric Ophthalmology & Strabismus Service. Dr. O'Hara traveled to Wuhan, China in 2006 to teach local ophthalmologists modern techniques of strabismus surgery. Other UC Davis faculty followed, serving as VFs teaching surgical, diagnostic and therapeutic techniques around the world (see table on page 17).

Through the agreement signed in May, 2014, UC Davis specialists in telemedicine, information technology and ophthalmology will work with Orbis to expand programs, including staff development, fellowships and programs on Orbis' Flying Eye Hospital (FEH). The FEH is the world's only mobile

30 years of saving sight worldwide



UC Davis & Orbis



Founded in 1984, Orbis has carried out programs in 92 countries around the world, performing more than 23.3 million medical and optical treatments.

The flying eye hospital (FEH) is a completely self-contained ophthalmic teaching hospital. A new FEH is under construction in Victorville, CA.

UC Davis is the academic center most actively involved with Orbis. They are among more than 325,000 medical professionals to have participated.

Dr. Mannis prepares a donated cornea for transplantation during surgery on the Flying Eye Hospital.

### TABLE

- Wuhan, China (2006)
  - O'Hara – Strabismus
- Ho Chi Minh City, Vietnam (2008)
  - Brandt – Glaucoma
- Trujillo, Peru (2009)
  - Brandt/Baik – Glaucoma
  - Park – Retina & Uveitis
- Jakarta, Indonesia (2010)
  - Brandt/Paul - Glaucoma
- Kathmandu & Lumbini, Nepal (2011)
  - Brandt/Lesley – Glaucoma
- India (2011)
  - Ruben – Strabismus
- Trujillo, Peru (2011)
  - Brandt – Glaucoma
  - Mannis – Cornea
- Danang, Vietnam (2012)
  - Brandt/Tong – Glaucoma
- El Salvador (2012)
  - Mannis – Cornea
  - Muntz – PACU & ALS Training
- Addis Ababa, Ethiopia (2012)
  - Caspar – Cataract
  - Redenbo – Ultrasound / Imaging
- Kitwe/Ndola, Zambia (2012)
  - Brandt/Liu – Glaucoma
- Panama (2013)
  - Caspar/Garcia - Cataract
  - Moore – Anesthesia
  - Minear – Informatics/EMR/IT Infrastructure
- Jinan, China (2014)
  - Brandt/Allar – Glaucoma
  - O'Hara – Strabismus
- Trujillo, Peru (2014)
  - Brandt – Glaucoma
  - Mannis – Cornea
  - Moore – Anesthesia
  - Muntz – PACU & ALS Training

*"By partnering with Orbis, a recognized pioneer in establishing sustainable, quality eye health care worldwide, we are leveraging UC Davis' expertise in telehealth and long-distance learning to have a profound impact on global health."*



1

**1** Drs. Mark Mannis (L) & Julie Freischlag, Dean & Vice-Chancellor at UC Davis Health System (R), in the cockpit of the Flying Eye Hospital during its 8 hour flight to Peru.



2

**2** Screening day at the Instituto Régional de Oftalmología (IRO) draws hundreds of patients from many hours away. Patients arrive by bus, taxi, or even walk to receive care.



3

**3** Susanna Park, M.D., Ph.D., retina specialist at UC Davis, teaching a Peruvian surgeon how to use a laser on the Orbis Flying Eye Hospital

ophthalmic teaching hospital, built into a DC-10 wide-body jet aircraft. Using the FEH, Orbis brings the teaching hospital to where it is needed. Under the new UC Davis / Orbis initiative, trainees from the developing world will have opportunities for hands-on training in the UC Davis Center for Health and Technology simulation center as well as remote surgical training in their home institutions through high definition video links between the operating rooms here at UC Davis and at partner hospitals throughout the world.

