

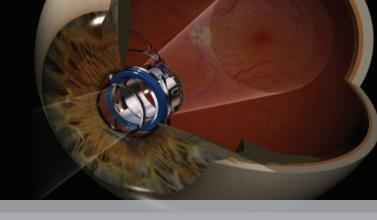
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The Implantable Miniature Telescope at UC Davis

by Jennifer Li, M.D.



Age-related macular degeneration (AMD) is a retinal disease that affects over 10 million people in the United States. As the leading cause of legal blindness in adults over the age of 60 in the United States, advanced AMD affects nearly 1.8 million Americans with 500,000 new cases diagnosed each year.

AMD affects the macula, the part of our retina that provides central vision. As macular degeneration progresses, it can lead to a decline in the ability to see fine detail and a loss of central vision in one or both eyes. For patients with advanced macular degeneration, this loss of central vision can have a significant impact on their ability to perform their daily activities, and, unfortunately, can lead to depression, increased accidents, and a diminished quality of life.

As AMD worsens, patients will frequently develop large areas of scarring in the macula and, until now, there have been no medical treatment options to offer these patients. In order to use the vision that remains in those eyes, patients will frequently rely on low vision devices such as magnifiers and telescopes. Unfortunately, these tools can be bulky and difficult to use for some patients.

The Implantable Miniature Telescope (IMT, VisionCare Ophthalmic Technologies, Saratoga, CA) is the first ever technology approved for end-stage AMD. It was FDA approved in July 2010 and the ophthalmologists at UC Davis will be among the first in the nation to begin implanting these devices in patients. The IMT is an intraocular lens, much like that which is used during cataract surgery, but instead of being a single lens, it incorporates two miniature mirrors to form a telescope that is surgically placed in the patient's eye. This design helps to magnify images 2-3 times their normal size. This larger image is then projected onto the retina for the eye to see. Patient selection for the IMT is critical and there is an extensive screening process that the doctors at UC Davis have begun to implement for potential IMT candidates. Patients 75 years or older with stable, end-stage macular degeneration and scarring in the macula may be eligible. At this time, candidates cannot have had prior cataract surgery. Most importantly, both before and after surgery, patients will work closely with a low-vision specialist to ensure that they will be able to utilize the device fully.

Early studies on the IMT demonstrate a statistically significant improvement of vision in eyes with the implanted telescope compared to control eyes. Approximately 60% of patients were able to see three or more lines on the eye chart after surgery with the IMT than prior to surgery. These early results are very promising, and we are excited to have the opportunity at UC Davis to provide this new avenue of hope for our patients with end-stage AMD. We look forward to updating you on our progress in future editions of enVision magazine.

- 1. Must be at least 75 years of age
- 2. Must have retinal findings of geographic atrophy or disciform scar with foveal involvement
- 3. Must have BCVA of 20/160 20/800
- 4. Must have evidence of a cataract in one eye
- 5. Must be willing to undergo pre-operative screening and post-operative training with a low vision therapist

For additional information on the IMT at UC Davis:

Patients can call a CentraSight Care Manager today at: 888-999-4134 between 8am and 6pm, Pacific Time. Alternatively, you may contact our CentraSight Coordinator at the Eye Center, Debbie Oppenheim at 916-734-6074.

Eligibility criteria for the implantable telescope: The patient:

UC Davis Eye Center: A Partnership with the Community

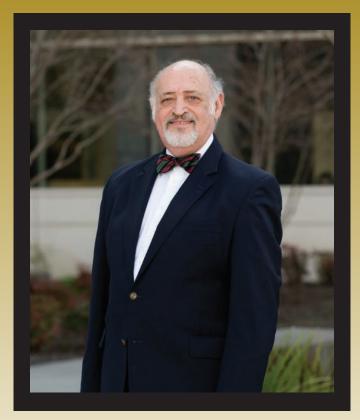
Shaking hands and partnering with the many and diverse members of our regional community has been a theme at the UC Davis Health System from its inception, and the Eye Center has endeavored to continue and advance the tradition of partnership and service to the Sacramento region.

As a public institution, especially as an academic center whose mission, in addition to patient care, includes teaching and meaningful research, UC Davis has a unique relationship to the regional community. The Health System, and by extension the Eye Center, has always positioned itself to provide the highest level and most sophisticated medical care. It has also endeavored to serve all sectors of the community from corporate leaders to the uninsured and underserved, giving the best that medicine has to offer.

This year, the Eye Center is building on this tradition of outreach. Working with the Sacramento Society for the Blind, we have embarked on a novel program that will make us the first in the region to implant a miniature telescope in the eyes of patients with end-stage macular degeneration, providing a promising new option for our patients with this disabling disease.

Further, we continue to provide volunteer screening programs for the student and community clinics, and we hope to be providing primary eye care for our UCD students on the Davis Campus as early as the fall term 2012. And the Eye Center is initiating a partnership with the local Lions Clubs to provide vision services to Sacramento's underserved by way of the Lions Club's Sight Van and community clinics.

Bringing excellence in care to your neighborhood, we have recently expanded our clinic location on Cadillac Drive to include new examining rooms and a new optical shop, while in our Roseville offices we continue to provide comprehensive



ophthalmology, glaucoma specialty care, and retina consultative services.

Many members of our notably high-quality local ophthalmic community are graduates of the UCD residency and fellowship programs and have translated the excellence of their training at UC Davis into service to the community through private practice. In this way, we remain an intrinsic part of the fabric of medical care of the region. We look forward to increasing our outreach to Sacramento and the region and to expanding partnerships with community agencies, offering the very best of vision care to our community and quality vision science to the nation.

Manie

Mark J. Mannis, MD, FACS Professor and Chair Department of Ophthalmology & Vision Science UC Davis Health System Eye Center



is published by the UC Davis Health System Eye Center. For more information about ophthalmology services and vision research at UC Davis, visit our Web site at:

www.ucdmc.ucdavis.edu/

eyecenter or call (916) 734-6435.

Managing Editor Mark J. Mannis, M.D.

Contributing Editors

Kim Angelo Barbara Holderreed Cameron Blount Ernest Phinney

Contributors

Mark J. Mannis, M.D. Jeffrey Caspar, M.D. Jennifer Li, M.D. Ernest Phinney Cameron Blount

Production Manager

Holland Adams

Photography Bhupinder S. Dhillon

Bhupinder S. Dhillon Emi Manning

Design/Layout

Steven A. Osborne

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.

