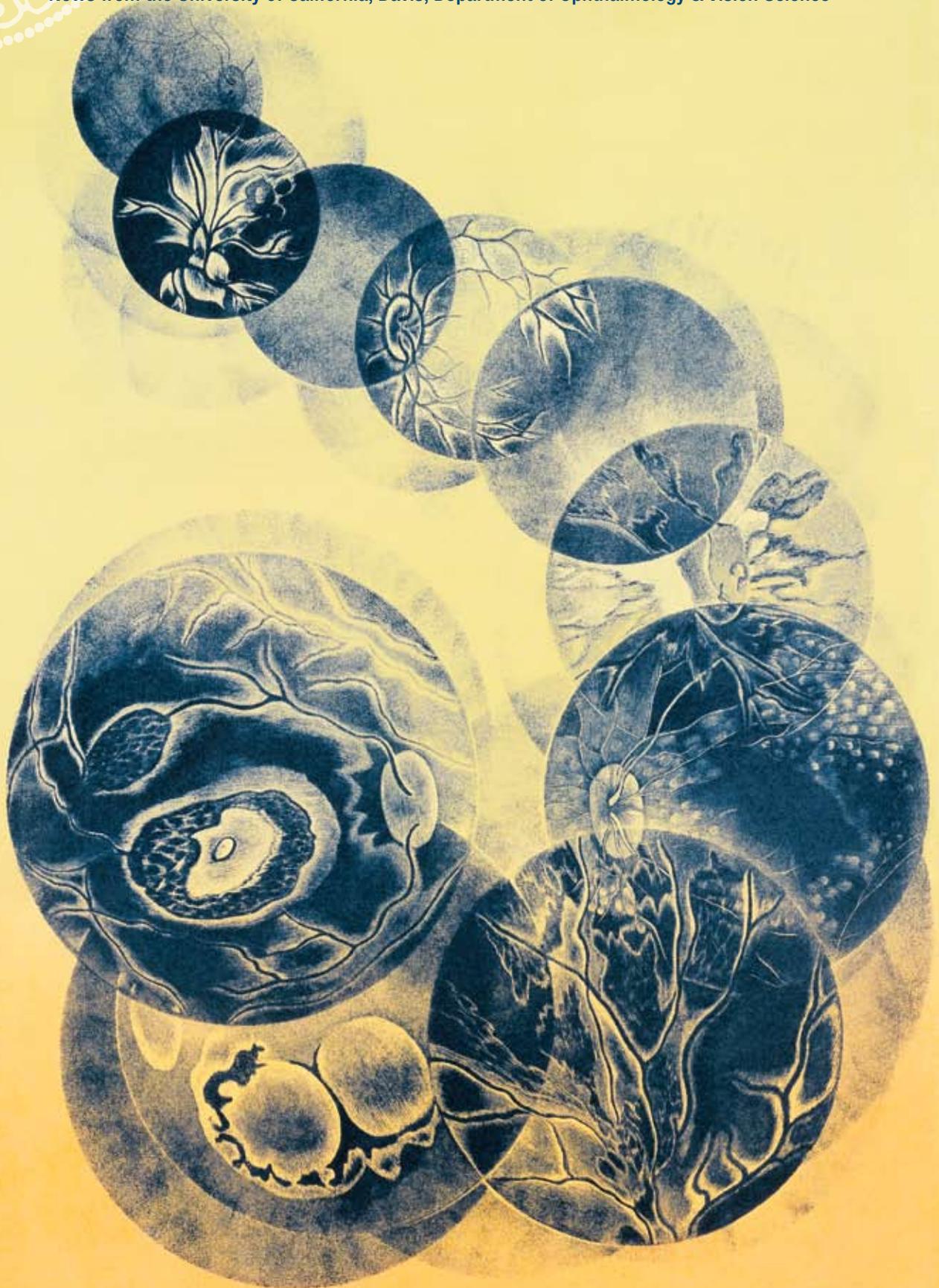
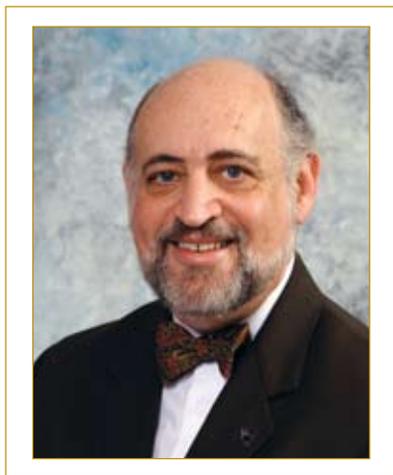


Volume 5, No. 1 • Fall 2007

enVISION

News from the University of California, Davis, Department of Ophthalmology & Vision Science





by Mark J. Mannis, M.D.

TOWN & GOWN:

A Case for Synergy

Communities in which there is an academic medical institution as well as a community of private practitioners face a unique set of opportunities and challenges. How many times have we heard about the “town vs. gown” split and of competing educational events sponsored by the community and the university, or of strict segregation in referral lines based on private or academic affiliations? However, the private sector and the academic community clearly have a great deal to offer one another, and the landscape of practice is changing in a way that should bring the private practice and university sectors closer together.

Academic institutions often function to absorb the more difficult cases that would drain the resources of the private practitioner. Most university departments are equipped for administering tertiary care in cases of severe trauma, serious infection, complicated glaucomas, ocular oncology and diagnostic services that are not readily available in the private office. On the other hand, teaching institutions are bound by their mission of education—often rendering the care they give more costly and significantly less efficient from

the standpoint of care delivery. The private sector, on the other hand, has done much more to master the art of care delivery in a cost effective and efficient fashion. Moreover, unencumbered by the limitations and bureaucracy of university systems, private practitioners have been able to make significant advances in new technology often before the academic centers.

Given that each sector of ophthalmology renders different kinds of care to different populations and has developed expertise in diverse areas of our specialty, there is clearly room for synergy in patient care management, community education, and residency training.

The external forces on us as ophthalmologists are also of increasing concern. We are faced with steadily diminishing reimbursements (now linked to our outcomes); an expanding pool of patients without funding or with funding sources that do not cover our costs; and aggressive encroachment on our specialty by organized optometry. These forces should drive us together not apart. Hand in hand, the private sector and the university need to represent ophthalmology through our state and national organizations to stem the loss of financial support from third party payors and the government and to ensure that medicine and surgery are practiced by physicians. The days of town

vs. gown are no longer feasible if we are to maintain our professional identity and our financial integrity.

UC Davis Department of Ophthalmology & Vision Science had its roots in the private sector. Our first department chair was in private practice throughout his career, and we have always maintained a close working relationship with private practitioners in our community, taking care to respect boundaries and to provide enhancement of community eye care. Nonetheless, the aggressive onslaught of managed care, the external pressures of organized optometry, and the steadily diminishing compensation for our services have succeeded in fractionating our eye care community into self-absorbed units. It is clear that we, like other communities across our country, can no longer afford this externally induced isolationism.

As the department enters its 40th year serving Sacramento, Northern California, and the Western United States, we look toward a time of new cooperative synergy, when the community practitioner and the university academic will join hands to enhance patient care, to broaden resident education, and to safeguard the noble specialty that has given us and our patients so much that is good.

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Managing Editors

Mark J. Mannis, M.D., *Chair*
Ernest Phinney

Contributing Editors

Martha Barber
Barbara Holderreed
Diane Weeks

Contributors

Bob August, R.N.
Marie Burns, Ph.D.
Mark J. Mannis, M.D.
Mary A. O'Hara, M.D.
Ernest Phinney
David G. Telander, M.D., Ph.D.

UC Davis Health System

Public Relations

David Ong

Production Manager

Bob August, R.N.

Photography

Bob August, R.N.
Bhupinder S. Dhillon
Emi Manning

Cover Artwork

"Uveitis" Original Artwork
by Cecelia Suzuki,
São Paulo, Brazil

Design/Layout

Carrie Dennis Design

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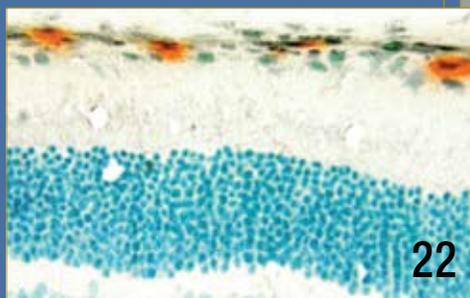


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JOSEPH T. ZEITER, M.D.



On any given weekend, you might find Joe Zeiter cruising over the countryside on his motorcycle, enjoying the speed and exhilaration of riding his bike in the Northern California valley. A seasoned and enthusiastic foreign traveler, a master of several languages, a skilled surgeon, and a talented businessman, Joe is a personality with many interesting facets. But it doesn't take long into a conversation with him before he turns to his first love—the practice of clinical ophthalmology.

Born into a family of Lebanese extraction in Venezuela, Joe came to the U.S. at age 13 starting in the 8th grade in a Stockton high school not speaking any English. He excelled and matriculated at UC Davis as an undergraduate. He then went to medical school in Guadalajara for a year and subsequently joined the School of Medicine at UC Davis in 1973. Fortunately, his uncle Henry, the ophthalmological patriarch of the Zeiter family, as well as his medical school advisor, Jerry Portney—first full time Chair of the Department of Ophthalmology at

UCD—guided him into ophthalmology, a direction that he has not regretted for a moment over almost 30 years of clinical practice.