The UC Davis Health System, widely considered the 'most wired' academic medical center in the world, will also partner with Orbis to help the organization's ongoing efforts to establish an open-source ophthalmic electronic medical record system appropriate for the developing world. This in turn

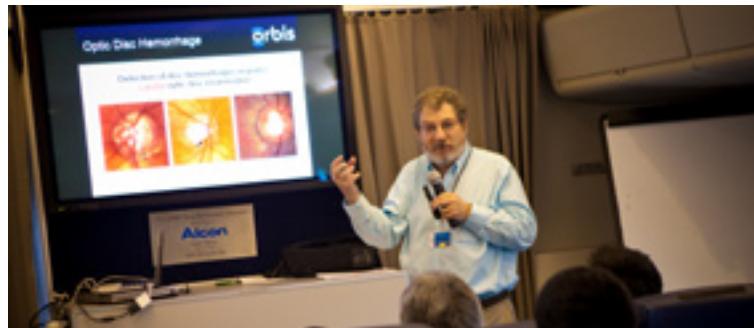


4





Part of the UC Davis team in front of the Orbis FEH  
(L>R): Drs. Brandt, Mannis, Choulakian, DeNiro, Park.



Dr. Brandt gives a lecture about glaucoma in the FEH classroom, which holds 48 trainees.

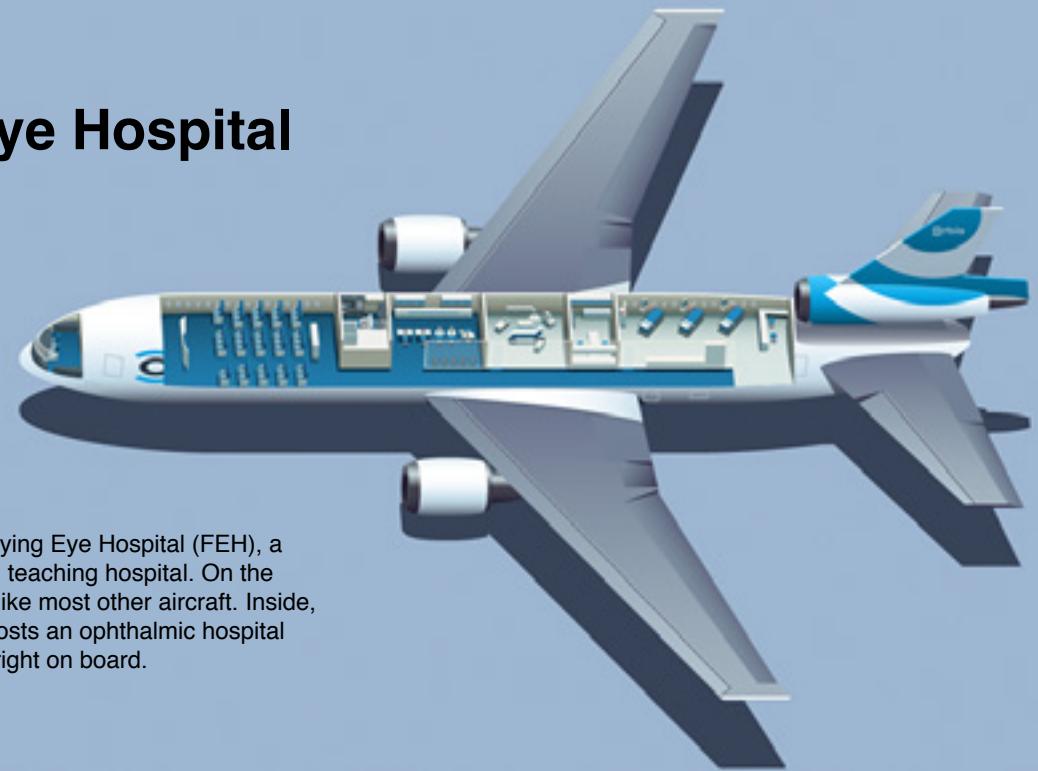


Dr. Brandt performing glaucoma surgery in the fully-equipped operating room aboard the Orbis DC10 FEH.

will help develop a more robust e-health infrastructure, provide doctors and policy makers access to increased decision-making support and will offer researchers a wealth of global data.

"Advances in telecommunications technologies and broadband capacity in developing countries has created new opportunities to improve training for physicians, nurses and other members of the health care team and expanded access to health care services among the world's most vulnerable populations," said Thomas Nesbitt, Associate Vice Chancellor for Strategic Technologies and Alliances at UC Davis. "By partnering with Orbis, a recognized pioneer in establishing sustainable, quality eye health care worldwide, we are leveraging UC Davis' expertise in telehealth and long-distance learning to have a profound impact on global health."