Mission

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

Directory

UC Davis Health System Eye Center 4860 Y St., Suite 2400

Sacramento, CA 95817

UC Davis Eye Center Optical Shop

4860 Y St., Suite 2013 Sacramento, CA 95817 (916) 734-6300

UC Davis Medical Group, Roseville

2261 Douglas Blvd. Roseville, CA 95661

UC Davis Eye Services Cadillac Drive 77 Cadillac Dr. Sacramento, CA 95825

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

To Schedule Patient Appointments:

(916) 734-6602 (Patients - All Sites)
(916) 734-6992 (FAX)
(916) 734-6650 (Laser Vision Correction Services)











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The Implantable Miniature Telescope at UC Davis

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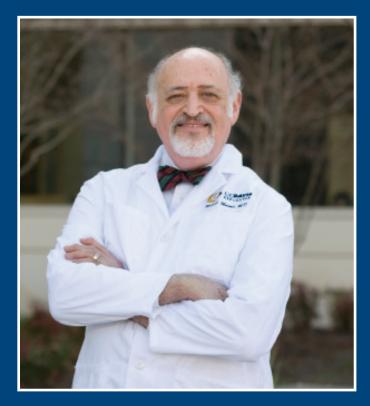
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Plan for your future and Leave a legacy for sight: The UC Davis Health System Heritage Circle

2011 UC Davis Stategic Plan

Next Issue:

Congratulations to Dr. Mark Mannis for receiving the 2011-12 Distinguished Scholarly Public Service Award! The Academic Senate bestowed this award to Dr. Mannis' at a reception on the main campus May 2nd. The next enVISION magazine will highlight Dr. Mannis⁶ award and many others that Eye Center faculty have received in recent years. Stay tuned!





Professor and Chair

Mark J. Mannis, M.D., F.A.C.S. Professor, Cornea, Chair. <u>Research Interests</u>: Corneal Transplant Technology, Eye & Skin Diseases, & Artificial Corneas.

Dr. Mannis, Professor and Chair of the UC Davis Health System Eye Center, specializes in corneal transplantation and external diseases of the eye. His residency was completed at Washington University, St. Louis, Missouri, and his cornea and external eye disease fellowship was completed at University of Iowa, Iowa City, Iowa. His research has included the development of experimental antimicrobial agents and growth factors that affect the corneal wound healing rate, skin diseases that affect the eye, and outcomes of corneal transplants and artificial corneas. Dr. Mannis has authored over 125 publications and five books on topics relating to corneal surgery and disease.





Associate Professor and Vice-Chair

Michele C. Lim, M.D. Associate Professor, Glaucoma, Vice-Chair, Medical Director. <u>Research Interests</u>: Drug delivery in glaucoma drops and patient compliance.

Dr. Lim specializes in the medical and surgical treatment of glaucoma in both children and adults. As Vice-Chair and Medical Director for the department, she oversees clinic operations. Dr. Lim completed her ophthalmology residency at UCLA's Jules Stein Institute and a fellowship at the University of Miami's Bascom-Palmer Eye Institute. Dr. Lim believes that patients and their physicians should work together as a team to achieve their treatment goals. The more information a patient has regarding his or her disease, the more involved that patient will be in their own medical care. She encourages patients to ask questions about their glaucoma eye care in order to stay informed. Her research has focused on medication adherence (whether a patient takes their medication on schedule) among glaucoma patients.



Annie K. Baik, M.D. Assistant Clinical Professor, Glaucoma, Veterans Administration, Mather. <u>Research Interests</u>: Emerging glaucoma surgical techniques, patient education.

Dr. Baik is a glaucoma specialist, treating both adults and children. She holds joint appointments at UC Davis Eye Center and the Sacramento Veterans Affairs Medical Center, Mather. After completion of her residency at University of Texas, Houston, Dr. Baik completed a glaucoma fellowship here at UC Davis. Her connection with UC Davis inspired her to return to the academic community. Dr. Baik is committed to resident education and mentorship as well as patient education and collaborative clinical care. In the past, she has presented her research at the American Glaucoma Society, and she retains an active interest in advances in the surgical management of glaucoma.



James D. Brandt, M.D.

Professor, Glaucoma, Director, Glaucoma Service. <u>Research Interests</u>: Nanotechnology for innovation in glaucoma treatments.

Dr. Brandt specializes in medical and surgical treatments of glaucoma in adults and children. His residency was completed at the University of Southern California after which he completed fellowships at Wills Eye Hospital and Harvard Medical School-Eye Research Institute. Dr. Brandt has research interests in both the clinical and basic science realms. He is actively involved in large clinical trials investigating new medical and surgical treatments of glaucoma and new technologies for diagnosing the disease. In the basic research arena, Dr. Brandt is currently collaborating with Dr. Tingrui Pan of the Department of Biomedical Engineering to develop new MEMS and Nanotechnology-based devices for the diagnosis of glaucoma.



Jeffrey J. Caspar, M.D.

Clinical Professor, Comprehensive Ophthalmology and Refractive Surgery, Residency Program Director. <u>Research Interests</u>: Improvement of techniques in cataract surgery.

Dr. Caspar is a comprehensive ophthalmologist, treating a wide variety of ophthalmic disorders. He specializes in small-incision cataract surgery using the latest technologies, including multifocal and astigmatism-correcting lens implants. He also specializes in laser vision correction, including custom and conventional LASIK, PRK, LASEK and clear-lens extraction. His research involves cataract surgery after refractive surgery and new techniques for cataract extraction. Dr. Caspar helps train other ophthalmologists in advanced cataract surgery techniques and refractive surgery. Dr. Caspar completed his residency at UC Davis.



Francisco J. Garcia-Ferrer, M.D.

Associate Clinical Professor, Cornea, External Disease and Refractive Surgery, Veterans Administration, Mather. <u>Research Interests</u>: New technology for refractive surgery.

Dr. Garcia-Ferrer specializes in cornea, external disease and refractive surgery. As Chief of the Eye Section at the Sacramento VA Medical Center, Dr. Garcia-Ferrer is involved in advanced cataract surgery techniques, corneal transplantation, and the medical management of glaucoma and retinal diseases. His UC Davis practice focuses exclusively on keratorefractive surgery, including LASIK and PRK. Dr. Garcia-Ferrer's research interests have included the development of molecular techniques to diagnose corneal infections. Current interests include developing new strategies to improve patient access to care and clinic efficiency. Nandini Gandhi, M.D. Assistant Professor, Pediatric Ophthalmology and Strabismus. <u>Research Interests</u>: International ophthalmology and curriculum development abroad.



John L. Keltner, M.D.

Professor, Chair Emeritus Neuro-Ophthalmology, Research Director. <u>Research Interests</u>: The effects of multiple sclerosis (MS) and cancer on vision.

