



Annual Report 2007–2008
Jules Stein Eye Institute





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Jules Stein Eye Institute

David Geffen School of Medicine at UCLA
University of California, Los Angeles

Jules Stein Eye Institute

Annual Report 2007–2008

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The emblem of the Jules Stein Eye Institute is adapted from the schematic eye used by Sir Isaac Newton in his classic treatise on human vision—“Opticks”—published in 1704. The horizontal lines extending from the surface of the eye represent Newton’s concept of the major colors that are in the spectrum of light.

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The legacy of Dr. and Mrs. Jules Stein arises from their role in the 20th century as visionaries. Through brilliance and beneficence, they created a multitude of programs aimed specifically at one goal—preserving and restoring eyesight. They approached this task dauntlessly, integrating the worlds of business, medicine, and philanthropy in such a way as to enhance each and leave in trust the promise of limitless accomplishment in the advancement of eye research and treatment. The Jules Stein Eye Institute was established as a result of their philanthropy.



Jules Stein

Jules Stein is the foremost benefactor in the world history of vision science and blindness prevention. He combined his love for music and medicine with a unique talent for

analysis and organization to produce a lifetime of celebrated achievements as musician, physician, business leader, and humanitarian.

Born in South Bend, Indiana, in 1896, Jules Stein received a PhB from the University of Chicago at age 18 followed by a MD degree from Rush Medical College. After completing postgraduate studies at the University of Vienna and Chicago's Cook County Hospital, he began medical practice and was certified by the American Board of Ophthalmology.

A musician from an early age, he financed his education by playing in and leading his own band. As his reputation increased, he began booking other musicians for professional engagements, and in 1924 founded Music Corporation of America (MCA). Shortly thereafter, he gave up the practice of medicine to concentrate on this enterprise. Within 10 years, MCA represented most of the great name bands and corporate activities began to extend to representation of film stars, directors, writers, and musical artists. MCA entered the promising new field of television at its inception, eventually acquiring the Universal City property, Universal Pictures, and other enterprises to become pre-eminent in the entertainment industry.

Throughout his phenomenally successful career, Jules Stein maintained a strong interest and emotional investment in medicine, particularly his own field of ophthalmology. In the late 1950s, urged by his wife, Doris, he chose to direct his considerable talents to blindness prevention. The result was a concert of ideas and achievements that encompassed philanthropy, government, and academic medicine.

By his efforts, Research to Prevent Blindness was created, now recognized as the world's leading voluntary organization in support of studies of the eye and its diseases. Jules Stein was largely responsible for the passage of legislation to establish the National Eye Institute as a separate entity in the National Institutes of Health. Under his leadership, the Jules Stein Eye

Institute was founded as a multidisciplinary center for vision science. Since its establishment, the Institute has become internationally identified as the focus for coordinated programs of research in the sciences related to vision, ophthalmic education, and the care of patients with eye disease. Jules Stein died in 1981, leaving a legacy of hope to the world. Through his accomplishments and philanthropy, he created ever replenishing resources for eye research and the means to preserve and restore sight for future generations.



Doris Stein

Doris Stein's purposeful, yet richly varied life earned the respect and affection of the many people who benefited from her humanitarianism. Inspiring partner of her husband for more than half a century, Doris Stein

shared with him the accomplishments of his philanthropic endeavors and guided his interests in ophthalmology, beginning with a visit to the New York Lighthouse for the Blind in the late 1950s. Deeply moved, Doris Stein urged her husband to "do something!" From that passionate beginning came a broad base of programs that catalyzed eye research.

Doris Stein was a major force in this vision renaissance. She served as an officer and director of Research to Prevent Blindness, personally leading the appeal to establish more resources for investigations into eye diseases. She suggested that Jules Stein assume the principal role in the creation of an eye institute at UCLA, and her unflagging enthusiasm nurtured the Institute's development as a unique provider of every facet of vision research and patient care. Serving as Trustee, she focused special attention on Institute initiatives to combat blindness throughout the world. She devoted her last days, until her death in 1984, to the development of an expansion and companion building for eye research. In 1989, dedication ceremonies were held for the Doris Stein Eye Research Center.

With grace, vision, and meaningful action, Doris Stein enhanced the lives of all privileged to know her, stimulated a cascade of progress in eye research, co-founded the Institute with its boundless scientific potential, and extended the miracle of sight to untold numbers of people.

BOARD OF TRUSTEES

The Jules Stein Eye Institute Board of Trustees was established in 1977 to ensure the Institute's orderly growth and development. The Board meets regularly during the year, with each Trustee providing his/her unique counsel. Collectively, their invaluable contributions have included fiscal planning

for the Institute, adoption of measures to facilitate recruitment of the world's finest vision scientists, allocation of funds for the purchase of vision research equipment, and recommendations for facilities expansion programs.

Current Members



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EXECUTIVE COMMITTEE

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Gabriel H. Travis, MD

Chief Administrative Officer, Jules Stein Eye Institute
Jonathan D. Smith



Jules Stein Eye Institute Executive Committee: (sitting from left to right) Drs. Gabriel Travis, Arthur Rosenbaum, Sherwin Isenberg, and Bartly Mondino; (standing from left to right) Mr. Jonathan Smith and Dr. Wayne Hubbell.

FACILITIES

The facilities of the Jules Stein Eye Institute comprise two free-standing structures of architectural note. The five-story Jules Stein Eye Institute building, occupying 110,000 square feet, is of neo-classical design. It is the original facility, constructed in 1966. An expansion and companion building, the Doris Stein Eye Research Center, followed in 1989. It is a four-story, red granite structure, occupying 67,000 square feet, and connecting with the Jules Stein Eye Institute by way of a graceful portico. With support from Research to Prevent Blindness, a conference center complex was erected between the buildings as part of the Doris Stein Eye Research Center.