## Flying Eye Hospital



Orbis operates the Flying Eye Hospital (FEH), a fully equipped mobile teaching hospital. On the outside, the plane is like most other aircraft. Inside, it's like no other - it hosts an ophthalmic hospital and teaching facility right on board.



# A CONVERSATION WITH DEAN FREISCHLAG

Mark J. Mannis, M.D.



***"UC Davis Ophthalmology is unique in the nation for its strong and creative synergy between the clinicians and the basic scientists."***

Baltimore, Maryland is over 3000 miles from Sacramento--a nation away from Northern California, and a medical culture equally as distant. Julie Freischlag, our new Vice Chancellor for Human Health Services and Dean of the School of Medicine, has made the long migration from Johns Hopkins University to UC Davis with a distinct vision in mind for providing health care and for training the next generation of physicians.

Dr. Freischlag grew up with her two brothers in Decatur, Illinois, her mother a teacher and her father a newspaperman. Originally on track to become a teacher, Freischlag attended the University of Illinois, Urbana and found that she had both an aptitude for the sciences as well as a growing interest in helping people through medical science. She next attended Rush Medical College in Chicago, and did her clinical training (internship, residency, and vascular surgery fellowship) at UCLA. Initially targeting pediatrics as her specialty of choice, she discovered that she had a strong attraction and ability in surgery after her surgical rotation with Rush. She completed a surgical residency (1980-1986) followed by a one-year fellowship in vascular surgery.

At the completion of her fellowship, Freischlag took a faculty position at the University of California, San Diego but was recruited back to UCLA to be Chief of Vascular Surgery at the West Los Angeles VA(1989-1992). In 1992, she returned to the Midwest as Chief of Vascular Surgery at the Veterans Administration Hospital affiliated with the Medical College of Wisconsin where she remained until 1998. A brief return to California (1998-2003) brought her

again to the Vascular Surgery Service at UCLA as Division Chief.

In 2003, Dr. Freischlag became the first woman Chair of the Department of Surgery at Johns Hopkins University. There she developed her philosophy that a good chair succeeds by making his/her faculty better and by "having their backs". Her strong leadership skills brought her multiple offers to interview for deanships, and although she was both successful and enjoyed chairmanship, she saw deanship as an opportunity to have a broader reach in health care delivery policy and disease prevention. For this reason and because she also wanted more impact on medical students, she accepted the position here at UC Davis.

When asked why she left being a very successful department chair at one of the nation's most prestigious medical institutions to come to UCD, she points out that there were multiple factors that attracted her to our institution: a successful, highly rated hospital; a superb and energetic faculty; the combined organizational strength of the network of UC medical schools; and, of course, the charm and wholesome atmosphere of Northern California. She points out that she has found the Health System here easier to negotiate than on the East coast, and she has spent her first six months getting to know the executive team, department chairs and faculty. She has concentrated on team building with her leadership group to whom she cannot give enough praise.

In addition to her complex and busy job running the Health System, Dr. Freischlag continues to work as a clinician and sees patients and operates as a vascular surgeon, performing

surgery for thoracic outlet syndrome, a procedure in which she is recognized as an expert worldwide. She sees patients not only at UCD but also attends the VA as well as David Grant Medical Center.

When not being Vice Chancellor, Dean, and practicing surgeon, Dr. Freischlag spends time with her family, swims regularly, walks, and is an avid reader of fiction and books on leadership. She is also an enthusiastic crafter.

Dr. Freischlag has been affiliated with institutions that boast prestigious eye centers—the Wilmer Eye Institute at Hopkins and the Jules Stein Eye Institute at the University of California, Los Angeles. Of Ophthalmology and the Eye Center at UCD, she says: “UC Davis Ophthalmology is unique in the nation for its strong and creative synergy between the clinicians and the basic scientists. And from a clinical standpoint, it is a department that succeeds in providing great care for problems ranging from the most routine to the most complex. It is a vibrant part of the Health System”. Dr. Freischlag looks forward to the day when UCD will have its own dedicated Eye Center building.