Dr. Gandhi joined the UC Davis faculty after completing her fellowship in pediatric ophthalmology and strabismus at the Duke Eye Center. Her commitment to academic medicine is born of her interest in teaching and medical education. She is also interested in international ophthalmology and curriculum development abroad. Her current clinical interests include comprehensive pediatric ophthalmology and adult strabismus. Dr. Keltner is an internationally known Neuro-ophthalmologist, who specializes in the diagnosis and treatment of complex unexplained neurological abnormalities affecting visual pathways. He completed residencies in ophthalmology, neurology, and internal medicine and fellowships in pediatric ophthalmology and neuro-ophthalmology. He served as Chair of the UC Davis Department of Ophthalmology and Vision Science for over 25 years, and he is currently the Director of Research and Faculty Development for the UC Davis Eye Center. Dr. Keltner has many research interests including autoimmune-related retinopathies, optic neuropathies that affect vision, and Multiple Sclerosis and its affect on vision.

Syed Khizer Khaderi, M.D., M.P.H.

Assistant Professor, Neuro-Ophthalmology. <u>Research Interests</u>: Genetic diseases of the optic nerve and visual psychophysics.



Dr. Khaderi joined the Eye Center after completion of a Neuro-Ophthalmology Fellowship at the Doheny Eye Institute, University of Southern California. His residency was completed at the University of Arizona College of Medicine. Dr. Khaderi's research focuses on genetic diseases of the optic nerve and on visual psychophysics. Dr. Khaderi owns several patents related to retinal ganglion expression and visual software algorithms, which assist him in his research.



Esther S. Kim, M.D.

Associate Clinical Professor, Comprehensive Ophthalmology, Director, Optometric Services. <u>Research Interests</u>: Improvement of technology in cataract surgery.

Dr. Kim is a comprehensive ophthalmologist specializing in cataract surgery. She completed medical school and residency at UC Davis. Dr. Kim chose to stay in academic medicine and teach the next generation of ophthalmologists. She is also the Director of Optometric Services. Her research interests include the improvement of technology in cataract surgery. Linda J. Margulies, M.D. Clinical Professor, Vitreoretinal Disease, Veterans Administration, Martinez. <u>Research Interests</u>: New treatments for age-related macular degeneration.



Dr. Margulies specializes in vitreoretinal diseases and surgery. She completed her ophthalmology residency at UC Davis and a fellowship in vitreoretinal disease at Washington University in St. Louis, Missouri. She has been associated with UC Davis as a faculty member since 1988 and works extensively with ophthalmology residents at the Veterans Administration Hospital in Martinez, California, where she is Director of the Ophthalmology Program.



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

Dr. Jennifer Li joined the Eye Center in August 2011 as a specialist in cornea, external disease and refractive surgery. Dr. Li received her medical degree and ophthalmology residency at the Baylor College of Medicine in Houston, Texas and subsequently completed her cornea fellowship at UC Davis. Following her training, she practiced at the Devers Eye Institute in Portland, Oregon. Her research on corneal surgery, including endothelial keratoplasty and keratoprosthesis surgery, has been presented nationally and internationally.

Lily Koo Lin, M.D.

Assistant Professor, Oculoplastic Surgery. <u>Research Interests</u>: Improvement of aging eyelids.



Dr. Koo Lin specializes in ophthalmic plastic and orbital surgery, including disorders of the orbit and lacrimal drainage system as well as cosmetic and reconstructive surgery of the eyelids and eyebrows. Her research includes improvement of aging eyelids and the orbital globe relationship and trauma. Dr. Koo Lin completed her residency in ophthalmology at Harvard Medical School and completed an ophthalmic plastic, orbital, and reconstructive surgery fellowship at Doheny Eye Institute in Los Angeles, California.



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

Dr. Morse is the Director of the VitreoRetinal Service and specializes in vitreoretinal disease and surgery with an emphasis on macular degeneration. He completed his Ph.D. in Virology at University of Chicago and continued his education, completing his ophthalmology residency at Jules Stein Eye Institute, UCLA and his retina fellowship at Duke University. In addition to his clinical work, Dr. Morse has been involved with over 20 clinical studies. He has also authored over 120 publications, been invited to teach at over 85 courses and spoke at over 100 meetings around the world.



Susanna S. Park, M.D., Ph.D. Professor, Vitreoretinal Surgery. <u>Research Interests</u>: Proton beam treatments for age-related macular degeneration, anti-VEGF treatment for age-related macular degeneration, retinal imaging and stem cell therapies for age-related macular degeneration.

Dr. Park is a vitreoretinal specialist who provides both surgical and medical management of all vitreoretinal disorders including macular degeneration, diabetic retinopathy, retinal detachment, posterior uveitis and trauma. She also treats patients with intraocular tumors including the use of proton beam irradiation for ocular melanomas and chemotherapy for retinoblastomas. She completed her ophthalmology residency and retinal fellowship at Massachusetts Eye & Ear Infirmary at Harvard University. Dr. Park is interested in using new imaging techniques to study macular disorders and in developing new treatments for retinal disorders including macular degeneration and diabetic retinopathy. She has participated in over 33 clinical trials.



Mary A. O'Hara, M.D., F.A.C.S., F.C.A.P. Professor, Pediatric Ophthalmology. <u>Research Interests</u>: Development of new technology in pediatric strabismus.

> Dr. O'Hara is the Director of Pediatric Ophthalmology. She specializes in pediatric ophthalmology, treating amblyopia and strabismus, cataracts, anterior segment disorders, and adult strabismus. Dr. O'Hara completed her ophthalmology residency at Brooke Army Medical Center and her pediatric ophthalmology and strabismus fellowship at Wills Eye Hospital, Philadelphia, Pennsylvania. Her clinical research interests include amblyopia and motility disorders.

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



Dr. Roth is active in pathology research. He completed two residencies, the first residency in ophthalmology at the Veterans' Administration Hospital, Long Beach; the second residency in pathology at UCLA. He also completed an NIH Special Fellowship in ophthalmic pathology at Jules Stein Eye Institute, Los Angeles.



Ivan R. Schwab, M.D., F.A.C.S.

Professor Emeritus, Cornea, External Disease and Uveitis. Director, Cornea Service. <u>Research Interests</u>: Limbal stem cell transplants and comparative anatomy.

Dr. Schwab specializes in cornea, external disease and uveitis. Dr. Schwab completed his residency and cornea fellowship at Pacific Medical Center, San Francisco. He is one of eighteen Directors of the American Board of Ophthalmology, the certification and recertification agency for Ophthalmologists in the United States. He is on the editorial board of the journals, <u>Cornea</u> and <u>The British Journal of</u> <u>Ophthalmology</u>, and he is active as a member of the American Academy of Ophthalmology. His research interests focus on stem-cell grafting, wound healing and comparative ophthalmology. He is the author of over 120 articles, 4 books, 12 book reviews, 19 book chapters, and has just released a new book, titled, "Evolution's Witness". For a complete listing of Eye Center faculty publications, please access the following link through the Eye Center's internet home page:

http://www.ucdmc.ucdavis.edu/eyecenterpdf/2011FacPublicationlist.pdf

The Eye Center Faculty and Staff would like to thank our patients and donors for your support and confidence!