The two facilities complement each other in design and function and together accommodate the Institute's outpatient treatment centers; clinical laboratories; a 30-bed ophthalmic outpatient unit; four operating rooms devoted exclusively to ophthalmic surgery; an optical dispensing facility; an ophthalmic photography unit; a pathology laboratory; basic science laboratories; a clinical research center; a library that provides dedicated study space for post doctoral vision science fellows and ophthalmology residents; and a variety of meeting facilities for lectures and conferences, including a 156-seat auditorium.

The buildings reflect the considerable architectural knowledge and exquisite taste of Dr. and Mrs. Jules Stein, which is evident in the Institute's design, building materials, artwork and furnishings. Dr. and Mrs. Stein were committed to the belief that the special attention given to internal design created an uplifting environment for patients, visitors and staff alike. Of particular architectural note are the Reading Room, Seminar Room and Adam Room, all elegant meeting places containing antiques, original artwork and memorabilia from the Stein's estate.

Patient care suites in both facilities have been carefully planned to offer comfortable, well-appointed reception and treatment rooms, along with the most up-to-date ophthalmic equipment. These areas are enlivened by original artwork, including wall murals in the pediatric waiting rooms.



The B-level lobby of the Jules Stein Eye Institute building

The Institute's vision research activities have benefitted enormously from the foresight of the original facility planners. A generous 20,000 square feet were devoted to basic science laboratories during the construction of the Jules Stein Eye Institute, providing highly functional space for biochemistry, biophysics, molecular biology, electrophysiology, microsurgery, cell biology, and visual physiology research. A central infrastructure supporting all of the basic science laboratories was also incorporated into this area.

Approved in 2001, and in the planning stages, is the Edie and Lew Wasserman Eye Research Center, a third building that will complete the Jules Stein Eye Institute campus. The 100,000-square-foot facility will be modeled after and situated opposite the Doris Stein Eye Research Center on Stein Plaza. Half of the space will be devoted to Institute activities and the other half to synergistic programs of the Institute and the David Geffen School of Medicine.

Dr. Jules Stein set the standard for the Institute's design and function at the outset when he pronounced, "Our primary objective in building this Institute has been to serve the needs of medical science and medical practice...At the same time, we wished to demonstrate that all these purposes can be served within an atmosphere of grace and beauty." This standard has been maintained through the Institute's 42-year history and continues to be an integral component of all facilities planning.

Annual Report 2007–2008
Jules Stein Eye Institute

Highlights





Dear Friends,

I am pleased to share these highlights of the 2007–2008 academic year, which serve to strengthen our commitment to preserve sight and prevent blindness. This year we are proud to present four new faculty members, Sophie X. Deng, MD, PhD, JoAnn A. Giacconi, MD, David Sarraf, MD, and David S. Williams, PhD, who will contribute greatly to our clinical care and basic science activities. Three faculty were appointed new chair holders: Robert Alan Goldberg, MD, FACS, was appointed to the Karen and Frank Dabby Chair in Ophthalmology, Arthur L. Rosenbaum, MD, to the Brindell and Milton Gottlieb Chair in Pediatric Ophthalmology, and Steven D. Schwartz, MD, to the Ahmanson Chair in Ophthalmology.

During the year, faculty members were awarded special honors from Research to Prevent Blindness, including the Jules and Doris Stein Professorship and a Career Development Award. Important research grants were awarded and renewed by the National Institutes of Health, and other funding organizations.

Philanthropic gifts to the Institute were highlighted by the proposed establishment of two new endowed chairs by The Skirball Foundation and Ernest G. Herman, the creation of the Lydia Ann Rosenberg Fund for the Indigent Children's Ophthalmic Care Program, and the Marie and Jerry Hornstein Family Endowed Macular Degeneration Research Fund. In addition, significant bequests were received including the Estate of Josephine M. Hewitt and the Mary E. Plummer Trust, as well as several generous contributions made in honor of friends and family.

We are appreciative of these opportunities afforded to faculty and students and share the belief that we will contribute to a future full of promise.

Sincerely,

A handwritten signature in black ink, which appears to read "Bartly J. Mondino". The signature is written in a cursive style.

Bartly J. Mondino, MD

Bradley R. Straatsma Professor of Ophthalmology

Director, Jules Stein Eye Institute

Chairman, Department of Ophthalmology, David Geffen School of Medicine at UCLA

HONORS

Each year as part of their ongoing academic pursuits, faculty members achieve notable recognition derived from their accomplishments and contributions. They give invited lectures around the world; they actively participate in influential professional and community organizations; and they serve as editors and writers for a wide range of scientific journals. In some cases special honors are bestowed. Members of the faculty were honored for their contributions to ophthalmology and visual science and three new chair holders were announced.

Karen and Frank Dabby Chair in Ophthalmology

Robert Alan Goldberg, MD, FACS, Chief of the Orbital and Ophthalmic Plastic Surgery Division at the Jules Stein Eye Institute, has been appointed to the Karen and Frank Dabby Chair in Ophthalmology. Dr. Goldberg received his medical degree from UCLA and completed his residency and fellowship training at the Institute before joining the faculty in 1989. He is committed to education and heavily involved in the academic administration of clinical teaching programs, directing a renowned fellowship program in orbital and ophthalmic plastic surgery and serving as Chairman of the Ophthalmology Residency Selection Committee. His surgical contributions include small-incision lateral orbital decompression, minimally invasive orbital tumor surgery, the Goldberg lacrimal stent, and non-incisional eyelid reconstruction techniques. In his clinical practice, which draws patients from across the United States and around the globe, he specializes in aesthetic and reconstructive orbital surgery, endonasal lacrimal surgery, endoscopic and small-incision facial surgery, and primary and secondary blepharoplasty.



Brindell and Milton Gottlieb Chair in Pediatric Ophthalmology Dr. Arthur Rosenbaum (second from left), with (from left) his wife Sandra, friend and donor Mrs. Brindell Roberts Gottlieb, and daughter-in-law and son Melissa and Steve Burick.

This endowment to support the activities of a distinguished faculty member in the area of orbital disease was made possible by a generous contribution from **Karen and Frank Dabby**.