And as for the vision that guided her across country from Baltimore to Sacramento, she says: “As Vice Chancellor and Dean, I want to modernize our educational programs at all levels; to maintain our focus on and funding for research; to improve quality care and patient outcomes; and to create a School of Population and Global Health where we can address healthcare disparity issues locally, regionally, nationally and internationally.”

It is, indeed, a grand vision, and we are glad that it guided her across country to Sacramento.



## Changing of the Guard: Hail and Farewell to Residents and Fellows

*Nandini Gandhi, M.D.  
Associate Program Director*

On June 21, 2014 the department of ophthalmology convened to celebrate our graduating residents and fellows. The event featured glowing tributes, faculty roasts and near-professional music videos, making for a most poignant and comedic send-off. We send our heartiest congratulations to all of our graduates:

### Graduate Residents:

**Harinderpal Chahal, MD:**  
Dr. Chahal has joined the faculty at the UC Davis Eye Center as an instructor, and will be starting a fellowship in oculoplastics at the University of Iowa in 2015.



**Vivian Lien, MD:**  
Dr. Lien will be completing a fellowship in Cornea and External Disease at the Cullen Eye Institute of Baylor University.



**Roma Patel MD, MBA:**  
Dr. Patel will be completing a two-year fellowship in Glaucoma at the Duke Eye Center.



**Judith Sabah MD, PhD:**  
Dr. Sabah will be completing a fellowship in Pediatric Ophthalmology and Strabismus at the University of Wisconsin at Madison.



### Fellows:

**Amar Patel, MD**  
Dr. Patel completed a fellowship in Retina and has begun practice at Kaiser Permanente in Oakland, CA.



**Rory Allar, MD:**  
Dr. Allar completed a fellowship in Glaucoma and will be practicing in Spokane, WA.



**Paramdeep Mand, MD**  
Dr. Mand completed a fellowship in Cornea and External Disease, and will continue to practice as Chief of Ophthalmology at the Veterans Administration in Sacramento.



We warmly welcomed our new residents and fellows to the Eye Center on July 1, 2014. We look forward to having them as part of the UC Davis family.

### Residents:

**Sam Abbassi, MD**  
Rush University Medical Center



**Jolene Rudell MD, PhD**  
UC Davis School of Medicine



**Rachel Simpson, MD**  
University of Arizona College of Medicine



**Ilana Traynis, MD**  
Tufts University



### Fellows:

**Jennifer E. DeNiro, MD**  
Clinical Glaucoma Fellow  
Ophthalmology residency: California Pacific Medical Center – Ophthalmology



**Mazen Choulakian, MD**  
Clinical Cornea Fellow  
Ophthalmology residency: University of Sherbrooke, Quebec



**Senad Osmanovic, MD**  
Clinical Retina Fellow  
Ophthalmology residency: University of Illinois, Chicago



# A Community Partner Offering a Continuum of Care

By: Shari Roeseler  
Executive Director



SOCIETY  
FOR THE  
BLIND

More than what you see.

Adjusting to vision loss is a significant and life-changing experience. Many of the clients we see at Society for the Blind, who are new to blindness or vision loss, express deep sadness at the prospect of no longer being able to enjoy activities such as sporting events, theater, or hiking. Others express fear that they will be vulnerable to falling, getting lost or being a target for crime. These are all normal responses to losing some or all of one's vision.

Society for the Blind provides a continuum of care for people with vision loss that complements the medical treatment they receive from their ophthalmologist. We meet individuals and determine where they are both emotionally and visually to assist them in attaining new skills that will enable them to maintain the activities, hobbies and livelihood they have known.

Vision loss is defined as a significant reduction of visual acuity that ordinary eyeglasses, contact lenses, and/or medical and surgical treatment cannot completely correct. A visit to our Low Vision Clinic provides patients the opportunity to try out magnifiers and other equipment that enlarge text. We also review lighting options and ways to reduce glare so that print is easier to see and read.

Courses at Society for the Blind allow individuals to acquire non-visual

skills so that they can safely carry out activities of daily living, adapt their work environment and continue to enjoy leisure activities. We also offer support groups for adjustment to vision loss and blindness.