Thomas B. Barnes, O.D., M.S., F.A.A.O. UC Berkeley School of Optometry Senior Optometrist

Dr. Barnes practices general optometry with a special interest in disorders of binocular vision . He is a Fellow of the American Academy of Optometry, and has an MS degree in Clinical Vision Research.



Melissa Barnett Erickson, O.D., F.A.A.O. UC Berkeley School of Optometry Principal Optometrist

Dr. Barnett provides comprehensive eye examinations and fits contact lenses with an interest in speciality contact lenses. She is a Fellow of the American Academy of Optometry and the Scleral Lens Education Society.



Brooke S. Chang, O.D. UC Berkeley School of Optometry Senior Optometrist

Dr. Chang provides comprehensive optometric care to the general population with a special interest in eye health maintenance in the geriatric population.

Marie E. Burns, Ph.D. Professor, Retinal Physiology. <u>Research Interests</u>: Physiology. http://www.burnslab.ucdavis.edu



Trained as a biochemist and electrophysiologist, Dr. Burns studies the temporal regulation of signal transduction mechanisms in neurons. She received her Ph.D. from Duke University and did fellowships at Stanford University. Much of her work has investigated the deactivation of the G protein cascade in photoreceptor cells of the retina. Her future studies will seek to understand the mechanisms by which different G protein cascades yield signals of varying amplitude and durations, such as in the rod and cone photoreceptors in the retina.



Paul FitzGerald, Ph.D.

Professor, Cell Biology and Human Anatomy. Director, Center for Visual Sciences. <u>Research Interests</u>: The role of intermediate filaments in the biology of the ocular lens. http://www.ucdmc.ucdavis.edu/

cellbio/faculty/fitzgerald

Dr. FitzGerald is studying the unusual biological requirement of optical clarity in the lens of the eye. How that is achieved is not fully understood, but a very high degree of structural order and uniformity is considered essential. Dr. FitzGerald's laboratory has identified two proteins that are very divergent members of the intermediate filament family of proteins that assemble into a unique cytoskeletal element called the beaded filament. Both of these proteins and the beaded filament are expressed only in the lens. Dr. FitzGerald received his Ph.D. in Cell Biology and Anatomy from UCLA.



Larisa Johnson-Tong, O.D., F.A.A.O. UC Berkeley School of Optometry Senior Optometrist

Dr. Johnson-Tong completed a fellowship in specialty contact lens fitting at UCLA's Jules Stein Eye Institute and is a fellow in the American Academy of Optometry. In addition to primary eye care, she fits all types of contact lenses specializing in infant and pediatric patients.



Hai Tong, O.D. University of Missouri, St. Louis School of Optometry Senior Optometrist

Dr. Tong completed his residency in pediatrics and binocular vision at the Pennsylvania College of Optometry. In addition to comprehensive eye care, he has a special interest in the pediatric population and patients with abnormal binocular vision.



Kaaryn Pederson-Vanbuskirk O.D., F.A.A.O. UC Berkeley School of Optometry Senior Optometrist

Dr. Pederson practices general optometry with a special interest in advanced contact lens fitting. She has had residency training in the area of contact lenses and is a Fellow of the American Academy of Optometry. Dr. Pederson has been honored as a Diplomate of the AAO in the Cornea and Contact Lens Section.

Mark S. Goldman, Ph.D. Associate Professor, Neuroscience. <u>Research Interests</u>: Computer models of eye movement. http://neuroscience.ucdavis.edu/ user/172



Dr. Goldman studies and builds mathematical and computer models of a variety of brain functions. In relationship to the visual system, Dr. Goldman investigates how neurons in the early visual system represent and encode information about objects in the external world. His work focuses primarily on a model system for studying such activity, the oculomotor neural integrator, in which transient eye movement commands are accumulated into persistent neural signals that control the horizontal position of the eyes. More recently, he has also been studying the role of the cerebellum in controlling the plasticity of oculomotor responses. Dr. Goldman holds a Ph.D. from Harvard University.

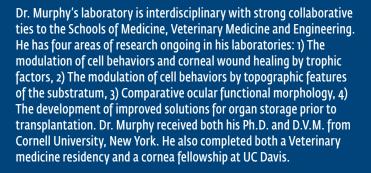


Leonard Hjelmeland, Ph.D. Professor, Ophthalmology. <u>Research Interests</u>: Epigenetics of age-related macular degeneration. http://biosci3.ucdavis. edu/FacultyAndResearch/ FacultyProfile.aspx?FacultyID=336 aspx?Researcherid=1339

Dr. Hjelmeland's research focuses on the study of cellular changes that cause age-related macular degeneration (AMD). His work is particularly concentrated on the epigenetics of the disease. Dr. Hjelmeland's laboratory was recently awarded a 3-year, \$1.8 million grant from the National Eye Institute to study the cellular changes that cause age-related macular degeneration. He has authored over 120 publications and has been invited to speak at over 50 meetings and conferences. Professor Hjelmeland received his Ph.D. in Biophysical Chemistry from Stanford University.

Christopher J. Murphy, D.V.M., Ph.D.

Professor, Comparative Ophthalmology. <u>Research Interests</u>: Bio-physical cueing and modulation of cell behaviors. http:// faculty.vetmed.ucdavis. edu/faculty/cimurphy/





Andrew T. Ishida, Ph.D. Professor, Retinal electrophysiology. <u>Research Interests</u>: Light adaptation, ganglion cell excitability, ion channel modulation, retinal immunohistochemistry. http://neuroscience.ucdavis. edu/user/26

Dr. Ishida studies how action potentials and voltage-gated ion currents are modulated by slow neurotransmitters in retinal ganglion cells. Vertebrate retinas use fast neurotransmitters to signal moment-to-moment changes in the distribution of incident light. Retinas contain an additional set of neurotransmitters which operate on slower time scales to modulate signal flow and processing. His laboratory research focuses on studying the intraretinal transmission of dopamine and on understanding how dopamine alters ganglion cell excitability. Dr. Ishida received his Ph.D. from UCLA.



Charles E. Thirkill, Ph.D.

Adjunct Professor Emeritus, Immunology & Biology. <u>Research Interests</u>: Ocular immunology, retinal and optic nerve imaging techniques.

Dr. Thirkill's research includes auto-immune retinopathy and cancer-associated retinopathy. He has published over 37 journal articles on topics in ocular immunology. Dr. Thirkill holds a Ph.D. degree from the University of Oklahoma in microbiology, and completed a post-doctoral appointment at Yale University.



John S. Werner, Ph.D.