Brindell and Milton Gottlieb Chair in Pediatric Ophthalmology

Arthur L. Rosenbaum, MD, appointed to the Brindell and Milton Gottlieb Chair in Pediatric Ophthalmology, has been on the UCLA faculty for 35 years, serving as Division Chief of the Pediatric Ophthalmology and Strabismus Division since 1980. He is one of the original investigators in the area of botulinum toxin injection of extraocular muscles in the treatment of strabismus and facial spastic disorders, and continues to be involved in research projects utilizing this treatment. At present, he is working on new surgical approaches to complicated strabismus problems resulting from trauma and congenital conditions. Dr. Rosenbaum has more than 200 publications and co-authored a major textbook on strabismus. The recipient of several outstanding awards, including Lifetime Achievement from the American Academy of Ophthalmology and the Marshall M. Parks Medal from the Children's Eye Foundation, he is recognized for his tireless work to advance the field of pediatric ophthalmology and strabismus.

Shortly before his passing in February 2006, **Milton Gottlieb** and his wife **Brindell** established the Brindell and Milton Gottlieb Chair in Pediatric Ophthalmology to support the



From left, Dr. Bartly Mondino, Karen and Frank Dabby, with Dr. Robert Goldberg, Karen and Frank Dabby Chair in Ophthalmology



*Dr. Steven Schwartz, Ahmanson
Chair in Ophthalmology*

teaching and research activities of the Chief of the Pediatric Ophthalmology and Strabismus Division. As a testament to their admiration for Dr. Rosenbaum, they requested that after his retirement, the name of the chair be changed to Arthur L. Rosenbaum, MD, Chair in Pediatric Ophthalmology.

The Ahmanson Chair in Ophthalmology

Steven D. Schwartz, MD, Associate Professor of Ophthalmology and Chief of the Retina Division, has been appointed as the Ahmanson Chair in Ophthalmology. Dr. Schwartz received his medical degree from the University of Southern California, followed by ophthalmology residency training at UCLA's Jules Stein Eye Institute, and a prestigious two-year fellowship at the Moorfields Eye Hospital in London, England. He joined the Institute's faculty in 1994 and was appointed Chief of the Retina Division in 2002. Dr. Schwartz has a strong interest in improving access to specialized ophthalmic care through telemedicine and has developed innovative screening programs for diabetic retinopathy and retinopathy of prematurity. His research contributions have helped revolutionize the way many vitreoretinal conditions, such as macular degeneration and vasoproliferative disorders, including retinopathy of prematurity and diabetic eye disease, are evaluated and treated. Recent research has contributed to innovative approaches to ocular robotic surgery.

This administrative chair to support the activities of the Chief of the Retina Division was created in 2005 by **The Ahmanson Foundation**. The Jules Stein Eye Institute is very grateful for

the late Robert H. Ahmanson's leadership and The Ahmanson Foundation's long-standing partnership in its mission to preserve sight and prevent blindness.

2007 Research to Prevent Blindness Award Grants

David S. Williams, PhD, Professor of Ophthalmology and Neurobiology, is the beneficiary of the 2007 Jules and Doris Stein RPB Professorship. The Stein Professorship is the premier award of Research to Prevent Blindness, providing up to \$700,000 across seven years with a possible additional \$150,000 in matching funds to equip lab space. The Stein Professorship is designed to foster translational research by recruiting outstanding basic scientists to conduct clinically relevant research in a department of ophthalmology.



Dr. Williams applies genetics and microscopy, including live-cell imaging, to the roles of molecular motor proteins in retinal cells. He will develop translational studies on retinal degeneration and bring a cell biological approach to the study of how visual pigment is regenerated.



RPB Career Development Awards provide \$200,000 across four years to outstanding young clinical and basic scientists conducting research in departments of ophthalmology.

The awards provide a valuable tool to Ophthalmology Department Chairs who seek to recruit young ophthalmologists and vision scientists

to eye research. In 2007, **Raymond S. Douglas, MD, PhD**, Assistant Professor of Ophthalmology, was one of eight researchers selected to receive the award. Dr. Douglas is investigating the autoimmune mechanisms of Graves disease in order to develop therapies to prevent the condition's irreversible effects.

Ophthalmology Rankings and Recognition “Best Ophthalmology Center in the West”

The Jules Stein Eye Institute was ranked as the best eye care center in the Western United States and number five in the nation, according to a *U.S. News & World Report* survey of board-certified specialists from across the country. The 19th annual guide to America's best hospitals was



published in the magazine's July 21–28, 2008, edition. The Institute continually ranks among the top ophthalmology centers in the country in this survey.

Top Ophthalmology Program

The Jules Stein Eye Institute was among the top ophthalmology programs in the United States in the 2007 survey of Best Programs by Ophthalmology Times. Published on October 15, 2007, the rankings were determined by polling Chairpersons and Residency Directors from Ophthalmology Departments across the nation. The Institute ranked fourth in the Best Overall Program category for outstanding work in teaching and developing residents, educating the public about eye care, and promoting continued research among professional staff. The Institute also received high national rankings for Best Clinical Programs, Research Programs and Residency Programs.

Top Contributor of Landmark Ophthalmology Articles

In a screening of Ophthalmology journals, articles authored by Jules Stein Eye Institute faculty were ranked among the most frequently cited. The study, published in the July 2007 issue of *Archives of Ophthalmology*, focused on articles that were published in major ophthalmology journals from 1975–2006. The 100 articles with the most citations were contributed by 41 institutions, and are considered classic-landmark articles with topics that have inspired clinical and basic research in the past 30 years. The Jules Stein Eye Institute was ranked among the top five leading institutions, contributing five landmark articles.



RESEARCH

Research is a key component of the Institute's academic mission, and a high priority for faculty who have often devoted their life's work to furthering our knowledge of specific vision processes and eye diseases. Major research grants are routinely awarded to this effort each year. In 2007–2008, faculty members received important awards from both public and private organizations. Major new grants and grant renewals will enable faculty to substantially further ongoing vision science investigations that have shown promise. New clinical trials have direct application to some of the country's most common ophthalmic problems.