Uncle Henry Zeiter had started an ophthalmology practice in Stockton in 1963 after completing his residency in Detroit. While growing up in Stockton, Joe was broadly exposed to medical and surgical eye care and decided early that he wanted to do surgery of some type. Ultimately deciding on ophthalmology because of its unique and delicate technical challenges and the huge impact the surgery had on people's lives, Joe entered the residency training program at UCD and went into practice with his uncle in 1981 in Stockton.

He was the first ophthalmologist to do outpatient surgery in Stockton in 1983, establishing the first outpatient surgery center in the city. A new outpatient surgery center was opened in 1989. Henry and Joe were then joined by Henry's son, John Henry Zeiter, in 1991 expanding the practice with offices in Lodi, Manteca, Tracy, and Sonora. The practice was

later joined by Richard Wong and most recently by John Canzano, also an alumnus of UC Davis Ophthalmology.

If asked what his proudest professional accomplishment is, Joe answers without hesitation that it is the practice he has built, a practice that has provided quality care for several generations of people in the San Joaquin Valley. His face lights up when he talks with pride about the “art of it.”

Melding his love of ophthalmology with his love of travel, Joe has taught phacoemulsification surgery around the world through the Lions Club, SEE International, and Orbis, visiting Bolivia, Mexico, Lebanon, and Bulgaria among other countries. But outreach from his practice has also touched his home region with the establishment of “Su Salud” — A nation-wide health program with which his mission cataract project is affiliated. For this annual project, he recruited local oph-

thalmologists to screen for and perform cataract surgery at no charge for patients who could not afford these services.

Joe is the proud father of Elisa, age 26 who is currently applying for nursing school with the goal of becoming a nurse anesthetist, and Joseph, a senior medical student and future ophthalmologist at Wayne State University.

With the Zeiter Eye Clinic flourishing, most recently with the establishment of a new refractive surgery center, Joe has found the need for personal reinvigoration. Although he has no plans to stop practicing ophthalmology, he now takes one week a

month off during which he enjoys hunting, fishing, scuba diving, power boats, and of course, his motorcycle. He continues to add to his life as a polyglot with English, Spanish, Arabic, Italian, and French under his belt.

Joe doubts that he will ever leave ophthalmology completely. Another five or six years of surgical practice and the promise of young "Joey" joining the dynasty will leave him with plenty to do.

And of his experience in the Department of Ophthalmology, Zeiter says, "UC Davis changed my life." He came to the U.S., a penniless immigrant,

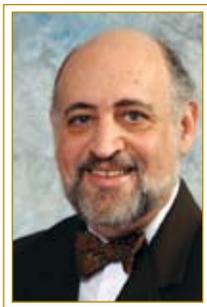
working 30 hours a week at a Stockton lumber company while going to school. His training in the Department of Ophthalmology equipped him with the tools to craft a stunning career.

Now, he says, he wants to give back to Davis, and he has done that too with a commitment of \$100,000 from the Zeiter Eye Medical Group (partners Henry Zeiter, Joe Zeiter, John Zeiter and John Canzano, MDs) for the UC Davis Eye Center project. Joe says, "We're thrilled to have been able to step forward, provide some seed money for the project, and, hopefully, use our gift to draw the attention of our fellow alums to the Eye Center plans starting to take shape."



And of his experience in the Department of Ophthalmology, Zeiter says, "UC Davis changed my life."

OPHTHALMOLOGISTS



Mark J. Mannis, M.D., F.A.C.S.
*Professor and Chair, Cornea, External
 Disease and Refractive Surgery*



Duva J. Appleman, M.D.
*Assistant Professor, Glaucoma,
 Veterans Administration, Mather*



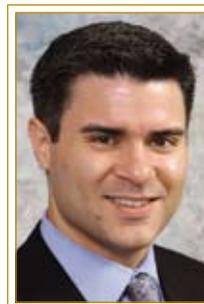
James D. Brandt, M.D.
*Professor, Glaucoma,
 Director, Glaucoma Service*



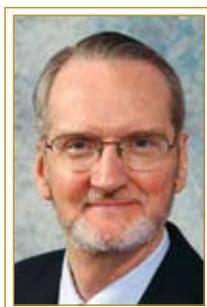
Jeffrey J. Caspar, M.D.
*Associate Clinical Professor, Comprehensive
 Ophthalmology and Refractive Surgery,
 Residency Program Director*



Vahid Feiz, M.D.
*Assistant Professor, Cornea,
 Director, Refractive Surgery, External
 Disease and Refractive Surgery*



Francisco J. Garcia-Ferrer, M.D.
*Associate Professor, Cornea, External
 Disease and Refractive Surgery,
 Veterans Administration, Mather*



John L. Keltner, M.D.
*Professor, Neuro-Ophthalmology,
 Research Director*



Esther S. Kim, M.D.
*Associate Clinical Professor,
 Comprehensive Ophthalmology,
 Director, Optometric Service*



Lily Koo Lin, M.D.
*Assistant Professor,
 Oculoplastic Surgery*



Michele C. Lim, M.D.
*Associate Professor, Glaucoma,
 Medical Director*



Linda J. Margulies, M.D.
*Clinical Professor, Vitreoretinal Disease,
 Veterans Administration, Martinez*



Lawrence S. Morse, M.D., Ph.D.
*Professor, Vitreoretinal Surgery and Uveitis,
 Director, Retina Service*



OPHTHALMOLOGISTS



Mary A. O'Hara, M.D., F.A.C.S., F.C.A.P.
*Professor, Pediatric Ophthalmology
and Strabismus*



Susanna S. Park, M.D., Ph.D.
Associate Professor, Vitreoretinal Surgery



Mark I. Rosenblatt, M.D., Ph.D.
*Assistant Professor, Cornea, External
Disease and Refractive Surgery*



Alan M. Roth, M.D.
Professor Emeritus, Ophthalmic Pathology



Ivan R. Schwab, M.D.
*Professor, Cornea, External Disease
and Uveitis, Director, Cornea Service*



David G. Telander, M.D. Ph.D.
Assistant Professor, Vitreoretinal Surgery

OPTOMETRISTS



Brooke S. Chang, O.D.
Senior Optometrist



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



Crista M. Corbett, O.D., F.A.A.O.
Senior Optometrist



Melissa Barnett, O.D., F.A.A.O.
Senior Optometrist



Marcia Y. Nearing, O.D.
Senior Optometrist



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

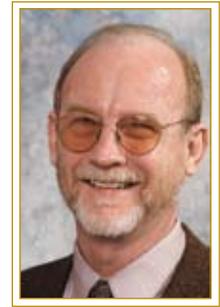
VISION SCIENTISTS



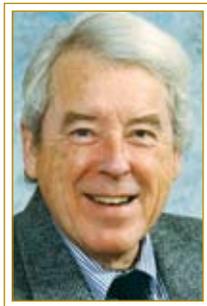
Leo M. Chalupa, Ph.D.
*Professor and Chair, Visual Developmental
 Neurobiology*



Stacey S. Choi, Ph.D.
*Assistant Adjunct Professor, High
 Resolution Retinal Imaging*



Leonard M. Hjelmeland, Ph.D.
Professor, Biochemistry



Charles E. Thirkill, Ph.D.
*Associate Adjunct Professor,
 Ocular Immunology*



John S. Werner, Ph.D.
Professor, Visual Psychophysics



Robert J. Zawadzki, Ph.D.
*Assistant Professor, High Resolution
 Retinal Imaging*

VOLUNTEER CLINICAL FACULTY

Duva Appleman, M.D.
 Barbara J. Arnold, M.D.
 Amin Ashrafzadeh, M.D.
 Kevin A. Beadles, M.D.
 Craig E. Berris, M.D.
 John Canzano, M.D.
 Ronald J. Cole, M.D.
 Byron H. Demorest, M.D.

Francisco Garcia-Ferrer, M.D.
 Tyrone Glover, M.D.
 Daniel M. King, M.D.
 Philip L. Levy, M.D.
 Linda Margulies, M.D.
 Robert B. Miller, M.D.
 Robert E. Nasser, M.D.
 Jonathan P. Perlman, M.D.

James B. Ruben, M.D.
 Denise Satterfield, M.D.
 Mithlesh C. Sharma, M.D.
 Francis J. Sousa, M.D.
 Ernest F. Tark, M.D.
 John T. Tong, M.D.
 Bruce A. Winters, M.D.
 John H. Zeiter, M.D.



Welcome

LILY KOO LIN, M.D.

“I am very honored to have been chosen to join such a distinguished clinical and research faculty as we have here at UC Davis.”

Welcome to Dr. Lily Koo Lin, the newest member of the UC Davis Department of Ophthalmology & Vision Science faculty. Dr. Lin’s practice at UC Davis will focus on ophthalmic plastic and orbital surgery, which includes disorders of the orbit and lacrimal drainage system as well as cosmetic and reconstructive surgery of the eyelids and eyebrows.

In addition to her clinical practice, Dr. Lin will be actively involved in training residents, working with medical students, and pursuing her research interests in the orbital-globe relationship and trauma.

Dr. Lin received her medical training and completed her residency in ophthalmology at Harvard Medical School. She also completed an ophthalmic plastic, orbital, and reconstructive surgery fellowship at Doheny Eye Institute in Los Angeles, California. According to Dr. Lin, “I am very honored to have been chosen to join such a distinguished clinical and research faculty as we have here at UC Davis. I am looking forward to doing everything I can do to support our Department’s goals of excellent patient care and cutting edge ophthalmic research.”

Dr. Lin grew up in Cleveland, Ohio, and has spent much of her life in Boston, Massachusetts. Now a resident of Davis, Dr. Lin enjoys spending her free time with her husband and two young boys.

Faculty Profiles

ANDREW ISHIDA, PH.D.