Distinguished Professor, Visual Psychophysics. <u>Research Interests</u>: Color and spatial vision, normal aging and age-related disease, retinal and optic nerve imaging. http:// vsri.ucdavis.edu

Professor Werner's research focuses on visual psychophysics including the structure and the function of the visual system. Dr. Werner studies the neurophysiological computations and mechanisms that mediate human vision, particularly changes in color and spatial vision across the life span and in association with retinal and optic nerve disease. His work has demonstrated that adaptive modifications of the visual system respond to changes in signals due to aging of the eye's optics and retina. His laboratory has developed state-of-the-art methods for imaging the human retina of the living eye at a cellular scale. Professor Werner holds a Ph.D. degree from Brown University and did post-doctoral studies in physiological optics at the Institute for Perception, Soesterberg, The Netherlands. Robert J. Zawadzki, Ph.D. Assistant Researcher, High Resolution Retinal Imaging. <u>Research Interests</u>: Retinal and optic nerve imaging techniques. http:// vsri.ucdavis.edu



Dr. Zawadzki is involved in studying the aging processes of the eye as well as various types of retinal and OHN diseases. His research interests focus on development of new instrumentation for high-resolution in vivo retina imaging. This includes, but is not limited to, Optical Coherence Tomography (OCT), Scanning Laser Ophthalmoscopy (SLO), or Adaptive Optics (AO). Dr. Zawadzki received a Ph.D. in Natural Sciences, and completed a Medical Physics fellowship from the University of Vienna, Austria.



Min Zhao, M.D., Ph.D. Professor, Regenerative Cures. <u>Research Interests</u>: The role of endogenous electric fields to stimulate cell migration, corneal wound healing and regeneration. http://www.ucdmc.ucdavis.edu/ dermatology/research/lab/zhao_ pi.html

Dr. Min Zhao is internationally known for the discovery that the endogenous electric signals fields direct cell migration and growth to heal wounds as one of the most important guidance cues. Dr. Zhao's collaborative work has used multiple approaches to study electric field-directed migration and growth of nerve, blood vessels, epithelial cells, and immune cells. Dr. Zhao received his M.D. degree in Medicine and his Ph.D. in Trauma Surgery and Pathology from the Third Military Medical University, Chongqing, China.

Thank You!

The faculty of the UC Davis Health System Eye Center is deeply grateful to the following Federal Government agencies:

The National Institutes of Health The National Eye Institute The National Institute on Aging

and

Research to Prevent Blindness, Inc.

for their long-time and major funding of ophthalmology research at UC Davis.





Samuel Lee, M.D. Third Year Resident



Eric Chin, M.D. econd Year Resident



Charles Weber, M.D.. Third Year Resident



Bobeck Modjtahedi, M.D. Second Year Resident



Kimberly Winges, M.D. Third Year Resident



Alena Reznik, M.D. Second Year Resident



Danli Xing, M.D. Third Year Resident



Jennifer Rizzo, M.D. Second Year Resident





Harinderpal Chahal, M.D. First Year Resident



Allan A. Hunter, III, M.D. Clinical Retina Fellow



Vivian Lien, M.D. First Year Resident



Saadia Rashid, M.D. Clinical Retina Fellow



Roma Patel, M.D. First Year Resident



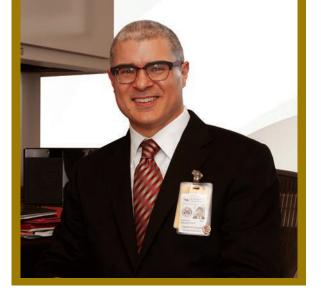
Brett L. Shapiro, M.D. Clinical Cornea Fellow



Judith Sabah, M.D. First Year Resident



Melissa G. Tong, M.D. Clinical Glaucoma Fellow



Almost 40 years ago, the UC Davis Department of Ophthalmology and the Veterans Administration (VA) Hospital, Sacramento, established the first UC Davis-Veterans Affairs Hospital partnership. With five locations in Northern California, most VA medical departments now have a formal partnership with the UC Davis Health System. Thanks to the leadership and dedication of Dr. Francisco J. Garcia-Ferrer, Eye Center Associate Professor and head of the Sacramento VA Hospital Eye Service, the partnership with the UC Davis Eye Center is robust and growing.

And, according to Dr. Garcia-Ferrer, "This is the best medical practice in the world for me. I wouldn't trade it for anything, and the vets are the best patients-- very disciplined and great to work with." He is justifiably proud of the accomplishments of the VA Service during his 13-year tenure. At the time of his arrival, the VA had endured a long disruptive period with the closure of the Martinez VA Hospital in 1989 as the result of the Loma Prieta earthquake and the subsequent cycling through temporary facilities. Ultimately, the permanent transfer of the VA practice in Sacramento to the former Mather Air Force Base in Rancho Cordova occurred just at the time of Dr. Garcia-Ferrer's arrival.

Today, the Northern California VA Eye Service, headed by Dr. Linda Margulies, also an Eye Center faculty member, provides excellent

Dr. Francisco J. Garcia-Ferrer Heritage Circle Member

eye care with more than 40,000 outpatient visits annually (up from just 21,000 in 1999). It performs over 1100 eye surgeries annually (700 at the Mather VA Hospital alone), and trains UC Davis ophthalmology residents to be excellent and independent practitioners at both the Mather and Martinez VA Hospitals.

First becoming acquainted with the UC Davis Eye Center as a cornea fellow, Dr. Garcia-Ferrer credits Dr. John Keltner, Eye Center Chair until 2003 and currently Eye Center Director of Research, Dr. Ivan Schwab, Director of the Eye Center's Cornea Service, and Dr. Mark Mannis, currently Eye Center Chair, as his professional mentors. He credits them for their commitment to the VA/UC Davis partnership, for promoting the VA Eye Service's growth, and encouraging the partnership to thrive. He is grateful for their ongoing support, good counsel and general availability to help him address the needs of a burgeoning ophthalmology practice at the VA.

Several years ago, a patient impressed upon Dr. Garcia-Ferrer the importance of having a testamentary trust to provide for family members as well as assuring that his last wishes are carried out for the disposition of his assets. In gratitude for the training, support and professional camaraderie provided by his three UC Davis Eye Center mentors, Dr. Garcia-Ferrer has established that, hopefully many years from now, a portion of his estate will come to the UC Davis Eye Center. Now a UC Davis Heritage Circle member, he observes that, "Drs. Keltner, Schwab and Mannis were critical in shaping the person and the ophthalmologist that I am today. I owe them so much, and I am happy to be able to give back. I'm very grateful."