Stem Cell Microvesicles: Potential Tools for Retinal Regeneration

A National Eye Institute grant was awarded to **Debora B. Farber, PhD, DPhhc**, Karl Kirchgessner Professor of Ophthalmology, to support research on stem cell microvesicles, very small membranous vesicles released by stem cells found in their extracellular environment. Important molecular signaling occurs between progenitor/stem cells and local tissue environments or niches. Conventional dogma supports the involvement of growth factors and soluble proteins in this process. **Alex Yuan, MD, PhD**, and other members of Dr. Farber's laboratory are currently investigating the ability of stem cell microvesicles to fulfill this cell-to-cell communication role and to provide cues to two different progenitor cell niches in the eye. This could result in reactivation of ciliary margin and/or retinal Müller progenitor stem cells. In addition, Dr. Farber's group will attempt to identify and characterize microvesicles in the eye's aqueous and vitreous humors. Delivery of stem cell microvesicles to the eye may become a new treatment for a variety of ocular disorders.



Molecular Mechanism of Vitamin A Transport

Hui Sun, PhD, Assistant Professor of Physiology and Ophthalmology, received a National Eye Institute grant to study the molecular mechanism of vitamin A uptake for vision. Vitamin A is the precursor for the chromophore of photoreceptor proteins and also plays critical roles in eye development. Vitamin A deficiency is a leading cause of blindness in the world. Plasma retinol binding protein (RBP) is the principal carrier of vitamin A in the blood. Dr. Sun's laboratory recently identified the long-sought cell-surface receptor for RBP that mediates efficient and specific transport of vitamin A into cells. Human genetics studies show that the RBP receptor is essential for the formation of the human eye. Dr. Sun's laboratory is using a variety of techniques to study this new membrane transport system. Given the essential roles of vitamin A for both adult and developing eyes, understanding the molecular mechanism of vitamin A uptake will have a significant impact on efforts to preserve human vision.

Mechanism of Visual-Pigment Regeneration in Cone Photoreceptors

Gabriel H. Travis, MD, Charles Kenneth Feldman Professor of Ophthalmology and Co-Chief of the Vision Science Division, was awarded a National Eye Institute grant to study the role of Müller cells in visual pigment regeneration. There is evidence that the Müller cell, a cell located within the retina, participates in the regeneration of visual chromophore destined for cone photoreceptors. Cones provide high-resolution color vision in bright light, and are critical to normal sight in humans. Almost nothing is known about how Müller cells regenerate visual chromophore, and their relative contribution to this process. Dr. Travis's laboratory is studying the biochemical mechanisms of visual-pigment regeneration. Light perception is mediated by visual pigments in the eye. For sustained vision, these pigments must be continuously regenerated. Since defects in pigment regeneration cause inherited blinding diseases, the project will help us understand how these genetic diseases arise.

Dr. Hui Sun is studying the molecular mechanism of vitamin A uptake for vision.



Dr. Joseph Caprioli is evaluating methods to measure progressive rates of optic nerve damage in early and moderately advanced glaucoma.

Evaluation of Methods to Measure Rates of Glaucomatous Optic Nerve Damage

Several new clinical studies were funded during the year. One of the highlights was a substantial grant from **Pfizer, Inc.**, awarded to **Joseph Caprioli, MD**, David May II Professor of Ophthalmology, to support a clinical study of measurement and prediction of progression rates in early and moderately advanced glaucoma. Accurate assessment of optic nerve and nerve fiber layer is important to the early detection and timely treatment of glaucoma. Research is underway to develop novel structural measures of the optic nerve and nerve fiber layer, which are sensitive and specific for early and progressive glaucomatous optic nerve damage. The goals of this study include identifying clinically implementable techniques to measure the rate of progressive damage. It is unlikely that a single structural or functional technique will be best throughout the course of the disease. Different methods may need to be applied at different stages to best measure disease progression.

Dr. Sophie Deng, Assistant Professor of Ophthalmology

EDUCATION

Academic education at the Jules Stein Eye Institute is multifaceted, ranging from teaching medical students, residents, and fellows to leading national conferences. In the course of their educational duties, faculty members mentor, counsel, lecture, and demonstrate. They are responsible for hundreds of clinical and scientific publications each year, and entrusted with developing and sharing new approaches to science and medicine that will ultimately result in improved patient care. This year we are proud to introduce four new full-time faculty members, and applaud the volunteer clinical faculty who were recognized at the Institute's Annual Clinical and Research Seminar for their exceptional contributions to the Institute's training programs.

New Faculty

Sophie X. Deng, MD, PhD, was successfully recruited to the Cornea and Uveitis Division as Assistant Professor of Ophthalmology. Dr. Deng received a joint medical and doctor of philosophy degree through the University of Rochester's rigorous Medical Scientist Training Program, focusing on immunology during her doctoral dissertation research. After medical school, Dr. Deng completed her residency at the Illinois Eye and Ear Infirmary at Chicago, where she conducted a study on the use of intravitreal methotrexate in the treatment of inflammatory eye diseases that won the 2005 Beem Fisher Award, First Place, from the Chicago Ophthalmologic Society. She was awarded the prestigious Heed Fellowship in 2005. Upon completing fellowship training in corneal and external ocular diseases and refractive surgery at the Jules Stein Eye Institute, Dr. Deng became a staff physician in the Institute's Cornea and Uveitis Division. In her new faculty position, she continues patient care and her research in ocular surface reconstruction using regenerative medicine.





*Dr. JoAnn Giaconi, Assistant Clinical Professor
of Ophthalmology*

JoAnn A. Giaconi, MD, is Assistant Clinical Professor of Ophthalmology in the Glaucoma Division. Dr. Giaconi received her medical degree from Columbia University in New York and did her residency in Ophthalmology at Stanford University Hospital. After completing a fellowship in Cornea and Refractive Surgery at the Bascom Palmer Eye Institute, University of Miami, she came to the Jules Stein Eye Institute, where she completed a second fellowship in Glaucoma. Dr. Giaconi provided medical and surgical care to patients in both the Institute's University Ophthalmology Associates and Glaucoma Division for three years prior to her faculty appointment, while concurrently teaching in the Institute's medical student education and residency programs at Harbor-UCLA Medical Center and the Department of Veterans Affairs Greater Los Angeles Healthcare System. As a faculty member of the Glaucoma Division, she continues her activities in patient care, teaching, and research into the effect of glaucoma surgery on the corneal endothelium.