“Dr. Ishida’s work is at the frontier of advanced retinal research being performed in the United States.”

UC Davis faculty member since 1986, Dr. Ishida joined the Department of Ophthalmology & Vision Science faculty in 2006 through a joint appointment with the UC Davis Section of Neurobiology, Physiology and Behavior. Although his ophthalmology appointment is relatively recent, he has been involved in carrying out his research program in retinal neurophysiology since coming to UC Davis.

According to Dr. John Keltner, Research Director of the UC Davis Department of Ophthalmology & Vision Science, “Dr. Ishida’s work is at the frontier of advanced retinal research being performed in the United States. We’re enormously proud to have been able to attract such a distinguished scientist to UC Davis, and we are anticipating important developments in his area of investigation in the coming years.”

Dr. Ishida’s laboratory, located on the Davis campus, examines ion currents, signaling mechanisms and excitability in adult mammalian retinal ganglion cells. The focus of this work is on the functional impact of modulating ion channel properties.

Dr. Ishida holds a doctoral degree in Biology for his work at the Jules Stein Eye Institute at the University of California, Los Angeles. In addition, he completed postdoctoral research at the National Institute for Physiological Sciences, Okazaki, Japan, and at the Ecole Normale Supérieure, Paris, France.

MARIE E. BURNS, PH.D.



Dr. Burns joined the faculty of UC Davis in 2001 as a member of the Department of Psychiatry and Behavioral Sciences and the Center for Neuroscience. She became an Alfred P. Sloan research fellow in 2002 and received an award from the E. Matilda Ziegler Foundation for the Blind (2002-2005). Dr. Burns joined the Department of Ophthalmology & Vision Science to head the Center for Visual Sciences in 2007. She is a regular member of the Biology and Disease of the Posterior Eye (BDPE) study section for the National Institutes of Health. Dr. Burns’ laboratory examines the processes by which photoreceptors generate their responses to light and the earliest physiological signs of photoreceptor damage.

FORTY YEARS OF

*1968 - 2008
Tradition*

Welcoming New Residents and Fellows

First Alta and Clyde Hammond Glaucoma Research Fellowships Awarded

Throughout these many years the Department has held fast to its original missions of excellent patient care, research, community service and teaching.

It is amazing to think that the Department of Ophthalmology & Vision Science will be celebrating its 40th Anniversary in 2008. With the help of Byron Demorest, M.D., and other community ophthalmologists, the Department was established within the School of Medicine at UC Davis in the spring of 1968. Throughout these many years the Department has held fast to its original mission of excellence in patient care, research, community service, and teaching.

With regard to teaching, it is noteworthy to mention the Department of Ophthalmology & Vision Science established the first accredited residency program within the School of Medicine at UC Davis, and in 1972, Neil Kelly, M.D., was the first graduate. During the past decades, the program has continued to grow, and we are now in our second year of four residents in each class.

Each year the Department receives close to 300 applications for residency training. From that applicant pool, UC Davis ranks high allowing us to bring top-notch candidates into the program. Our alumni have stated that the residency

program at UC Davis offers a rare and valuable opportunity to establish a close relationship with faculty and learn from expert clinicians and researchers. They are not only greatly skilled and accomplished in their fields but are also truly wonderful people. The success of our residency program is largely attributable to our dedicated faculty and our residency director, Jeffrey Caspar, M.D.

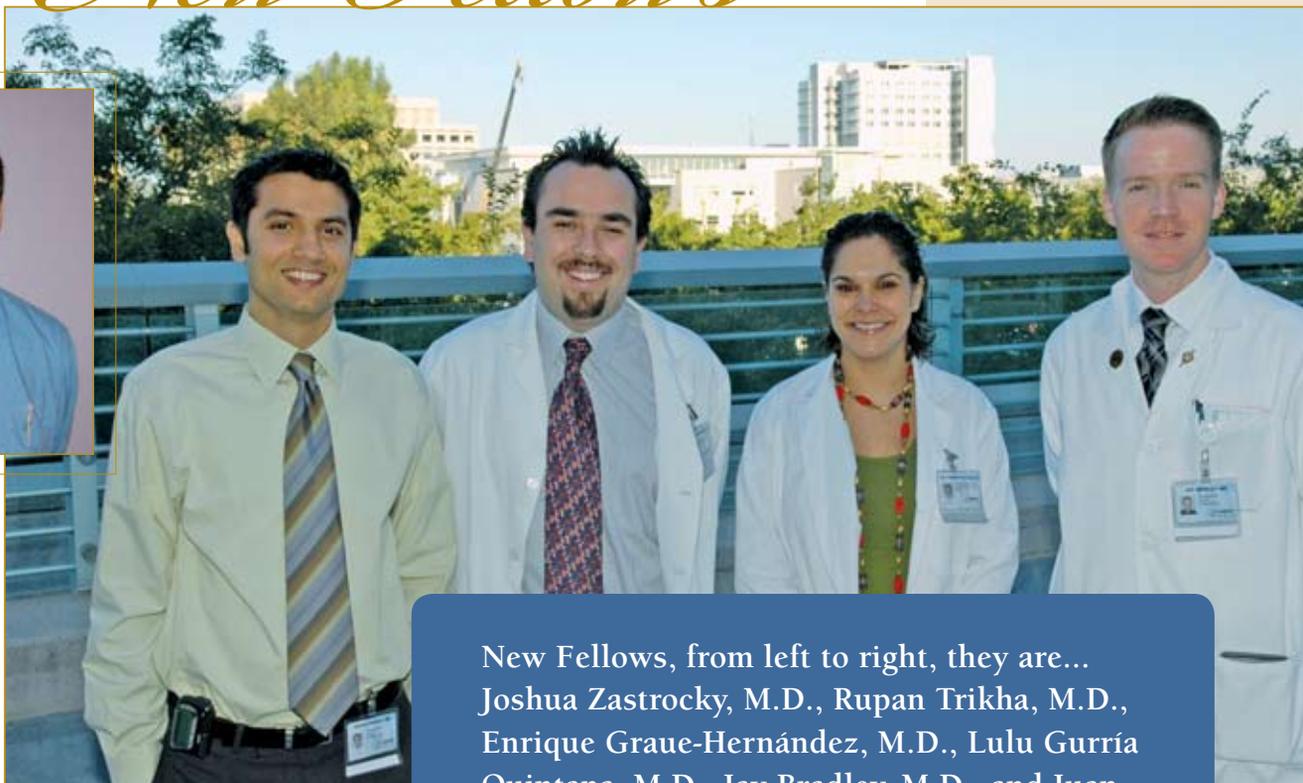
In contrast to the Department's residents, ophthalmology fellows focus on one of three professional sub-specialties: cornea, retina, or glaucoma. These fellows work intimately with faculty mentors for a one or, sometimes, two-year advanced training and research program. In 2007, the Department welcomed its first Alta and Clyde Hammond Glaucoma Research Fellows who will be focusing their fellowships on research projects to better understand and cure glaucoma. This fellowship program in glaucoma research is permanently endowed through the Alta and Clyde Hammond Glaucoma Research Fund. The Fund was established in 2005 with a gift to UC Davis made to honor the donor's parents.

New Residents



New Residents, from left to right, they are...
Christine Chiou, M.D., George Watson, M.D.,
Allison Granier, M.D., and Ashley Lesley, M.D.

New Fellows



New Fellows, from left to right, they are...
Joshua Zastrocky, M.D., Rupan Trikha, M.D.,
Enrique Graue-Hernández, M.D., Lulu Gurría
Quintana, M.D., Jay Bradley, M.D., and Juan
Carlos Izquierdo Villavicencio, M.D.

New Residents

Christine Chiou, M.D.

Undergraduate: Harvard University (Biomedical Sciences)
Medical School: UC San Diego, School of Medicine
Internship: Cedars-Sinai Medical Center in Los Angeles

Allison Granier, M.D.

Undergraduate: Whitman College, Walla Walla, WA (Philosophy)
Medical School: University of Washington, School of Medicine
Internship: Deaconess Medical Center, Spokane, WA

Ashley Lesley, M.D.

Undergraduate: Rice University, Houston, TX (Medical Studies)
Medical School: Baylor College of Medicine, Houston, TX
Internship: Naval Medical Center San Diego (2002-2003) United States Navy Flight Surgeon, Naval Air Station, Lemoore, CA and USS Carl Vinson (2004-2007)

George Watson, M.D.