Brandt honored by American Glaucoma Society

At the recent 22nd Annual Meeting of the American Glaucoma Society (AGS), James D. Brandt, M.D., Professor of Ophthalmology and Director of the Glaucoma Service at the UC Davis Eye Center, was honored for his research contributions to the field. Dr. Brandt was the Society's 13th 'Clinician-Scientist Lecturer'. According to the AGS, the Clinician-Scientist Lecture is given annually by an "individual who exemplifiers qualities of excellence in patient care and basic research" and is selected by a special committee of the Society.

Given in the historic grand ballroom of the Waldorf-Astoria Hotel in Manhattan, Dr. Brandt's lecture was entitled, "Is it Real or is it Artifact? What the Cornea Can Tell Us About Glaucoma." The lecture summarized almost two decades of work in which Dr. Brandt and colleagues, drawing from the \$40 million Ocular Hypertension Treatment Study, demonstrated that central corneal thickness (CCT) is an important risk factor for the development of glaucoma. That finding has changed the practice of glaucoma diagnosis and management and now permits doctors to better identify those at risk of developing glaucoma, the world's second-leading cause of blindness.



AMERICAN GLAUCOMA SOCIETY

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Ivan Schwab, M.D., is "Evolution's Witness"

"For over 500 million years, eyes have been 'standard equipment' for earth's creatures and fundamental to speciation and survival, including human survival. But the history of precursors to the fully formed eye begins 3.75 billion years ago", according to Dr. Ivan R. Schwab, Director of the Eye Center's Cornea Service. Dr. Schwab, who has been on the UC Davis faculty for over 20 years, is an avid student of comparative biology. He has just completed his "magnum opus", a new book entitled, "Evolution's Witness–How Eyes Evolved".

Eyes Evolved". Released November 1, 2011, the book incorporates 400 photographs and other images into a text that provides many insights new to science and illustrates key steps in the evolution of the eye and visual system. Besides Dr. Schwab's photographs of eyes in their almost unimaginable variety, the book includes photographs taken by another UC Davis Eye Center Faculty member, Dr. James D. Brandt, Director of the Eye Center's Glaucoma Service.

According to Dr. Schwab, "I have been interested in natural history for many years. I'm fascinated with what we can learn about ancient creatures, their anatomical development, the world they inhabited, and what that tells us about our world today. I hope that the story of the eye, as presented in my book, will amaze the readers as it has amazed me."

"Evolution's Witness" is published by Oxford University Press and is available through the Oxford website at http://www.oup.com/us/catalog/general, enter "Evolution's Witness".

Other Eye Center Faculty preparing books for publication include Dr. Jack Werner, Distinguished Professor of Ophthalmology, whose book, "The New Visual Neurosciences", will be published in October 2013, and Dr. Mark Mannis, working on the second edition of his book on ocular surface disease, scheduled for publication in 2013.

Brandt Addresses Support Group Partnering with Glaucoma Patients Society

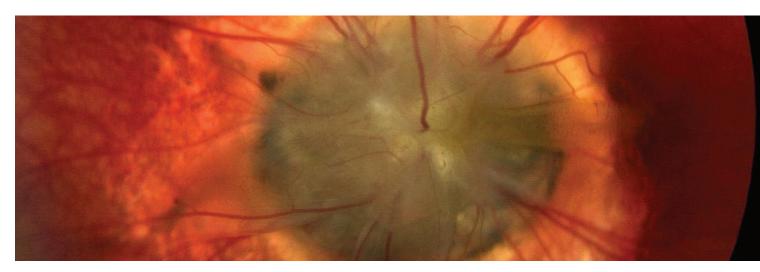
Partnership is an important concept in modern medicine. On the individual patient level, patients partner with their physician to address their medical issues. Physicians partner with each other in order to give themselves new perspectives and new information. On a beautiful evening in February, the UC Davis Eye Center partnered with the Sun City Glaucoma Support Group to bring Dr. James D. Brandt, Director of the Eye Center's Glaucoma Service, to address their group about the newest information on innovations in glaucoma treatments and research. Founded in 2008 by UC Davis Eye Center Council Member Bonnie Dale, the Support Group meets monthly. Information on meeting times, dates and exact location is available by calling (916) 543-2133 or by email at bjdale@aol. com. The group exists for glaucoma patients looking for the support, encouragement, information, perspective and companionship provided by other people addressing the treatable, but still incurable, disease. Diagnosed with glaucoma in 2004 shortly before moving from Santa Rosa to Sun City, Mrs. Dale found groups in Sonoma County and San Francisco, but none closer to her home in Lincoln, northeast of Sacramento, California. So she started one for her neighbors...and herself.

Dr. Brandt's presentation to the assembled group of over 40 patients, family and friends, focused principally on two different topics. The first was an examination of the definition and characteristics of glaucoma, the nature of current treatments, and innovations in the diagnosis and understanding of the disease. Perhaps the single most important message from Dr. Brandt was the importance of early detection of the disease. Most people have no symptoms until the disease has taken a substantial amount of the patient's sight, so regular eye examinations are critically important to early detection. He also emphasized that glaucoma is a disease of the optic nerve, and while managing intraocular

pressure is the only current treatment for glaucoma, elevated intraocular pressure itself is not the same as the disease.

The second topic was one that is near and dear to Dr. Brandt's heart: ORBIS International. ORBIS International's signature program is a flying eye hospital. A full and complete ophthalmic operating room, recovery room, ophthalmic laboratory and teaching facility is installed in a DC-10, thanks to major support from FedEx. This hospital flies volunteer ophthalmologists into places in Asia, South America and Africa where they provide training to local physicians and surgical solutions to a wide variety of eye issues. In addition, ORBIS sends volunteer ophthalmologists into a large number of hospitals in the developing world where the physicians train, perform surgeries, and provide expert advise on a wide range of ophthalmic problems.

Following his presentation, Dr. Brandt answered many questions from the audience, and the entire program lasted almost two hours. On a regular basis, Dr. Brandt and other faculty members partner with groups supporting people with eye disease. Eye patients interested in having a UC Davis Eye Center faculty member address their groups should contact: Holland Adams, 916-734-6435 or holland.adams@ucdmc.ucdavis.edu.



Dr. Jefferey Caspar International Update: Bangladesh

The Ispahani Islamia Eye Institute and Hospital (IEH) was established in 1958 by the late M. A. Ispahani, an industrialist and philanthropist. It began as a charitable dispensary that in 1960 developed into an eye hospital, the first of its kind in Bangladesh. Currently, it is the largest eye hospital and the only specialized eye care service provider in the country. At present, Islamia provides eye care services to nearly 350,000 outpatients annually, seeing between 1,200 and 1,800 patients per day. Over the years, Islamia has also established itself as a leading ophthalmic organization in Bangladesh for providing specialized services and training courses.