Since 2012, Society for the Blind has been partnering with the UC Davis Eye Center to work with recipients of the Implantable Macular Telescope. This new treatment for people with Age-Related Macular Degeneration restores central vision. Adjusting to the IMT requires extensive therapy and training. Working with the surgeons at the UC Davis Eye Center, Society for the Blind offers the continuum of care to include appropriate eyewear, skills acquisition and supportive services. "We see the benefits for our patients as they access the services of Society for the Blind," said Dr. Mark J. Mannis, MD, Chair of the UC Davis Eye Center. "This partnership is a wonderful example of what collaboration can do for people with vision loss and blindness."

Society for the Blind is a resource for individuals with vision loss, their families, and eye-care professionals. We serve twenty-six counties in northern California, offering in-home trainings, community-based workshops and on site classes and retreats at our center in the Midtown area of Sacramento.

# 37<sup>th</sup> Annual Eye Center Symposium

By Jennifer Li, M.D.



**UCDAVIS**  
EYE CENTER

NAPA  
CALIFORNIA



The 37th Annual UC Davis Eye Center Ophthalmology Symposium took place this year at the Napa Valley Marriott, June 6-8, 2014. The theme of this year's symposium was "TEAMS: Treating Eyes Across Medical Specialties." There was a strong focus throughout the program on both interdisciplinary and intradisciplinary collaboration efforts.

The UC Davis Eye Center faculty was delighted to be joined at the podium by their colleagues from the Department of Neurology and Internal Medicine. Dr. Steven Brass, Director of the Neurology Sleep Clinical Program, reviewed with us the current screening protocols and treatment modalities for obstructive sleep apnea and joined the Eye Center faculty in discussing the known associations



between ocular disease and sleep apnea. Dr. Pamela Prescott, Professor of Endocrinology, Diabetes, and Metabolism, discussed both the management of diabetes mellitus and thyroid disease. Finally, Dr. Happy Chan from the Division of Rheumatology gave a wonderful overview on newer biologic therapies for

systemic immunosuppressive agents. Each of these guest speakers was part of a panel (including faculty from the Eye Center) who helped review the ocular manifestations and management of these important diseases.

The keynote speaker for this year's Symposium was Dr. Victor Perez



from the Bascom Palmer Eye Institute in Miami, Florida. Dr. Perez's keynote address was entitled, "Graft versus Host Disease After Allogenic Hematopoietic Stem Cell Transplants: Can we prevent ocular complications?" He shed light on the many challenges that we as ophthalmologists face in the management of patients with graft versus host disease.

The 2014 UC Davis Eye Center Napa Symposium was a great success. We thank everyone who came and participated. We look forward to seeing everyone again May 15-17, 2015 for the 38th Annual Symposium.

**1** Left to right: Dr. Jeff Willis, Dr. Peter Wu, Dr. Syed Khaderi and Dr. Sam Lee

**2** Former and Current residents

**3** Left to right: Dr. Rory Allar, Dr. Jamie Brandt, Dr. Michele Lim, Mr. Christopher Sanders, Dr. Jeffrey Caspar and Ms. Lori Collins

**1** Dr. Hai Tong, Dr. Kingsley Okafor and Dr. George Watson

**2** Dr. Pamela Prescott, Dr. Mark Mannis and Dr. Victor Perez

**3** Mrs. Kimber Chavez, Ms. Christine Parvin , Dr. Robert Miller, Mrs. Nora Moore-Jimenez and Dr. Bradley Sandler

# The Femtosecond Laser for Cataract Surgery at UC Davis

Jeffrey J. Caspar, M.D.



The UC Davis Eye Center recently became the first University on the west coast to begin performing femtosecond laser assisted cataract surgery with the Alcon LenSx™ laser. The first case was performed on June 18th at the Same Day Surgery Center. Currently Drs. Caspar and Li are using the laser for selected patients who would like to take advantage of this new technology.

A cataract is a clouding of the natural human lens that typically occurs with age. Cataracts can also be congenital or may form due to diabetes, trauma or steroid use. Cataracts cause progressive blurring of the vision, often accompanied by halos and glare at night and affect more than 22 million Americans, with that number expected to rise to 30 million by 2020.

The only definitive treatment for cataracts is surgery. Cataract surgery is traditionally performed through small incisions made with metal or diamond scalpels. The front capsule of the cataract is then opened by creating a circular tear using specialized surgical instruments. The surgeon then employs an ultrasonic device to break up the cataract and remove it thru the small incision. In place of the clouded lens that has been

removed, the surgeon implants an artificial lens. This technique, used since the early 1980's, is highly successful but relies on the surgeon's ability to create very precise, reproducible incisions and a well centered, round opening in the anterior capsule of the lens.