David Sarraf, MD, was appointed Associate Clinical Professor of Ophthalmology in the Retinal Disorders and Ophthalmic Genetics Division. Dr. Sarraf received his medical degree from the University of Toronto in Canada. He completed an Ophthalmology research fellowship at the Jules Stein Eye Institute, followed by Ophthalmology residency training at the University of Chicago's Pritzker School of Medicine in Illinois and a fellowship in Medical Retina and Uveitis at Moorfields Eye Hospital in London. He returned to Los Angeles in 1998 as Assistant Professor of Ophthalmology at Martin Luther King Medical Center, and as clinical staff at the Jules Stein Eye Institute. Prior to his faculty appointment, Dr. Sarraf provided medical retina services in University Ophthalmology Associates, and participated in the Institute's medical education and residency training programs, for which he

*Dr. David Williams,
Professor of Ophthalmology*



*Dr. David Sarraf, Associate Clinical Professor
of Ophthalmology*

received the Faculty Teaching Award in 2006. He continues his patient care, research into age-related macular degeneration and diabetic retinopathy, and teaching activities as a full-time faculty member.

David S. Williams, PhD, has an adjunct appointment as Professor in the Departments of Ophthalmology and Neurobiology. He was awarded the prestigious Jules and Doris Stein Research to Prevent Blindness Professorship in 2007. Dr. Williams received his doctorate in neurobiology from Australian National University and completed a postdoctoral fellowship in retinal cell biology from University of California, Santa Barbara. He gained further experience as an Assistant Research Scientist at the Jules Stein Eye Institute before joining the faculty at Indiana University. He was an Adjunct Professor in the Departments of Pharmacology and Neurosciences at the University of California, San Diego, prior to his recruitment to UCLA. Dr. Williams research interests center on cell biological studies of the retina in relation to retinal function and inherited retinal disease. His current studies focus on the role of molecular motors for the function and viability of photoreceptor and retinal pigment epithelium cells—primarily their role in protein and organelle transport within these cells.





Drs. Bartly Mondino (left) and Robert Goldberg (right) present Dr. Bruce Becker with the Irvine Prize.

Annual Clinical and Research Seminar

The Institute's most prestigious academic event, the Clinical and Research Seminar, was held on May 30, 2008. Sponsored by the Department of Ophthalmology Association, it provided an opportunity for discussion of emerging vision research and a celebration of teaching and faculty volunteerism. This year's seminar featured the Thirty-Ninth Jules Stein Lecture, the Sixth Bradley R. Straatsma Lecture and the Sixth Thomas H. Pettit Lecture.

Jules Stein Lecturer

Neil R. Miller, MD, FACS

Professor of Ophthalmology, Neurology and Neurosurgery
The Johns Hopkins University School of Medicine

Bradley R. Straatsma Lecturer

Catherine Bowes Rickman, PhD

Professor of Ophthalmology and Cell Biology
Duke University School of Medicine

Thomas H. Pettit Lecturer

Stuart R. Seiff, MD

Professor of Ophthalmology Senate Emeritus
University of California, San Francisco

Volunteer and clinical faculty received awards of distinction.

Bruce B. Becker, MD, received the S. Rodman Irvine Prize, which recognizes excellence among Department of Ophthalmology faculty. Senior Honor Awards were given to **Andrew Henrick, MD**, **Morton P. Israel, MD**, and **Jonathan I. Macy, MD**, for volunteer service to the teaching programs of UCLA and affiliated hospitals. **Lynn K. Gordon, MD, PhD**, and **Sadiqa Stelzner, MD**, received the Faculty Teaching Award for their contribution to residency education.

JSEI Clinical and Research Seminar Named Lecturers (left to right): Thomas Pettit Lecturer Dr. Stuart Seiff, Bradley Straatsma Lecturer Dr. Catherine Bowes Rickman, and Jules Stein Lecturer Dr. Neil Miller



PHILANTHROPY

*“You make a living by what you get.
You make a life by what you give.”*

–Sir Winston Churchill

Established in 1966 through the remarkable insight and generous philanthropy of Dr. and Mrs. Jules Stein, the Jules Stein Eye Institute continues to advance and expand its programs and facilities. Private philanthropy provides critical support for scientific innovations, exceptional education and training, and the finest, most compassionate therapeutic approaches.

This year, over \$8.2 million was raised to support the Institute’s sight-saving endeavors. This commitment and dedication from more than 700 donors allows faculty to elevate the Institute to the next level of achievement in terms of eradicating blindness and preserving vision.

Jack H. Skirball Endowed Chair in Ocular Inflammatory Disease

The Skirball Foundation made a \$1-million pledge to establish the Jack H. Skirball Endowed Chair in Ocular Inflammatory Disease at UCLA’s Jules Stein Eye Institute. The creation of the Skirball Chair will enable a distinguished faculty member to engage in groundbreaking investigations and training programs in the field of inflammatory eye diseases. Jack Skirball’s entire life was one of philanthropy. Since several members of his family had eyesight problems, research in this area became a priority. Beginning with the first contribution in 1969, The Skirball Foundation has continued to fund vision science programs at the Jules Stein Eye Institute and, in particular, the endeavors of the UCLA Ocular Inflammatory Disease Center.