In January of this year, Dr. Jeffrey Caspar, Clinical Professor of Ophthalmology at the UC Davis Eye Center and the Director of the Eye Center's Resident Education Program, and Dr. Matti Vazeen, UC Davis alumnus and Director of the Center for Advanced Eye Care in Carson City, Nevada, traveled to the hospital in hopes of establishing a relationship between the two eye centers to foster education and research. Dr. Vazeen, who has long-standing connections to the country, brought the hospital to the attention of Dr. Caspar and the UC Davis Eye Center at their annual resident surgical training course.

After nearly 35 hours of travel, Dr. Caspar and Dr. Vazeen spent a busy week at the Islamia Eye Hospital, meeting with doctors, working in surgery each day, and providing lectures each evening. Their trip culminated in a



Islamia Eye Institute and Hospital

half-day symposium attended by nearly 50 local ophthalmologists. Here they lectured on advanced surgical techniques and performed live surgery via video transmission to the auditorium.

The Islamia Eye Hospital has been undergoing a rapid modernization under the direction of its new CEO, Dr. Steven Roy, with the goal of providing the finest services in eye care to all sections of society, especially those who cannot afford to pay. Their interest in collaborating with the UC Davis Eye Center is in developing world-class patient care, education and research programs. The UC Davis Eye Center, home of a premier residency training program and the largest ophthalmic research program in Northern California, can help them reach this goal.

Islamia Eye Hospital (IEH) has a lot to offer UC Davis. The UCD Eye Center plans to include Islamia Eye Hospital in their telemedicine grand rounds, currently held several times a year with several eye centers in Brazil. The Eye Center will also be hosting physicians from IEH for an exchange program, similar to the programs the Eye Center has had with physicians from around the world, including Brazil, Mexico, and Israel.

The Eye Center is also incorporating the Islamia Eye Hospital into their residency education program. Working in Bangladesh will be a wonderful experience for the residents, exposing them to a wide range of eye diseases and surgical techniques not frequently seen in the United States. They will learn the challenges and rewards of providing much needed eye care in a developing nation and be better prepared for future opportunities of international service. It will also foster long-standing relations and spark a desire to give back to the profession of ophthalmology and the world.

The Eye Center sees this trip by Dr. Caspar and Dr. Vazeen as the first step in a long term, mutually beneficial relationship between the Center for Advanced Eye Care, UC Davis Eye Center, and the Islamia Eye Hospital.



Dr. Caspar with the surgical team at the Islamia Eye Institute and Hospital



Dr. Caspar performing cataract surgery





The Livingstons and the Organization of Macular Friends

For patients and loved ones learning to cope with the challenges of living with chronic eye diseases, community support groups can be a vital resource of information and emotional support. In each of its sub-specialties, the Eye Center has a time-honored practice of furthering the mission of community support groups. It is proud of its ongoing relationships with these entities.

Of these support groups, one of the most active and longstanding is the relationship between the Organization of Macular Friends (OMF) and the Eye Center. Serving the greater Sacramento area, the OMF's primary mission is to provide emotional support, share ideas, and enhance social activity for people living with the various forms of macular degeneration.

Twenty years ago, the Organization of Macular Friends began with only six members, brought together by macular degeneration and its effects on everyday life. Now, as a result of the outreach effort by OMF, community physicians, and the UC Davis Eye Center, its membership has swelled to more than 80 active members. The new membership has grown due to a word-of-mouth effort by current members, referrals by Eye Center faculty, and via informational materials provided by both Eye Center clinics and other clinics across the greater Sacramento area.

Meeting on a monthly basis, the organization's agendas typically include lunch and an invited speaker. Dr. Lawrence Morse and Dr. Susanna Park, both retina specialists at the UC Davis Eye Center, frequently speak at these meetings. The topics include recent advancements in the treatment of macular degeneration, current research in understanding the disease, and other vision care topics. In addition to the UC Davis Retina Specialists, community physicians, representatives from societies and foundations dedicated to the treatment of blinding eye disease, and other specialists also speak at meetings held at various Sacramento restaurants and hotels.

Jim Livingston, President of the Organization of Macular Friends since 2010, states that the true nature of the organization is not only to educate about macular degeneration, but also to stimulate the minds of its members. "The Group provides social activity for our members while learning more about the disease. Quite often the most stimulating aspect of our meetings is learning the various ways that other members have devised to solve the everyday problems that macular degeneration presents. Our members produce some unique approaches."

In addition, Mr. Livingston stresses that the Organization of Macular Friends is one of many community support groups available to patients in need of emotional and intellectual support. There are many groups across Northern California geared toward vision-impaired individuals. A list of some of these groups is provided at the end of this article.

Membership in the Organization of Macular Friends is \$15 annually. This fee covers administrative costs in organizing OMF and the creation and distribution of informational materials designed to educate and to increase membership. Funds are also donated each year to the Eye Center to further the advancement and treatment of macular degeneration.

Sacramento Region Vision Support Groups

ORGANIZATION OF MACULAR FRIENDS

Meets 1st Thursday of each month for luncheon speaker P.O. Box 22492 Sacramento, CA 95822 Voice mail (916) 492-5656

LOW VISION SUPPORT GROUP

1300 Jefferson Street #114 Napa, CA 94559 (707) 259-9452

OUTA SIGHT GROUP

Community / Senior Center 2001 East Street Woodland, CA 95695 (530) 662-0535

EARLE BAUM CENTER

4539 Occidental Road Santa Rosa, CA 95401 (707) 523-3222 ebc@earlebaum.org

NEW OUTLOOK SUPPORT GROUP

Gina Gavett 3571 Sunview Road Paradise, CA 95969 (530) 877-2020 or (530) 514-8793

SOCIETY FOR THE BLIND

c/o Heather Frank 2750 24th Street Sacramento, CA 95818 (916) 452-8271

INSIGHT/ ROSEVILLE

Lois Brooks 403 Halliford Court Roseville, CA 95661 (916) 782-2406

SUNRISE MACULAR DEGENERATION ASSOCIATION

P.O.Box 491 Citrus Heights, CA 95611 Voice mail (916) 491-5885

EL DORADO CENTER FOR THE VISUALLY IMPAIRED

4600 Farnsworth Lane El Dorado, CA 95623

EYE CONTACT

For the residents of Sun City Lincoln Hills (916) 645-5516 chelsea@starstream.net

COVELL GARDENS RETIREMENT COMMUNITY

Davis, CA 95616 (530) 753-1522 Arturolg@aol.com

DAVIS SENIOR CENTER

646 A Street Davis, CA 95616 (530) 753-7694 JenniferLynnFrazier@gmail. com

Visionary Gold (\$100,000+)

Foundation Fighting Blindness Macular Degeneration Foundation, Inc. Research to Prevent Blindness

Visionary Silver (\$50,000+) Lanie Albrecht Foundation

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Financial planning can be a real chore, but it can also be very rewarding when it's done to provide financial security in retirement, support for loved ones, and an enduring legacy for sight. We recognize that a "planned gift", a gift involving an estate plan, a trust or another financial planning arrangement, is a significant investment in the future of UC Davis and the Eye Center, and we are grateful to our donors for considering this exceptional investment in the UC Davis Eye Center. Consider a few of the most popular charitable planned giving options that oftentimes allow you to have a greater impact than you ever thought possible. Consider the potential tax benefits that you and your estate may enjoy as a result of your philanthropy.