Undergraduate: Ohio Wesleyan University, Delaware, OH
Medical School: State University of New York at Buffalo, School of Medicine and Biomedical Sciences
Internship: UC Davis Medical Center

New Fellows

Jay Bradley, M.D., Cornea *2007-08 Heed Foundation Fellow*

Medical School: Texas Tech University School of Medicine, Lubbock, TX
Internship: Texas Tech University Health Sciences Center, Preliminary Internal Medicine, Lubbock, TX
Residency: Texas Tech University Health Sciences Center, Lubbock, TX

Enrique Graue-Hernández, M.D., Cornea

Medical School: Universidad Nacional Autónoma de México, México City, México
Internship: Universidad Nacional Autónoma de México, Hospital General de Zona, Ensenada, Baja California
Residency: Instituto de Oftalmología Conde de Valenciana. Universidad Nacional Autónoma de México, México City, México
Fellowship: Cataract Surgery- Instituto de Oftalmología Conde de Valenciana

Lulu Ululani “Lani” Gurría Quintana, M.D.,

Alta and Clyde Hammond Glaucoma Research Fellow
Medical School: Facultad Mexicana de Medicina, Universidad La Salle, México City, México
Internship: Hospital General Dr. Manuel GEA González, México D.F., México City, México
Residency: Hospital Oftalmológico de la Luz March (03-04); Instituto de Oftalmología Conde de Valenciana

Juan Carlos Izquierdo Villavicencio, M.D.,

Alta and Clyde Hammond Glaucoma Research Fellow
Medical School: Private University of San Martín De Porres, Lima, Peru
Internship: Private University of San Martín De Porres, Lima, Peru
Residency: University of Federico Villarreal, Lima, Peru

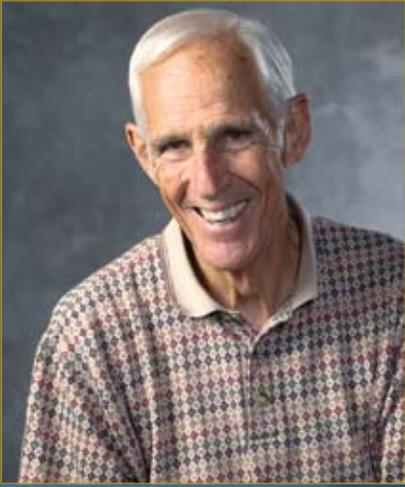
Rupan Trikha, M.D., Retina

Medical School: University of Medicine and Dentistry of New Jersey (UMDNJ), New Jersey
Internship: University Hospital, UMDNJ
Residency: Geisinger Medical Center, Danville, PA

Joshua Zastrocky, M.D.,

Alta and Clyde Hammond Glaucoma Research Fellow
Medical School: Creighton University School of Medicine, Omaha, NE
Internship: University of Nebraska Medical Center, Dept. of Internal Medicine, Omaha, NE
Residency: University of Nebraska Medical Center, Dept. of Ophthalmology, Omaha, NE





Donor Profile

JIM STRENG

Jim Streng has been one of the Sacramento community's most committed and involved residents for several decades. From his business life with contractor and developer Streng Bros. Homes, with his brother Bill Streng, to his community service as a member of the Sacramento County Board of Supervisors from 1986 to 1992, and as an active member of the Rotary Club of Sacramento, Jim, with his wife Mary Jo, has been a real force in the Sacramento community. So when his sight began to fail some twenty years ago, he decided to come to UC Davis for help.

"I believe that the American River Parkway and the UC Davis Health System are the two best things about living in Sacramento."

Originally told that he would be legally blind by his 60s, Jim came to see UC Davis' Dr. Mark Mannis. "I was starting to have trouble driving at night, so I called and got a referral to UC Davis. Dr. Mannis examined my eyes and determined that removing my cataracts would help. It did, and I credit Dr. Mannis with saving my sight." Jim is still driving and seeing very well at age 77.

Jim made his first gift to the UC Davis Health System in 1994, and he has been a donor ever since. Indeed, several years ago he and Mary Jo were doing their estate planning and decided to leave a pension fund they have to several favorite charities. The UC Davis Department of Ophthalmology & Vision Science will be one of those causes. According to Jim, "I believe that the American River Parkway and the UC Davis Health System are the two best things about living in Sacramento. I've been in the hospital six times and I chose UC Davis. I felt I would get the best care, and I really did."

Dr. Mannis, now Department Chair, is grateful to the Stengs. "They have been great supporters of the Health System as donors and Leadership Council members and of the Department especially. We are honored that they have provided for the Health System. This is a wonderful legacy for our community. With that kind of generosity from them and others, the excellence we strive for here will continue long after all of us are gone."



by Mary A. O'Hara, M.D.

CENTER FOR CHILDREN'S SIGHT RECEIVES CALIFORNIA CHILDREN'S SERVICES APPROVAL; *Programs to Begin in January 2008*

The long-awaited inauguration of the new UC Davis Center for Children's Sight has now moved significantly closer with certification by the State of California's Children's Services. The Agency has oversight responsibilities for a broad array of institutions providing health and medical services to the state's children, and its approval was necessary before the new tertiary care center at UC Davis could open for business.

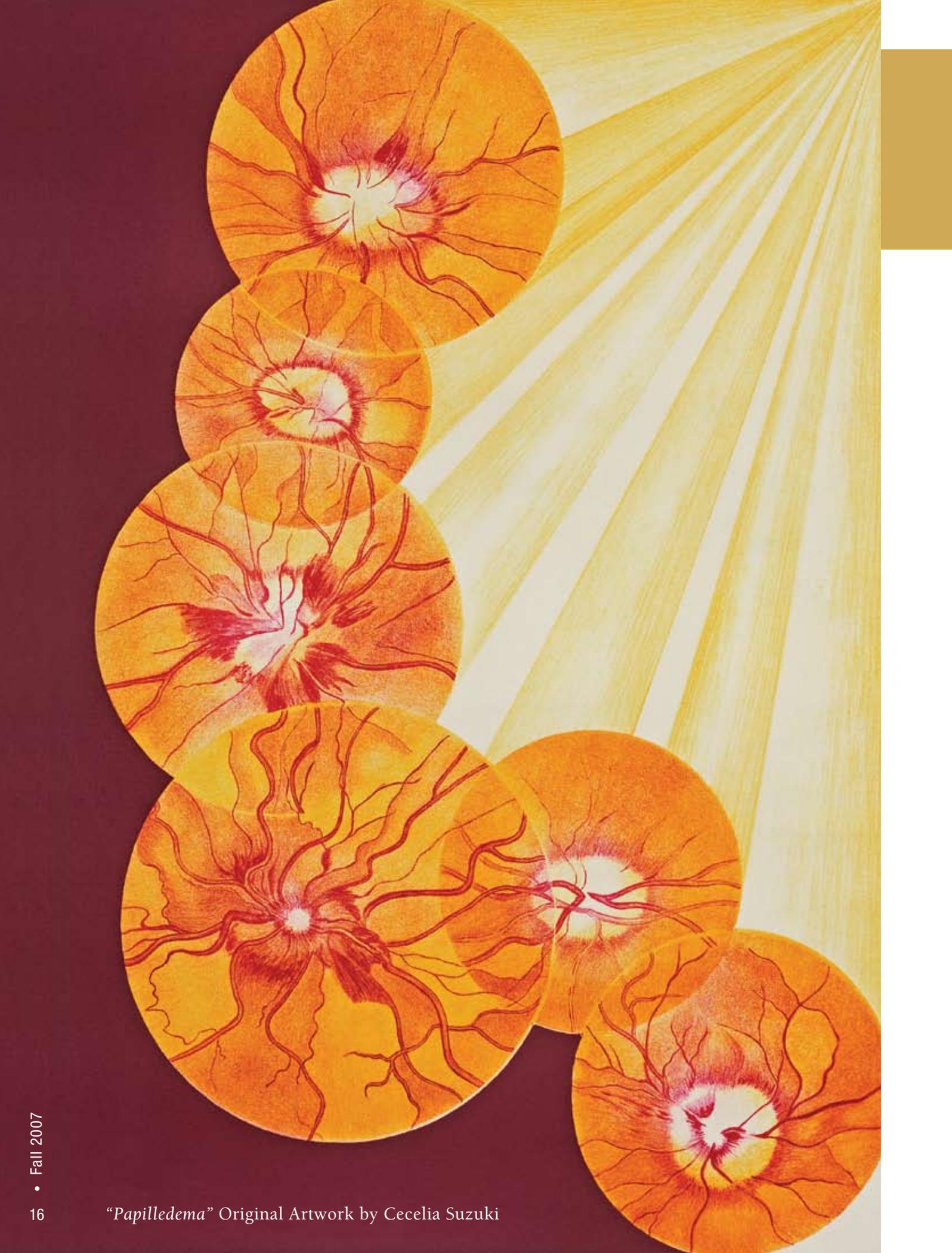
Dr. Mary O'Hara, Center Director and Professor of Pediatric Ophthalmology, is confident that the center's first patients will be enrolled beginning in January 2008. According to Dr. O'Hara, "The Center represents a great leap forward for UC Davis as we involve the many different care givers who will be necessary for the

care of the children we treat. These care givers will include not just the different university disciplines but also the families of each of our very young patients. The Center will provide a new approach to comprehensive care, and we're confident that the improved results will be substantial."

As a new program, the Center will likely accept only about 50 cases in the first year. But these cases will involve some of the most intractable forms of childhood eye disease including cataracts, glaucoma and a variety of congenital abnormalities. Frequently, the children will be very young, sometimes only days or weeks old. They will also present in many cases a multiplicity of health issues that will all need to be addressed to optimize the outcomes of treatment. Their

families will also need to be intimately involved in their treatments, so a critical member of the new Center team will be a clinical social worker charged with helping families address any issues holding back their efforts.

Dr. Mark Mannis, Department Chair, remarked that, "We are very proud of what Dr. O'Hara and her team have accomplished, and we are looking forward to being able to improve the chances of our region's youngest eye patients to see clearly and fully develop their potential. With the assistance of the McBeth and the Albrecht Foundations, we have been able to provide some kick-off assistance, but we will be looking to fund the program fully as it grows."



CENTER FOR VISUAL SCIENCES

by Marie E. Burns, Ph.D.



“Providing opportunities for meaningful interactions among vision researchers is one of my primary goals.”

UC Davis has recently created the Center for Visual Sciences (CVS), an interdepartmental organization to promote excellence in vision-related research on campus. The principal mission of the CVS is to create a culture of collaboration between basic and clinical vision research, strengthening existing individual research programs and inciting new partnerships and collaborations among UC Davis investigators and the larger national and international vision science communities. The CVS will be headed by Marie E. Burns, Ph.D, Associate Professor of Ophthalmology & Vision Science and member of the UC Davis Center for Neuroscience. Dr. Burns’ own research program investigates the physiological properties of rod and cone photoreceptors, both in terms of their normal ability to signal light and what goes terribly wrong as photoreceptors begin to die.