Jack Skirball

Born in 1896 in Homestead, Pennsylvania, **Jack H. Skirball** was ordained a rabbi in 1921. He took leave of rabbinate in 1933 and become a pioneer in film, first, as the manager of Educational Films Corporation and, then, as President of Skirball Productions, which was responsible for pictures such as Alfred Hitchcock’s *Saboteur* (1942) and *Shadow of a Doubt* (1943). In the 1950s, he began a third successful career, this time as a real estate developer. Through Mr. Skirball’s film career and relationship with the Music Corporation of America (MCA, Inc.), he met and became lifelong friends with Dr. Stein and Mr. Wasserman. The creation of the Jack H. Skirball Endowed Chair in Ocular Inflammatory Disease will serve as a lasting legacy to this enduring and influential connection, and bring Center specialists closer to their goal of improved treatment modalities and, ultimately, a cure and methods of prevention for these blinding and painful conditions.

Ernest G. Herman Chair in Ophthalmology

The proposed Ernest G. Herman Chair in Ophthalmology will support a vision scientist or a clinician-investigator whose work emphasizes a significant area of ocular research. **Ernest G. Herman** has been helping people see for decades. At the Jules Stein Eye Institute, he donated to an indigent care program in Pediatric Ophthalmology and made gifts for Retina research and fellowships. Over the years, his philanthropy has touched the International Council of Ophthalmology Foundation, EyeCare America, and the Association of University Professors of Ophthalmology. He made a major contribution which helped to establish the Straatsma Award for Excellence in Resident Education through the American Academy of Ophthalmology and the Association of University Professors of Ophthalmology.



Mr. Ernest Herman (right)
with the Jules Stein Eye
Institute’s Founding Director,
Dr. Bradley Straatsma

Ernest Herman, who moved from Berlin to Los Angeles as a teenager, was raised in a culture of giving. He watched his father, Berlin's largest owner of pre-World War II residential and commercial properties, donate his first restored building back to the poor to aid Berlin's reconstruction. Mr. Herman, with his business partner Fred Keeler, built a real estate empire that included 42 J.C. Penney department stores across the nation. After helping Dr. Jules Stein with property investments in the 1960s, Mr. Herman became a patient and lifelong friend of **Bradley R. Straatsma, MD, JD**, the Institute's founding director. The Jules Stein Eye Institute is deeply appreciative to Mr. Herman for his broad and influential philanthropic support of ophthalmology. The Ernest G. Herman Chair is a lasting investment in the preservation of vision for children and adults.

Lydia Ann Rosenberg Fund for the Indigent Children's Ophthalmic Care Program

To honor her late daughter Lydia Ann, **Phyllis Rosenberg** made a generous contribution to establish a fund to support the Jules Stein Eye Institute's Indigent Children's Ophthalmic Care Program. This much-needed resource will provide surgical eye care and follow-up services for young patients with no medical insurance. Due to the increasing number of Americans, particularly children and their parents, who lack



Marie and Jerry Hornstein

health coverage, this program fulfills a growing need for ophthalmic care in our community. Phyllis and her son **Marc Rosenberg** heard of the Institute's outstanding reputation, and a program to specifically help children really appealed to them. The Jules Stein Eye Institute is incredibly grateful for the support and friendship of Phyllis and Marc. Additional funding for indigent care is a major priority for the Institute. The establishment of this fund is an important investment in the lives of children and a wonderful tribute to Lydia Ann.

Marie and Jerry Hornstein Family Endowed Macular Degeneration Research Fund

Jerry J. Hornstein and his wife **Marie** made a \$100,000 donation to establish the Marie and Jerry Hornstein Family Endowed Macular Degeneration Research Fund. This valuable resource will provide funds in perpetuity to underwrite the age-related macular degeneration studies of **Steven D. Schwartz, MD**, Ahmanson Professor of Ophthalmology. Both Holocaust survivors, Mr. Hornstein and his wife settled independently in the United States after World War II, met, married, and ultimately opened the Security Contact Lens laboratory in Beverly Hills. Diagnosed with age-related macular degeneration, Mr. Hornstein was referred to the Jules Stein Eye Institute for treatment. Through emergency surgery, and thanks to Dr. Schwartz's expertise, he gained peripheral vision. When the Hornsteins learned of the pioneering research on age-related macular degeneration underway at the Institute, they were inspired to make a contribution to advance these investigations. An endowment appealed to the couple because it will serve as a lasting legacy to their family, particularly those who perished in the concentration camps.



Jules Stein Eye Institute Director, Dr. Bartly Mondino (left), with Phyllis Rosenberg and her son Marc.

THANK YOU

The Jules Stein Eye Institute is grateful for the generous and steadfast support of its research, education, patient care, and outreach activities. This investment will influence Ophthalmology and related disciplines at UCLA and throughout the broader vision community. Thank you for your commitment to these important endeavors.

Major Gifts over \$25,000

Alcon Research Institute
Allergan Inc.
American Geriatrics Society, Inc.
American Health Assistance Foundation
J. Richard and Ardis Armstrong Living Trust
Bruce Ford and Anne Smith Bundy Foundation
Children's Hospital Corporation
Moshe Dalman
Diane and Guilford
The Foundation Fighting Blindness
Tom and Mary Kay Gallagher
Laraine and David Gerber
Brindell Roberts Gottlieb
Stella and Daniel Hering
Ernest G. Herman
Estate of Josephine M. Hewitt
Hope for Vision
Marie and Jerry Hornstein
Jaeb Center for Health Research
The Karl Kirchgessner Foundation
Irving & Estelle Levy Foundation
courtesy of Dr. and Mrs. Jerome Klein
Los Angeles Biomedical Research Institute
MacDonald Family Foundation
L and S Milken Foundation
Neuro Kinetics, Inc.
Gerald H. Oppenheimer Family Foundation
Mary E. Plummer Family Trust
Louis and Harold Price Foundation, Inc.