CONTACT US:

Ernie Phinney, Development Officer, UC Davis Health System Eye Center 916-734-8758 or ernest.phinney@ucdmc.ucdavis.edu

or

Mark E. Schaal, M.B.A., Senior Planned Giving Officer, Health Sciences Development UC Davis Health System 916-734-9310 or mark.schaal@ucdmc.ucdavis.edu



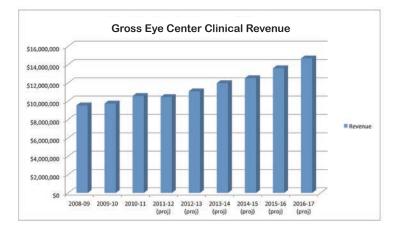
2011 UC Davis Eye Center Strategic Plan



In July 2009, the UC Davis Health System Eye Center Faculty reviewed and adopted a firstever Vision and Mission Statement for the Eye Center. That exercise and the creation of the Statement led, almost inevitably, to the initiation of the Eye Center's latest strategic planning process in February 2011. For nine months, dozens of Eye Center faculty, staff, volunteers, and friends challenged themselves and each other to reconsider the assumptions and direction of the Eye Center. On October 4, 2011, the Eye Center Faculty adopted the UC Davis Eye Center Strategic Plan 2011 to guide decision-making and resource allocation for at least the next five years.

UC Davis: A Vision of Excellence

The Eye Center Strategic Plan wholeheartedly subscribes to and endorses UC Davis Chancellor Linda Katehi's statement: "UC Davis aspires to be recognized as one of the top public research universities in the nation. As such, we choose to be regarded, both domestically and internationally, as a preeminent leader of higher education that is driven by our land-grant heritage to provide educational affordability and access to excellence.



UC Davis will be known for its diverse educational opportunities, its innovative, interdisciplinary and collaborative research endeavors, and its distinction in leading enterprises that support social responsibility and a sustainable global environment."

UC Davis Health System: Guiding Principles

In accord with the UC Davis Health System Strategic Plan, the Eye Center will strive for these guiding principles in all phases of teaching, research, and service. These principles are:

- Excellence
- Compassion
- Leadership
- Teamwork/Collaboration
- Social Responsibility
- Diversity

UC Davis Eye Center: Vision and Mission

The Vision-Mission Statement has been very useful in guiding Eye Center strategic planning discussions:

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.

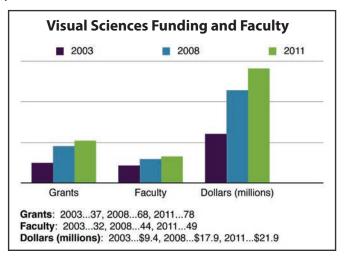
MISSION: We will realize our vision through pioneering collaborative vision research, providing state-of-the-art, world-class eye care, and training superbly prepared ophthalmologists and vision scientists.

Core Strategic Imperatives

Six areas of endeavor were identified for particular attention and emphasis in the coming years, and the most important of these was the newly defined **Satellite Strategy:**

The **Satellite Strategy** is the overarching core strategy from which imperatives and initiatives will grow in the coming years. What this means is that core Eye Center activities (including research, teaching and patient care) will be located where they are best able to flourish, create synergies and fully realize our goals. Most research will be conducted on the Davis Campus, neighborhood eye clinics will be developed, teaching opportunities will be initiated where those opportunities can be best utilized, and a new "hub" facility for administration, advanced patient care and clinical research will be located on the UC Davis Sacramento Campus.

Our **Vision Research** will expand in response to the need for therapies and cures for blinding eye disease and the aggressive development of new funding sources. In addition, we will continue to foster and expand interdisciplinary collaborative science as people and opportunities present themselves.

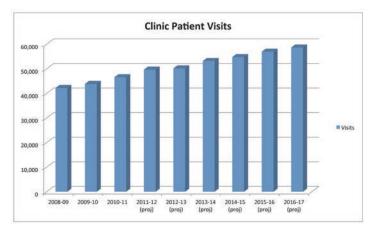


Source: UC Davis Center for Visual Sciences



First Executive Committee Meeting: February 7, 2012

The Eye Center's **Clinical Practice** will foster a patient-centered environment focusing on the most up-to-the-minute diagnostics, therapies and procedures.



Professional Training, the preparation of the next generation of clinicians and scientists, will receive increased investment in equipment and will see the increase of interdisciplinary activity.

A new Eye Center Headquarters Building

will serve as an international center for vision science and eye care, and will serve as a telecommunications (teleophthalmology) and administrative hub for international ophthalmology as well as for the various local Eye Center research and clinical enterprises.

Recognizing that these strategic imperatives cannot be realized without public awareness and the financial support of our patients and community, the Strategic Plan 2011 calls for renewed efforts in Marketing, Public Relations and Fundraising.

Implementing the Plan

While adhering to the sound financial management practices of the past, the Eye Center leadership has taken steps to move forward quickly on achieving the goals of the plan. An Executive Committee, composed of Eye Center leaders, who were formerly members of the Strategic Planning Committee, and dedicated to plan implementation, has met, and steps have been taken to begin executing an Eye Center Headquarters Building Program.

Additional Information

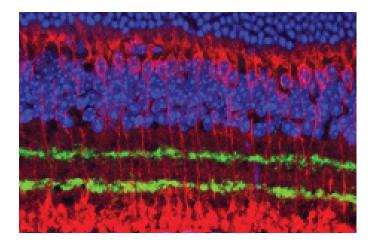
For additional and more detailed information, including a copy of the 2011 Strategic Plan, Please Contact:

Cameron Blount

Chief Administrative Officer Ph: 916-734-6967 cameron.blount@ucdmc.ucdavis.edu

Ernest Phinney

Development Officer Ph: 916-734-8758 ephinney@ucdavis.edu





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Lasik Surgery UCDAVIS EYE CENTER



Upcoming Events

Sacramento, CA 95817

June, 9 2012 UC Davis Eye Center Alumni and Resident Dinner UC Davis M.I.N.D. Institute Sacramento, CA June 13-16, 2012 35th Annual UC Davis Ophthalmology Symposium Big Topics on the Big Island: An Update of Comprehensive Ophthalmology Hilton Waikoloa Village Big Island, Hawaii

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