About her appointment as CVS director, Burns says “We all work hard, very hard, and the tendency is for each of us to focus so hard on the details before us that we don’t take

time to come up for air and look around to see what’s going on next door. Truly cutting edge research results when ideas are fertilized with new perspectives. Providing opportunities for meaningful interactions among vision researchers is one of my primary goals.”

One of the ways Burns will improve interactions is through the establishment of a central, on-line resource for researchers to seek the expertise of others on campus or to connect with others with similar research interests. It will also be the primary means of finding out about research and training opportunities for students and post doctoral invited speakers and visiting professors, as well as funding opportunities for vision-related research. The website was launched in early October: cvs.ucdavis.edu.



MARK THOMAS

CERTIFIED RETINAL ANGIOGRAPHER (CRA)

How Mark Thomas Sets the Line of Site on Ophthalmology Imaging at UC Davis.

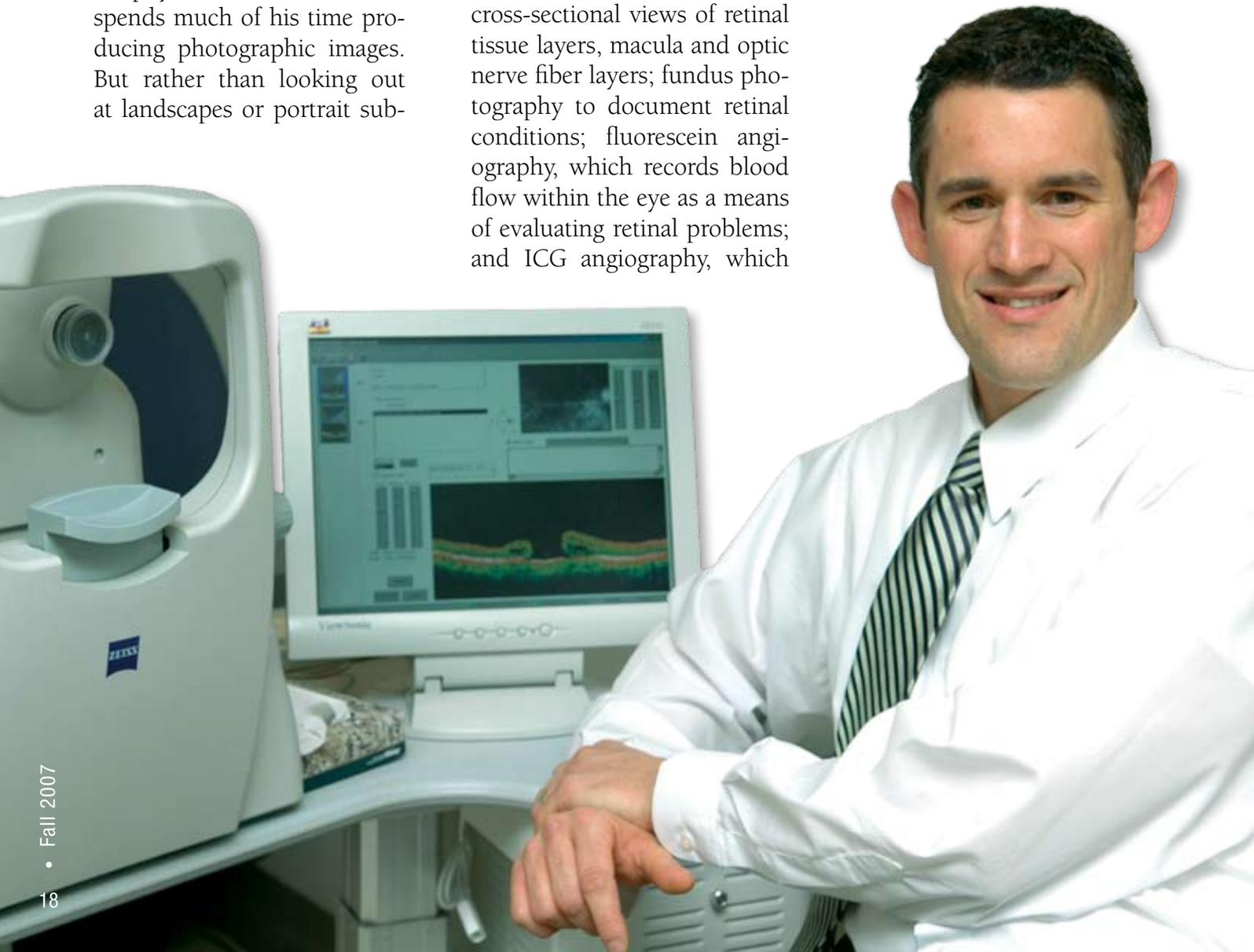
Mark Thomas is supervisor of the Diagnostic Imaging Center within the UC Davis Health System's Department of Ophthalmology & Vision Science. He is a true romanticist who likes to think of the eye as the window to the soul. To Mark Thomas, it's a portal through which to reveal indicators of physical health. Thomas spends much of his time producing photographic images. But rather than looking out at landscapes or portrait sub-

jects, he looks inward—to the interior of the human eye.

As a certified retinal angiographer (CRA), he performs diagnostic imaging procedures, including: specular microscopy to document cornea cell density prior to surgery; slitlamp biomicrography, to document pathology of the cornea, iris and lens; optical coherence tomography (OCT), to provide cross-sectional views of retinal tissue layers, macula and optic nerve fiber layers; fundus photography to document retinal conditions; fluorescein angiography, which records blood flow within the eye as a means of evaluating retinal problems; and ICG angiography, which

uses indocyanine green (ICG) dye for enhanced visualization of the choroidal layer of the retina.

These and other tests that Thomas performs can reveal not only retinal and other eye disorders, but in addition, systemic disorders including high cholesterol, hypertension and diabetic retinopathy. In the



absence of other evidence, hemorrhages in the eyes of infants can confirm that they have been criminally shaken.

The sophisticated instruments that Thomas and his colleagues use perform functions that would have been possible only through more invasive means in previous years.

“OCT produces a cross-sectional view, similar to a histology. The only other way to examine tissue in that detail would be to cut the retina out and look at it through a microscope,” Thomas said. “Our existing equipment produces a single cross section at a time, but a new piece of equipment that we are beta testing for a manufacturer visualizes tissue in a three-dimensional cube, which includes many cross sections taken at the same time. We work with numerous partners in technology, and we get a lot of patient referrals because we have the latest equipment.”

As animated as he is when discussing ophthalmic imaging, Thomas didn't dream of that field when he was a college kid. Born in England, David Mark Thomas had moved to the United States with his family at the age of 6. Because his father also was named David, he became known by his middle name to avoid confusion. He was the only one of five siblings in his family to graduate from college.

As a student at Santa Ana College and subsequently at California State University, Fullerton,

he studied advertising and marketing. After seeing the motion picture *All the President's Men*, he took an elective class in photography, thinking that could be his springboard to a career in photo journalism. But his first experience taking photos of a fatal automobile accident as a student project soured the appeal of that idea.

As he scanned newspaper ads for jobs to support himself while in college, he spotted an opening for a part-time darkroom technician at a private-practice retinal clinic. He enjoyed the work and applied for a full-time position at UC Irvine, where he was hired in July 1995 as the sole photographer in the Department of Ophthalmology. He took corneal and retinal photographs of patient, and also assisted in clinical trials. On the invitation of a colleague, he began working simultaneously as an ophthalmic photographer in clinical trials for The University of Southern California's Doheny Eye Institute in Los Angeles.

“I found contributing to society in the health-care field more rewarding than photo journalism would have been for me,” Thomas said. “But because of traffic congestion, I also realized that I didn't want to remain in the Los Angeles area, although I wanted to remain with UC.”

When the opportunity to join UC Davis presented itself in late 2003, Thomas was ready. At the time he arrived, the Department was preparing to expand its complement of diagnostic instruments. Thomas was involved in purchasing equipment for the Department and organizing its diagnostic facility. Now that he's

ushered in the conversion to digital imaging equipment, Thomas is engaged in a transition to integrate the imagery into the electronic medical record (EMR) system. The task is complicated because different pieces of equipment use proprietary data recording structures.

“We're working with a vendor that offers technology capable of capturing the data from all of the different instruments we use and integrating all of that output in a uniform wrapper that eventually will enable images to be viewed on a standard computer monitor,” explained Thomas, who was recognized with a Dean's award this spring.

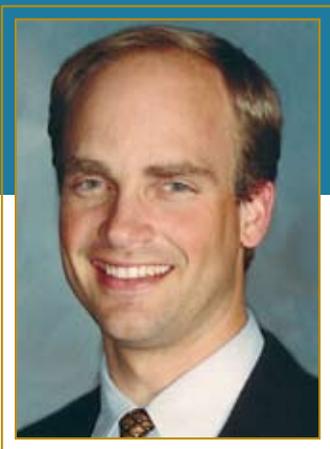
He's concurrently taking part in a collaborative project through which the family practice clinic can perform screening for diabetic retinopathy. The eyes of many diabetic patients are not checked as regularly as they should be. Through a pilot program begun in May, the family practice clinic has been supplied with screening cameras capable of capturing retinal images without dilation of the pupil.

“The test system is capable of discovering problems even before patients become aware of them. If this pilot program continues as well as it has, we plan to roll out cameras in all primary care clinics, funded through a telemedicine bond,” Thomas said.