Jeanne A. Rappaport
Ritter Family Trust
Phyllis and Marc Rosenberg
Drs. Daljit S. and Elaine Sarkaria
The Skirball Foundation
Beth and David Shaw
Sonin Family Trust
Ruth Straatsma and Bradley R. Straatsma MD, JD
The Fran and Ray Stark Foundation
Research to Prevent Blindness, Inc.
Vision of Children, Sam and Vivian Hardage, Co-Founders
Plus numerous anonymous contributors

The following individuals were honored with a tribute gift this past year:

In Honor of

William Ahmanson
Leonard Apt, MD
Richard Casey, MD
Leonard and Cindy Chapman
Anne Chinn
Devin Freeman
Marvin Meye Gladstone
John Griffin, OD, MSED
Mort and Lita Heller
John Hofbauer, MD
Kevin Miller, MD
Bartly J. Mondino, MD
Edgar M. Phillips, Jr.
Arthur L. Rosenbaum, MD

Jennete Rosenfeld
Charlotte Rubin
Steven Schwartz, MD
Richard L. Silver, OD
Bradley Straatsma, MD, JD
Marty Taback
Barry Weissman, OD, PhD
Rita Zide

In Memory of

Robert Ahmanson
Mabel Chapman
Seymour Fleischer
Milton Gottlieb
Wayne N. Graves II
Cornelia Griswold
Mary Hayes
Carol Holoen
Mary Blake Larson
Nang Nou Leang
Virginia E. Leyden
Joseph P. Manson
Laughlin B. Patrick
Lydia Ann Rosenberg
Haruo Yoshino

COMMUNITY OUTREACH



Volunteer Toshka Abrams reviews the screening symbols with a young preschool student at a recent vision screening.

Much of the Jules Stein Eye Institute's reputation springs from its innovative vision research, which translates into first-class patient care, including care for those in underserved communities. Members of the Institute's family: JSEI Affiliates volunteers, staff, donors, faculty, fellows, and residents, have combined their talents to provide eye care to those who would normally find it difficult to afford vision screenings, contact lenses, eyeglasses, medical eye examinations, and surgery.

Indigent Children and Families Ophthalmic Care Program

The Jules Stein Eye Institute's Indigent Children and Families Ophthalmic Care Program is a resource for children and adults with no medical insurance who require eye surgery or other specialized care in order to preserve their vision. Supported by private philanthropy, the program received an additional boost in 2003 when the Annenberg Foundation made a \$1 million pledge to support its continuation and expansion. Patients are referred to the program by faculty, fellows, and residents working at the Institute, UCLA-affiliated medical centers, UCLA Mobile Eye Clinic and Venice Family Clinic. Once the patients' medical and financial screenings are completed, pre-operative tests are conducted, required surgeries are scheduled, and post-operative care is provided. In addition to free surgical services, the program assists parents with the purchase of pediatric contact lenses for children under the age of five who suffer from aphakia (absence of the lens of the eye) due to congenital cataract.

UCLA Mobile Eye Clinic

The UCLA Mobile Eye Clinic provides general eye care to approximately 4,000 adults and children annually throughout Southern California, traveling to schools, shelters, community health and senior citizen centers, health fairs, and organizations that assist homeless and low-income families. The Clinic, founded in 1975 with philanthropic support from The Karl Kirchgessner Foundation, currently uses a 39-foot bus specially equipped with eye examination equipment. The staff of trained ophthalmic personnel includes **Lawrence M. Hopp,**

MD, Eddy Nguyen, MD, and **Andrew Young, MD,** as well as JSEI residents, and is led by **Anne L. Coleman, MD, PhD.** Vision services offered include ophthalmic examination and refraction, diagnoses of potential or existing eye disorders, treatment of some ocular diseases, and appropriate referral of patients who need additional services or surgery. Eyeglass vouchers are available for children in need through the generosity of the Karl Kirchgessner Foundation, and Our Lady of Angels Cathedral provides prescription eyeglasses for adults seen on the Mobile Eye Clinic in downtown Los Angeles.

JSEI Affiliates Programs—A Year in Review

Since its inception, the Jules Stein Eye Institute Affiliates have provided extensive outreach programs made possible through funding from annual membership dues and philanthropic support from program donors. Affiliates programs support vision research, vision education and vision rehabilitation for the underserved of the Los Angeles community.

Preschool Vision Screening (PSVS) Program

The Preschool Vision Screening Program began in 1999 with support from a private donor. This program meets a growing need for early intervention for children who have undetected refractive errors or eye muscle problems. Trained lay volunteers, under the supervision of two retired optometrists, visit local preschools in Los Angeles County to screen young children for simple refractive errors and eye muscle problems. In 2008, the Institute continued its relationship for a second year with the Santa Monica-Malibu Head Start Program, allowing volunteers to screen low-income children participating in this program that could not otherwise afford a vision exam.

2007–2008 Program Statistics

Number of children screened	500
Average number screened per session	30
Number of children referred to a physician for further examination	30
Number of participating volunteers	20, including two retired optometrists



JSEI Affiliates Program Volunteers, (left to right) Marcia Lloyd and Evita Cheslow, sold Make Surgery Bearable sponsorships at the fifth annual Mother's Day "Ice Cream Social" campaign, May 2008.

Vision IN-School Program

Vision IN-School is a vision education program designed for fourth-to-sixth-grade students, based on curriculum provided by the National Eye Institute. Offered to schools throughout the Greater Los Angeles area, the program began in 1996 and is a fun, interactive curriculum that covers anatomy of the eye, eye safety, and optical illusions. Volunteers visited 10 different schools this past year, presenting to 12 different classrooms. The program emphasizes eye safety and injury prevention in hopes of inspiring children to protect their precious gift of vision.

2007–2008 Program Statistics

Number of presentations	12
Number of participating children	349
Number of participating volunteers	20

Shared Vision Program

The Shared Vision Program collects and recycles donated eyeglasses for those in need. Most of the glasses are donated to clinic missions in Africa, Mexico, and other developing nations. Many are distributed to Jules Stein Eye Institute faculty and staff members who travel abroad to conduct specialized clinics, and some, especially pediatric frames, are utilized by the Institute's own Mobile Eye Clinic that conducts vision screenings in low-income areas throughout Southern California.