The LenSx™ laser incorporates an imaging system that produces real-time images of the eye as well as cross-sectional pictures that show the thickness of the lens. The cross-sectional images help the surgeon program the depth of the cuts. With the system programmed, a laser then fires pulses in femtoseconds (one millionth of one billionth of a second) that generate strings of gas bubbles that cut the anterior capsule, help break up the cataract and create the incisions with near-perfect precision.

The laser can be used to create the incisions used for the cataract surgery, to open the front capsule of the cataract and to fragment the cataract into small pieces that are then aspirated. It can also treat astigmatism by making precise partial thickness arc shaped incisions--all without use of a scalpel blade.

Studies have shown that the LenSx™ laser produces a more precise, better-centered opening in the capsule of the cataract and a significant reduction in the amount of ultrasonic energy required to remove the cataract. This should result in better visual outcomes.

"The LenSx laser allows us to perform many of the more delicate steps of cataract surgery that we used to perform manually, with laser precision, with the goal of improving vision without glasses", says Jeffrey Caspar, M.D. who, along with Dr. Jennifer Li, is now performing the surgery. "This is a quantum leap forward in cataract surgery that I believe will be as significant as the change to small incision surgery was in the 1980's. In the future, I believe, femtosecond lasers will become the standard method of performing cataract surgery."

Currently the laser is being used to treat astigmatism when performing cataract surgery, as well as with advanced technology lens implants such as toric and multifocal lenses. Up to 80 percent of patients undergoing cataract surgery may be candidates for this technique.

**Fully automated, fully customized, faster refractive cataract procedures**



The LenSx® Laser System automates and customizes many of the most difficult steps in refractive cataract surgery, for a faster, streamlined procedure.

- Designed to reduce overall procedure time
- Reduces laser time by 33%
- Facilitates simple, easy patient docking

## LEADERSHIP

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**Mark J. Mannis, M.D., F.A.C.S.**  
Professor, Cornea, External Disease, Chair  
Research Interests:  
Corneal transplant technology, eye & skin diseases, and artificial corneas



**Michele C. Lim, M.D.**  
Professor, Glaucoma  
Vice-Chair, Medical Director  
Research Interests:  
Glaucoma patient compliance focusing on medication adherence



**Esther S. Kim, M.D.**  
Professor, Comprehensive Ophthalmology Director, Optometric Services  
Research Interests:  
Improvement of technology in cataract surgery



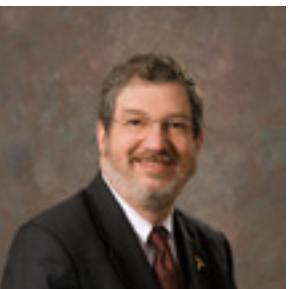
**Jennifer Li, M.D.**  
Assistant Professor, Cornea, External Disease and Refractive Surgery  
Research Interests:  
Endothelial keratoplasty and keratoprosthesis surgery

## FACULTY

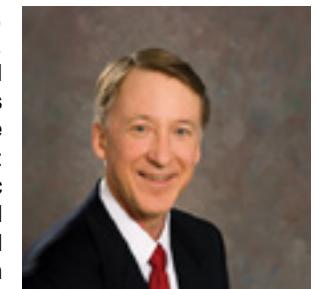
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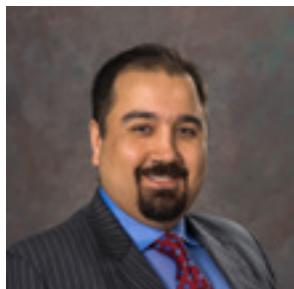
**Annie K. Baik, M.D.**  
Associate Professor,  
Glaucoma  
Veterans Administration,  
Mather  
Research Interests:  
Emerging glaucoma surgical techniques, patient education