As he looks back upon his career, Thomas concurs that the photography elective course he took was an eye-opening experience.



FROM T CELLS TO STEM CELLS



by David G. Telander, M.D., Ph.D.

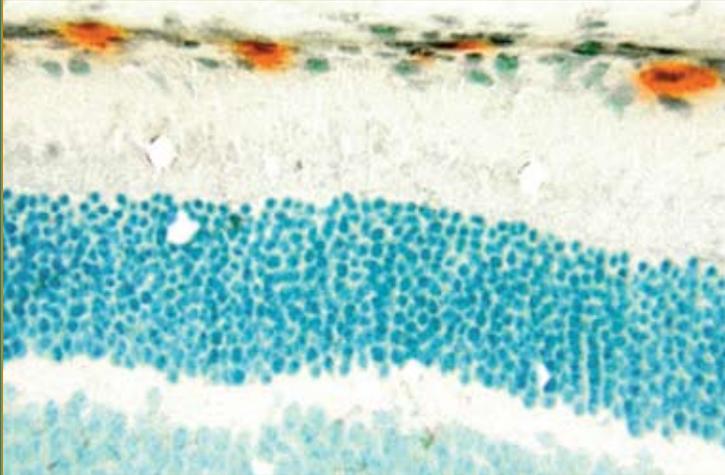
“Today at UC Davis, I am fortunate to care for those with surgical and medical problems of the retina and pursue ways to improve that care.”

My interest in medicine and science began as an undergraduate at Stanford, where I had the chance to work with scientists studying nerve growth and viruses that target the nervous system. During this same time, my passion for ophthalmology began while in India assisting a missionary eye surgeon whose work greatly impacted patients' lives. I combined my clinical interest with my scientific interest by pursuing training as an M.D./Ph.D. student in an National Institutes of Health (NIH) sponsored training program. My Ph.D. research focused on the immune system and the regulation of T cells, which I hoped to later apply to eye problems.

During my residency training in surgical ophthalmology, I became frustrated with our inability to offer hope to many patients that suffer vision loss from retinal disease and scarring. It was here that I first studied adult stem cells and

saw their potential role in regenerative treatments. The last step of my training was at UCLA (Jules Stein Eye Institute) where I was trained as a retinal surgeon. During that time I worked with scientists studying ways to prevent scarring associated with retinal surgery (proliferative vitreoretinopathy) and how the immune system may regulate this scarring.

Today at UC Davis, I am fortunate to care for those with surgical and medical problems of the retina and pursue ways to improve that care. With our participation in many clinical trials we have seen new treatments emerge for age-related macular degeneration. We have also been privileged to participate in the first promising clinical trial for the treatment of retinitis pigmentosa using ciliary neurotrophic factor (CNTF). Despite our advances, we continue to lack effective treatments for many of our patients. In California,



16% (1.7 million) of people over 45 years of age have vision loss, and in fact, it is estimated that by the year 2020 the percent of blind Americans will increase by 70% largely from retinal disease.

Now, in collaboration with my partners, Drs. Lawrence Morse and Susanna Park, and UC Davis scientists Drs. Jan Nolte and Leonard Hjelmeland, my goal has become to speed the development of stem cell treatments for the many blinding diseases that affect the retina.

Cell transplantation has been attempted for two decades without real success. Our current research is aimed at addressing gaps in our knowledge in two areas: 1) It will help us answer how the stem cells get to where they need to be to help the eye; and how do we make the cells stay in the retina and work where they need to be? As in all areas of transplantation, the immune system's reaction to the transplanted cells

will play a big role in answering these two questions. This is what we have begun to study.

To answer the question of how the cells get to where they need to be, we have found a way to study cell movement in the eye. This new model allows us to study cells as they move to the retina. Using this model, we can study how the immune system influences stem cell movement and long-term survival.

To help us in our pursuits, UC Davis has successfully recruited top stem cell scientists and built a thriving stem cell program. In addition, a new stem cell center is being built which will be a 100,000 square-foot facility scheduled to open in Fall 2008. This facility will speed the development of clinical trials using stem cells, and it will foster collaboration. In addition, the new UC Davis Clinical and Translational Science Center is an important resource for designing this type of clinical research.

Blindness or loss of vision is devastating, and more and more Americans are suffering its consequences. We believe that stem cell transplantation to the retina could prevent and in some cases reverse retinal damage. Filling these gaps in our knowledge will allow us to advance stem cell therapy for the retina and offer hope to our patients with vision loss and blindness.

UC DAVIS

By Dr. David Telander and Dr. Shagufta Yasmeen

OPHTHALMOLOGY OUTREACH



Dr. David Telander and
Shifa Clinic patient Ak Malhotra

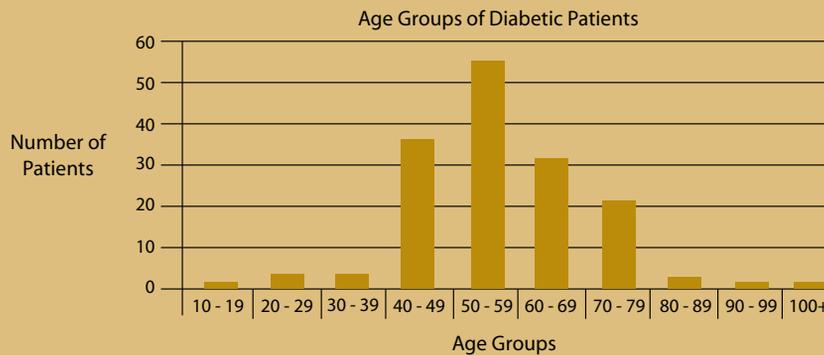
UC Davis operates 5 student-run free clinics in the Sacramento area as part of its educational and outreach mission. Many UC Davis ophthalmologists have been involved in providing care in these clinics including Drs. Lawrence Morse, Mark Mannis, Esther Kim, Susanna Park, David Telander, and many of the UC Davis ophthalmology residents and fellows. In particular, close ties have been developed with the Shifa Community Clinic (SCC).

The Shifa Community Clinic is one of the UC Davis-affiliated student-run free clinics. The Shifa Clinic's origin dates back to 1994, when in collaboration with the V Street Mosque of Sacramento, two physicians began seeing underserved patients living in the surrounding Muslim community. With the help of Medical Director, Shagufta Yasmeen, M.D., Member, Royal College of Gynecologists (MRCOG) and medical students from UC Davis, a new clinic was developed. It was officially af-

filiated with UC Davis in June 2001. With generous support from Drs. Mark Mannis and Lawrence Morse, Shifa Clinic patients have been receiving free annual/biennial screening for diabetic retinopathy and glaucoma since 2002. In Sept. 2001 the Muslim community in Sacramento also recognized The UC Davis Department of Ophthalmology & Vision Science for organizing free treatment for an immigrant child from Pakistan.

Over 50% of patients seen in the SCC have chronic medical conditions (diabetes, hypertension, and hyperlipidemia). In 2005 the Shifa Clinic conducted a survey to assess the prevalence of chronic medical conditions among the target population it serves. Survey data on health screening questions related to diabetic eye diseases, showed that only 15-18% of patients with diabetes had an ophthalmologic eye examinations in the past 2 years. About 1/3rd of the population had not had any ophthalmologic eye examinations and 40% of participants were confused and lacked awareness or

Population of Diabetic Patients Seen at the Shifa Clinic



knowledge about diabetic eye complications.

The Shifa Clinic has >1,600 patients in the clinic database and of those, 15-18% have diabetes. Given the high prevalence of diabetic patients, Shifa Clinic has an annual retinopathy screening program supported by the volunteer staff from the Department of Ophthalmology & Vision Science at UC Davis. Because of the lack of symptoms from diabetic retinopathy and glaucoma, patients often present at a later stage of disease resulting in worse outcomes. Consequently, only 30-40% Shifa Clinic diabetic patients attend the annual diabetic retinopathy screening program.

With support and collaboration from Drs. David Telander and Steven Truong from the Department, Shifa Community Clinic received the 2007 Healthy Vision Community award of \$10,000. The goals of this project are:

- a. To identify critical gaps in awareness, knowledge, attitudes, and factors influencing

treatment compliance for diabetic retinopathy and glaucoma.

- b. To increase awareness and knowledge that the risk of blindness from diabetic eye disease can be reduced with early detection and treatment.
- c. To create a comprehensive diabetic retinopathy and glaucoma screening program for a diabetic population that has no access or barriers to healthcare.
- d. To encourage people with diabetes to seek annual comprehensive eye examinations with dilated pupils by trained health care professionals, and encourage compliance with appropriate treatment regimens in preventing visual loss. The ultimate goal is appropriate behavior change and increased access into mainstream health care

for long term routine screening.

A survey was developed to assess patient awareness and knowledge of diabetic retinopathy and glaucoma. The survey was pilot-tested to assess the understandability of questions etc. The survey was then completed by patients to assess the critical gaps in knowledge about diabetic retinopathy and glaucoma at a community health fair. This health fair focused on glaucoma and diabetic retinopathy screening and vision check, and was supported by the UC Davis Department of Ophthalmology & Vision Science. Data from this survey will help guide future eye care and education to this underserved community. The UC Davis Department of Ophthalmology & Vision Science is glad to be a participant in this outreach. Note: If you are interested in learning more about the free clinics, see our web page address. The Shifa website is **shifaclinic.org** and the phone number is **916-441-6008**.

Leonard M. Hjelmeland, Ph.D.

Alizadeh P, Smit-McBride Z, Oltjen SL, **Hjelmeland LM**. Regulation of cysteine cathepsin expression by oxidative stress in the retinal pigment epithelium/choroid of the mouse. *Experimental Eye Research*. 2006 Sep; 83(3):679-87. Epub 2006 May 8.

Smit-McBride Z, Oltjen SL, Lavail MM, **Hjelmeland LM**. A strong genetic determinant of hyperoxia-related retinal degeneration on mouse chromosome 6. *Investigative Ophthalmology & Visual Science*. 2007 Jan; 48(1):405-11.

Mark J. Mannis, M.D.

Reilly CD, Lee WB, Alvarenga LS, Caspar J, Garcia-Ferrer F, **Mannis MJ**: Surgical monovision and monovision reversal in LASIK. *Cornea*. Feb; 25(2):136-8.

Mannis MJ, Holland EJ, Beck RW, Belin MW, Goldberg MA, Gal RL, Kallajian AD, Kenyon KR, Kollman C, Ruedy KJ, Smith P, Sugar J, Stark WJ; Cornea Donor Study Group: Clinical profile and early surgical compli-

cations in the Cornea Donor Study. *Cornea*. Feb; 25(2):164-70.

Lee WB, **Mannis MJ**, Mehra N, Garcia-Ferrer F: Superficial Hypertrophic Dendriiform Epitheliopathy, A Follow-up Series. *Cornea*. April; 25(3):273-279.

McDermott AM, Rich D, Cullor J., **Mannis MJ**, Smith W, Murphy CJ, Reis T: The in vitro activity of selected defense against an isolate of Pseudomonas in the presence of human tears. *British Journal of Ophthalmology*. 90:60-611.

Mannis MJ, Barnett M: Contact Lens Wear in the Rosacea Patient. *Review of Ophthalmology*. September; 13(9):82-86.

Lawrence S. Morse, M.D., Ph.D.

Gerth C, Delahunt PB, Alam S, **Morse LS**, Werner JS. Cone-mediated multifocal electroretinogram in early age-related macular degeneration: Significant progression over a long-term follow-up. *Archives of Ophthalmology*, 2006. 124:345-52.

Friberg TR, Musch D, Wilson M, Lim JI, **Morse LS**, Sinclair S, and PTAMD Group. Prophylactic Treatment of Age-Related Macular Degeneration (PTAMD) Report No. 1: 810 nm Laser to Eyes with Drusen. *Ophthalmology* 2006. 113:622-31.

Lincoln JE, Boling M, Parikh A, Yeh Y, Gilchrist DG, and **Morse LS**. Fas Signaling induces raft formation that is blocked by cholesterol depletion in human RPE cells undergoing apoptosis. *Investigative Ophthalmology & Visual Science*, 2006. 47:2172-78.

Alam S, Zawadzki RJ, Choi S, Gerth C, Park S, **Morse L**, Werner JS. Clinical application of rapid serial Fourier - domain optical coherence tomography for macular imaging. *Ophthalmology*, 2006. 113 (8):998-92.

Haan M., Klein R, Klein BE, Deng Y, Blythe LK, Seddon JM, Musch DC, Kuller LH, Hyman LG, Wallace RB, **Morse LS**. Hormone therapy and age-related macular degeneration: the Women's Health Initiative Sight Exam Study. *Archives of Ophthalmology*. 2006, Jul; 124(7):988-92.



Rosenfield PJ, Brown D, Heiser J, Boyer D, Kaiser P, Chung C, Kim R, **Morse LS**, Park SS, Truong S, Alam S. Ranibizumab for Neovascular Age-Related Macular Degeneration: *New England Journal of Medicine*. 2006, Oct; 355:1419-31.

Abraham P, Bergsma D, Carr Tyree., Drouilhet J, **Morse LS**. Effect of Ruboxistaurin on Visual Loss in Patients with Diabetic Retinopathy: *Ophthalmology*. 2006 expedited publication.

Susanna S. Park, M.D., Ph.D.

Alam S, Zawadzki RJ, Choi S, Gerth C, **Park SS**, Morse LS, Werner JS. Clinical applications of rapid serial fourier domain optical coherence tomography for macular mapping. *Ophthalmology*, 113:1425-1431, 2006.

Ivan R. Schwab, M.D.

Tanhehco TY, Eifrig DE Jr, **Schwab IR**, Rapuano CJ, Klintworth GK. Two cases of Reis-Bucklers corneal dystrophy (granular corneal dystrophy type III) caused by spontaneous mutations in the TBRB1 gene. *Archives of Ophthalmology*. 2006; 124:589-93.

Darlington, JK, Lee WB, **Schwab IR**: Corneal perforation during laser blepharoplasty. *Ophthalmic Surgery, Lasers and Imaging*. 2006. 37:327-329.

Benetz BA, Gal RL, Ruedy KJ, Cornea Donor Study Group (**Schwab IR**). Specular microscopy ancillary study methods for donor endothelial cell density determination of Cornea Donor Study images. *Current Eye Research* 2006, Apr; 31(4):319-27.

Mannis MJ, Holland EJ, Beck RW, Cornea Donor Study Group (**Schwab IR**). Clinical profile and early surgi-

cal complications in the Cornea Donor Study. *Cornea*. 2006, Feb; 25(2):164-7.

Shi B, Han B, **Schwab IR** and Isseroff R: Ultraviolet irradiation induced changes in the 27-kDa Heat Shock Protein in Human Corneal Epithelial Cells. *Cornea*, 2006; 25:948-55.

Darlington JK, Adrean SD, **Schwab IR**. Trends of Penetrating Keratoplasty in the United States from 1980 to 2004. *Ophthalmology*, 2006; 113:2171-5.

Schwab IR, Johnson, N, Harkin D: Inherent risks associated with manufacture of bioengineered ocular surface tissue. *Archives of Ophthalmology*, 2006. 124:1734-40.

Schwab IR. AJO history of ophthalmology series. Thomas Young (1773-1829). *American Journal of Ophthalmology*, 2006; 142:487.

Lee WB, **Schwab IR**: Allergy & Medication- Induced Ocular Surface Disease. In: Agarwal A. *Dry Eye: A Practical Guide to Ocular Surface Disorders*. 2006. Chapter 8, pp. 77-91.

Lee WB, **Schwab IR**. Limbal Stem Cell Disease and Management. In: Agarwal A. *Dry Eye: A Practical Guide to Ocular Surface Disorders*. 2006. Chapter 18, pp. 219-251.

Schwab IR, Pettigrew JD. With just a quiver. *British Journal of Ophthalmology*, Jan 2006; 90:10.

Schwab IR, Fritsches. K. Superlatives. *British Journal of Ophthalmology*, Feb 2006; 90:143.

Schwab IR, Jackson R. ...deceived with ornament. *British Journal of Ophthalmology*, Mar 2006; 90:261.

Schwab IR, Hart N. More than black and white. *British Journal of Ophthalmology*, April 2006; 90:406.

Schwab IR, Warrant EJ. The best of a bad situation. *British Journal of Ophthalmology*, May 2006; 90:533.



Schwab IR. Divine countenance or witches' brew? *British Journal of Ophthalmology*, Jun 2006; 90:672.

Schwab IR, Collin S. Bringing the eyes along. *British Journal of Ophthalmology*, July 2006; 90:818.

Schwab IR, Rouse G. It's the worm's turn. *British Journal of Ophthalmology*, August 2006; 90:941.

Schwab IR. From the top down. *British Journal of Ophthalmology*, September 2006; 90:1086.

Schwab IR, McMenamin P. A tale of two possums. *British Journal of Ophthalmology*, October 2006; 90:1224.

Schwab IR. Shedding light on the reflections. *British Journal of Ophthalmology*, November 2006; 90:1343.

Schwab IR. A backseat driver. *British Journal of Ophthalmology*, December 2006; 90:1447.

Lee B, **Schwab IR**. Intestinal surgery a villain? You need A vitamin. *British Journal of Ophthalmology*, 2006; 90:931-2.

John S. Werner, Ph.D.

Spillmann, L, Pinna, B & **Werner, JS**. Form-from-watercolour in perception, and old maps. In M.R.M. Jenkin and L.R. Harris (Eds.) *Seeing Spatial Form*. Oxford: **Oxford University Press**, 2006. 153-166 (plus 4 plates).

Gerth, C, Delahunt, PB, Alam, S, Morse, LS & **Werner, JS**. Cone-mediated multifocal electroretinogram in age-related macular degeneration: Progression over a long-term follow-up. *Archives of Ophthalmology*, 2006. 124, 345-352.

Devinck, F, Delahunt, P, Hardy, JL, Spillmann, L & **Werner, JS**. Spatial dependence of color assimilation by the watercolor effect. *Perception*, 2006. 35, 461-468.

Hardy, JL, Delahunt, PB & **Werner, JS**. Visual psychophysics with adaptive optics. In J. Porter, A. Awwal, J. Lin, H. Queener and K. Thorn (Eds.) *Adaptive Optics for Vision Science: Principles, Practices, Design and Applications*. 2006. New York: Wiley, pp. 363-394.

Zawadzki, RJ, Jones, SM, Zhao, M, Choi, S, Laut, S, Olivier, SS, Izatt, JA & **Werner, JS**. Adaptive optics – optical coherence tomography for in vivo retinal imaging: comparative analysis of two wavefront correctors. In V.V. Tuchin, J.A. Izatt and J.G. Fujimoto (Eds.) *Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine X*. 2006. Vol. 6079, 607908-1 – 607908-9.