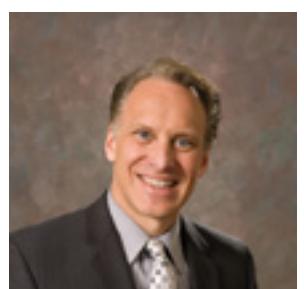
**James D. Brandt, M.D.**  
Professor, Glaucoma  
Director, Glaucoma Service  
Research Interests:  
Nanotechnology for innovation in glaucoma treatments



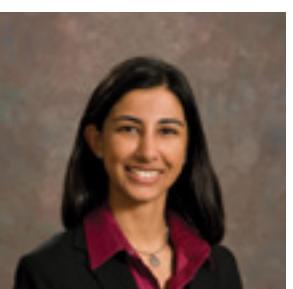
**Lawrence S. Morse, M.D., Ph.D.**  
Professor, Vitreo-retinal Surgery and Uveitis  
Director, Retina Service  
Research Interests:  
Treatments for diabetic retinopathy, age-related macular degeneration and retinal degeneration



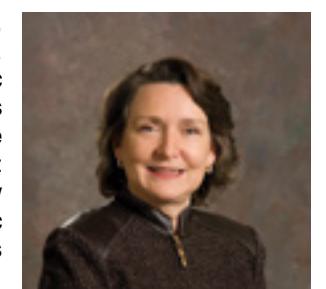
**Ala Moshiri, M.D., Ph.D.**  
Assistant Professor,  
Vitreoretinal Surgery  
Research Interests:  
Genetic Disease.



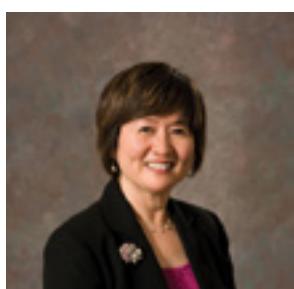
**Jeffrey J. Caspar, M.D.**  
Professor, Comprehensive Ophthalmology and Refractive Surgery  
Director, Residency Program  
Research Interests:  
Cataract surgery after refractive surgery and new techniques for cataract extraction



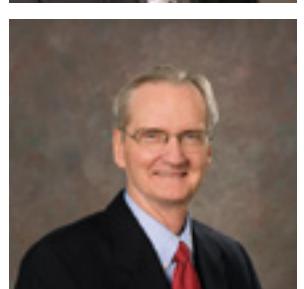
**Nandini Gandhi, M.D.**  
Assistant Professor, Pediatric Ophthalmology and Strabismus  
Research Interests:  
International ophthalmology and curriculum development abroad



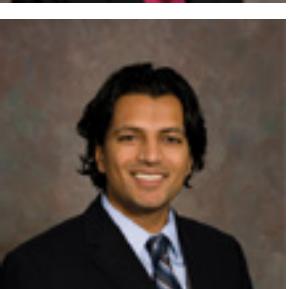
**Mary A. O'Hara, M.D., F.A.C.S., F.C.A.P.**  
Professor, Director, Pediatric Ophthalmology and Strabismus Service  
Research Interests:  
Development of new technology in pediatric strabismus



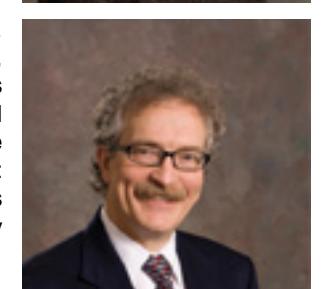
**Susanna S. Park, M.D., Ph.D.**  
Professor, Vitreo-retinal Surgery  
Research Interests:  
Age-related macular degeneration, proton beam treatments, and stem cell therapies



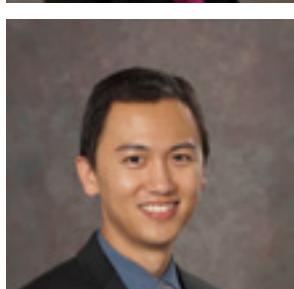
**John L. Keltner, M.D.**  
Distinguished Professor,  
Chair Emeritus,  
Neuro-Ophthalmology Research Director  
Research Interests:  
The effects of multiple sclerosis and cancer on vision



**Syed Khizer Khaderi, M.D., M.P.H.**  
Assistant Professor, Neuro-Ophthalmology  
Research Interests:  
Genetic diseases of the optic nerve and visual psychophysics



**Ivan R. Schwab, M.D., F.A.C.S.**  
Professor Emeritus, Cornea, External Disease and Uveitis  
Director, Cornea, External Disease Service  
Research Interests:  
Limbal stem cell transplants and comparative anatomy



**Glenn C. Yiu, M.D., Ph.D.**  
Assistant Professor  
Professor, Vitreo-retinal Surgery  
Research Interests:  
Neuro-regeneration, retinal cell biology, ocular imaging

## OPTOMETRISTS



Thomas B. Barnes, O.D., M.S.,  
F.A.A.O.  
Principal Optometrist



Melissa Barnett Erickson, O.D.,  
F.A.A.O.  
Principal Optometrist



Brooke S. Chang, O.D.  
Senior Optometrist



Larisa Johnson-Tong, O.D.,  
F.A.A.O.  
Senior Optometrist



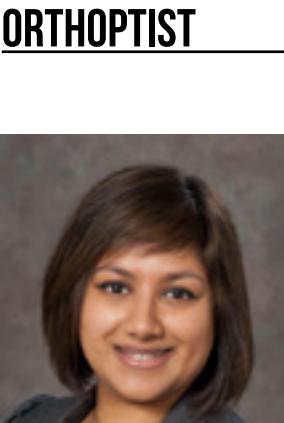
Hai Tong, O.D.  
Senior Optometrist



Marcia Nearing, O.D., F.A.A.O.  
Senior Optometrist



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



Tania Hashmi, B.Med.Sci.  
Orthoptics

## ORTHOPTIST

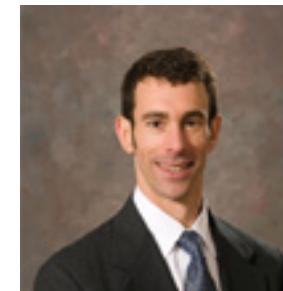
## VISION SCIENCES



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



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



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



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



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



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



Christopher J. Murphy, D.V.M.,  
Ph.D.  
Professor, Comparative  
Ophthalmology  
Research Interests:  
Bio-physical cueing and  
modulation of cell behaviors



Charles E. Thirkill, Ph.D.  
Adjunct Professor Emeritus,  
Immunology & Biology  
Research Interests:  
Ocular immunology, retinal  
and optic nerve imaging  
techniques



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 Researcher,  
High Resolution Retinal  
Imaging  
Research Interests:  
Retinal and optic nerve imaging  
techniques

## **VISION SCIENCES CONTINUED**

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**Min Zhao, M.D., Ph.D.**  
Professor, Regenerative Cures  
Research Interests:  
The role of endogenous electric fields to stimulate cell migration, corneal wound healing and regeneration of retinal degeneration



## **RESIDENTS**

---



**Annamieka Leary, M.D.**  
**Third Year Resident**



**Shabnam Taylor, M.D.**  
**Third Year Resident**



**Jeffrey Willis, M.D., Ph.D.**  
**Third Year Resident**



**Peter Wu, M.D.**  
**Third Year Resident**

## **FELLOWS**

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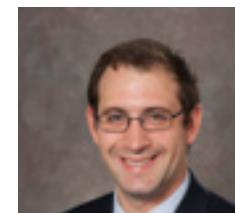
**J. Edie DeNiro, M.D.**  
**Clinical Glaucoma Fellow**



**Mazen Y. Choulakian, M.D.**  
**Clinical Cornea Fellow**



**Elad Moisseiev, M.D.**  
**Clinical Retina Fellow**



**Senad Osmanovic, M.D.**  
**Clinical Retina Fellow**



**Nathaniel Gebhard, M.D.**  
**Second Year Resident**



**Kimberly Gokoffski, M.D., Ph.D.**  
**Second Year Resident**



**Natasha Kye, M.D.**  
**Second Year Resident**



**Kingsley Okafor, M.D.**  
**Second Year Resident**



**Sumeer Thinda, M.D.**  
**Clinical Retina Fellow**



**Sam Abbassi, M.D.**  
**First Year Resident**



**Jolene Rudell, M.D., Ph.D.**  
**First Year Resident**



**Rachel Simpson, M.D.**  
**First Year Resident**



**Ilana Traynis, M.D.**  
**First Year Resident**