Zhang, Y, Rha, J, Cense, A, Jonnal, RS, Gao, W, Zawadzki, RJ, **Werner, JS**, Jones, S, Olivier, S & Miller, DT. Motion-free volumetric retinal imaging with adaptive optics spectral-domain optical coherence tomography. In F. Manns, P.G. Söderberg and A. Ho (Eds.) *Ophthalmic Technologies XVI*. 2006. Vol. 6138, 613802-1 – 613802-7.

Zawadzki, RJ, Fuller, AR, Zhao, M, Wiley, DF, Choi, SS, Bower, BA, Hamann, B, Izatt, JA & **Werner, JS**. 3D OCT imaging in clinical settings: Toward quantitative measurements of retinal structures. In F. Manns, P.G. Söderberg and A. Ho (Eds.) *Ophthalmic Technologies XVI*. 2006. Vol. 6138, 613803-1 – 613803-11.

Zawadzki, RJ, Jones, SM, Zhao, M, Choi, SS, Laut, SS, Olivier, SS, Izatt, JA & **Werner, JS**. Adaptive optics – optical coherence tomography for in vivo retinal imaging: Effects of spectral bandwidth on image quality. In F. Manns, P.G. Söderberg and A. Ho (Eds.) *Ophthalmic Technologies XVI*. 2006. Vol. 6138, 61381X-1 – 61381X-9.

Choi, SS, Doble, N, Hardy, JL, Jones, SM, Keltner, JL, Olivier, SS & **Werner, JS**. In vivo imaging of the photoreceptor mosaic in retinal dystrophies and correlations with visual function. *Investigative Ophthalmology & Visual Science*, 2006. 47, 2080-2092.

Devinck, F, Hardy, JL, Delahunt, PB & Spillmann, L & **Werner, JS**. Illusory spreading of watercolor. *Journal of Vision*, 2006. 6, 625-633.

Shinomori, K & **Werner, JS**. Impulse response of an S-cone pathway in the aging visual system. *Journal of the Optical Society of America A: Optics, Image Science, and Vision*, 2006. 23, 1570-1577.

Devinck, F, Spillmann, L & **Werner, JS**. Spatial profile of contours inducing long-range color assimilation. *Visual Neuroscience*, 2006. 23, 573-577.

Alam, S, Zawadzki, RJ, Choi, SS, Gerth, C, Park, S, Morse, L & **Werner, JS**. Clinical application of rapid serial Fourier-domain optical coherence tomography for macular imaging. *Ophthalmology*, 2006. 113, 1425-1431.

Zhang, Y, Cense, B, Rha, J, Jonnal, RS, Gao, W, Zawadzki, RJ, **Werner, JS**, Jones, S, Olivier, S & Miller, DT. High-speed volumetric imaging of cone photoreceptors with adaptive optics spectral-domain optical coherence tomography. *Optics Express*, 2006. 14, 4380-4394.

Mizokami, Y, **Werner, JS**, Crognale, MA & Webster, MA. Nonlinearities in color coding: Compensating color appearance for the eye's spectral sensitivity. *Journal of Vision*, 2006. 6, 996-1007.

Andrew T. Ishida, Ph.D.

Lee SC, **Ishida AT**: I(h) without K(ir) in adult rat retinal ganglion cells. *Journal of Neurophysiology*, 2007; 97:3790-9.

Witkovsky P, Stell WK, **Ishida AT**: Circuits and properties of signal transmission in the retina. *Journal of Neurophysiology*, 2006; 96:509-11

John. L. Keltner, M.D.

Choi S, Doble N, Hardy JS, **Keltner JL**, Olivier S, Werner JS. In Vivo Imaging of the Photoreceptor Mosaic in Retinal Dystrophies and Correlations with Visual Function. *Investigative Ophthalmology & Visual Science*. 2006. 47 (5): 2080-2092

Levine RS, Demirel S, Fan J, **Keltner JL**, Johnson CA, Kass MA, and the Ocular Hypertension Treatment Study Group, Asymmetries and Visual Field Summaries as Predictors of Glaucoma in the OHTS. *Invest Ophthalmology Vision* 47 (9): 3896-3903

Keltner JL, Johnson CA, Anderson DR, Levine RA, Fan JJ, Cello KE, Quigley HA, Budenz DL, Parrish RK, Kass MA, Gordon MO, and the Ocular Hypertension Treatment Study Group. The Association Between Glaucomatous Visual Fields and Optic Nerve Head Features in the Ocular Hypertension Treatment Study (OHTS) *Ophthalmology* 113, (9): 1603-1612

Keltner JL, Fine SL, Abrams GW, Mondino B, Subspecialty Fellowships: Standardizing and Enhancing the Educational Experience. *Ophthalmology* 144, 2007, (4): 628

Sanchez R, Smith A, Carelli V, Sadun A, **Keltner JL**, Leber Hereditary Optic Neuropathy Possibly Triggered by Exposure to Tire Fire. *Journal of Neuro-Ophthalmology* 26 (4), 268-272

Michele, C. Lim, M.D.

Merrill KD, Suhr AW, **Lim MC**. Long-term success in the correction of exposed glaucoma drainage tubes with a tube extender. *American Journal of Ophthalmology*, 2007 Jul; 144(1):136-7. PMID: 17601438

Marie E. Burns, Ph.D.

Chan S, Rubin WW, Mendez A, Liu X, Song X, Hanson SM, Craft CM, Gurevich VV, **Burns ME**, Chen J. Functional comparisons of visual arrestins in rod photoreceptors of transgenic mice. *Invest Ophthalmol Vis Sci*. 2007. 48:1968-75.

Krispel CM, Chen D, Melling N, Chen YJ, Martemyanov KA, Quillinan N, Arshavsky VY, Wensel TG, Chen CK, **Burns ME**. RGS expression rate-limits recovery of rod photoresponses. *Neuron*. 2006. 51:409-16.

Moussaif M, Rubin WW, Kerov V, Reh R, Chen D, Lem J, Chen CK, Hurley JB, **Burns ME**, Artemyev NO. Phototransduction in a transgenic mouse model of Nougaret night blindness. *Journal of Neuroscience*. 2006. 26:6863-72.

Burns ME, Mendez A, Chen CK, Almuete A, Quillinan N, Simon MI, Baylor DA, Chen J. Deactivation of phosphorylated and nonphosphorylated rhodopsin by arrestin splice variants. *Journal of Neuroscience*. 2006. 26:1036-44.

Lily Koo Lin, MD

Koo L, Young LH. Management of Ocular Toxoplasmosis. *International Ophthalmology Clinics*. 2006 Spring; 46(2):183-93.

Koo L, Hatton MP, Rubin PAD. When is enophthalmos "significant"? *Ophthalmic Plastic and Reconstructive Surgery*. 2006 Jul-Aug; 22(4):274-7.

Koo L, Peng DH, Chang EL. Solving the mystery of the itchy eyelid. *Review of Ophthalmology*. 2006 Nov; 13(11): 131-133.

Koo L, Chang EL. Methicillin-resistant Staphylococcus aureus caruncle abscess. *Ophthalmic Plastic and Reconstructive Surgery*. 2007 Mar-Apr; 23(2):160-1.

Koo L, Hatton MP, Rubin PAD. Traumatic Blindness after a Displaced Lateral Orbital Wall Fracture. *Journal of Trauma*. 2007 May; 62(5):1288-9.

Mark I. Rosenblatt, M.D., Ph.D.

Rosenblatt MI, Azar DT. Anti-angiogenic therapy: prospects for the treatment of ocular tumors. *Seminars in Ophthalmology*. 2006. 21(3):151-60.

Sakimoto T, **Rosenblatt MI**, Azar DT. Laser eye surgery for refractive errors. *The Lancet*. 2006. 367: 1432-1447.

Yu CQ, **Rosenblatt MI**. Transgenic corneal neurofluorescence in mice: a new model for in vivo investigations of nerve structure and regeneration. *Invest Ophthalmol Vis Sci*. 2007. (Including cover illustration, In press).

Ghoghawala SY, Mannis MJ, Murphy CJ, **Rosenblatt MI**, Isseroff RR. Economical LED based, real-time, imaging of in vivo murine wound healing. *Exp Eye Res*. (In Press).

David G. Telander, M.D., Ph.D.

Truong SN, Alam S, Zawadzki RJ, Choi SS, **Telander DG**, Park SS, Morse LS, Werner JS. High resolution Fourier-domain optical coherence tomographical findings of retinal angiomatous proliferation. *Retina* 2007 Retina. 2007 Sep; 27(7):915-25.

Telander DG, de Beus A, Small K., Retinitis Pigmentosa: E-Medicine Article: <http://www.emedicine.com/oph/topic704.htm>, March, 2007

Telander DG, and D Sarraff. Cystoid macular edema with docetaxel chemotherapy and the fluid retention syndrome. *Semin Ophthalmol*. 2007 Jul-Sep; 22(3):151-3.

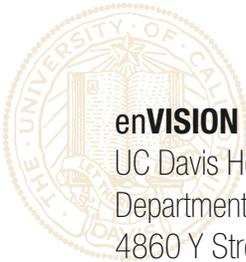
Telander DG, Holland GR, Jaroonwanichkul P, Wax MB, Van Gelder RN. Anterior chamber neovascularization associated with cryoglobulinemia. *American Journal of Ophthalmology*. 2006 Oct; 142(4): 689-90.

Telander DG, Gonzales CR. An Easy and Effective Way to Remove Residual Silicone Oil Droplets in Phakic Patients. *Retina*. 2006. Jul – Aug; 26(6):697-9

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UC Davis Health System
Department of Ophthalmology & Vision Science
4860 Y Street, Suite 2400
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