2007–2008 Program Statistics

Number of eyeglasses collected	10,500
Organizations that received eyeglass donations:	<ul style="list-style-type: none"> • US Doctors for Africa • Fellowship for International Service and Health (FISH) • Lions Club International • Venice Family Clinic • Various additional International Clinic Missions

MagniVision

MagniVision volunteers support the Institute's Vision Rehabilitation Center by training low-vision patients on the use of magnification devices and various new vision aids that allow them the ability to maintain their independence and improve their quality of life. Volunteers work in the clinic on a year-round basis to provide assistance to Center staff and patients. Aside from volunteer support, the JSEI Affiliates provide financial assistance to support the general needs of the Center and to purchase new assistive and magnification devices to keep the Lending Library's inventory current.

Make Surgery Bearable

The Make Surgery Bearable program provides plush "Dr Teddy MD" teddy bears to each and every pediatric patient undergoing eye surgery at the Jules Stein Eye Institute. They are small tokens but go a long way to help children feel secure during a scary time. Funds for the teddy bears are raised in a variety of ways, including the Affiliates' annual holiday and Mother's Day campaign drives. Sponsorships are also available year-round to honor a loved one or celebrate a special occasion.

Number of teddy bears sponsored during 2007–2008	750
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Annual Report 2007–2008
Jules Stein Eye Institute

Faculty



Anthony J. Aldave, MD

Associate Professor of Ophthalmology
Director of the Cornea Service
Director of the Cornea and Refractive Surgery Fellowship
Member of the Jules Stein Eye Institute



Discovering the Genetic Basis of the Corneal Dystrophies

The corneal genetics laboratory, under Dr. Aldave's direction, is involved in the search for the genetic basis of inherited corneal disorders such as keratoconus, posterior polymorphous corneal dystrophy, and posterior amorphous corneal dystrophy. Additionally, the laboratory is investigating the utility of RNA interference in the management of the TGFBI dystrophies.

PUBLIC SERVICE

Member, American Academy of Ophthalmology Knowledge Base Development Project Cornea and External Disease Panel
Member, American Academy of Ophthalmology Subspecialty Day Committee
Member, American Academy of Ophthalmology Ethics Committee
Associate Examiner, American Board of Ophthalmology
Reviewer for many scientific journals

HONORS

Visiting Professor/Invited Grand Rounds Speaker at Northwestern University in Chicago, Illinois
Keynote Speaker at the 66th Annual Conference of the All India Ophthalmological Society in Bangalore, India
Visiting Professor at King Khaled Eye Specialist Hospital in Riyadh, Saudi Arabia
Presented the Gaynelle Robertson Memorial Lectureship in Ophthalmology at the University of Texas Medical Branch in Galveston, Texas

RESEARCH GRANTS

NEI/NIH: Cloning the Gene for Posterior Polymorphous Corneal Dystrophy, 9/30/05–8/31/10
Case Western University/NIH: A Multicenter Study to Map Genes for Fuchs Dystrophy, 2/1/06–8/31/08
National Keratoconus Foundation: Identification of Differentially Expressed Genes in Keratoconus, 9/1/06–8/31/07
Stein Oppenheimer Endowment Award: Identification of the Genetic Basis of Keratoconus Using a Candidate Gene Approach Incorporating Gene Expression and Linkage Analysis Data, 2/13/07–2/12/08
Oppenheimer Family Foundation Center For Prevention of Eye Disease Program: RNA Interference Targeting of the TGFBI Gene Transcript in Human Corneal Epithelial Cells as a Method to Inhibit Pathologic TGFBI Protein Deposition in the Corneal Dystrophies, 2/15/08–2/14/09
Ophthalmic Innovations International, Inc.: To Evaluate the Safety and Effectiveness of the Phakic 6 H2 Refractive Anterior Chamber Lens, 7/3/03–7/2/07



Anthony C. Arnold, MD

Professor of Clinical Ophthalmology
 Chief of the Neuro-Ophthalmology Division
 Director of the UCLA Optic Neuropathy Center
 Member of the Jules Stein Eye Institute

Ischemic and Inflammatory Diseases of the Optic Nerve

Dr. Arnold directs a neuro-ophthalmology research program concerned with diseases of the optic nerve. The overall goals of the program are the development of new techniques for imaging the optic nerve and its blood supply; an improved understanding and classification of ischemic and inflammatory optic nerve diseases; and the development and evaluation of new therapeutic modalities for these diseases.

Dr. Arnold was a principal investigator in the National Eye Institute-sponsored clinical study of optic nerve sheath decompression surgery for nonarteritic anterior ischemic optic neuropathy, and he was on the study's Visual Field Data Analysis Committee. He is a primary consultant for an international multicenter study of risk factors for nonarteritic anterior ischemic optic neuropathy.

Ongoing additional research studies include clinical characteristics of ischemic optic neuropathy in young patients; improved differentiation of arteritic from nonarteritic anterior ischemic optic neuropathy; identification of ischemic aspects of other rare optic neuropathies, such as diabetic papillopathy, uremic optic neuropathy, and chemotherapy-induced optic neuropathy after bone marrow transplantation; and classification of unusual optic neuropathies, such as ethambutol-induced optic neuropathy and focal congenital optic nerve hypoplasia. A longitudinal study of optic nerve sheath meningiomas treated with conformal radiation is in development.

PUBLIC SERVICE

Faculty, Stanford/Bay Area Basic Science Course in Neuro-Ophthalmology

Reviewer for many scientific journals

HONORS

President of the North American Neuro-Ophthalmology Society

Director of the American Board of Ophthalmology

Co-Director and Invited Guest Lecturer at the Symposium on Residency Education and Neuro-Ophthalmology at the World Ophthalmology Congress in Hong Kong, China

Chaired the Curso de Directores de Residencias Oftalmologicas (Residency Program Directors Course) in Buenos Aires, Argentina

Co-Chair at the International Neuro-Ophthalmology Society Meeting in Napa, California

Invited Guest Lecturer at the International Council of Ophthalmology Program Directors Course in Florianopolis, Brazil

Presented the Koplowitz Lecture at the Current Concepts of Ophthalmology Meeting at the Wilmer Eye Institute in Baltimore, Maryland

Invited Lecturer at the Saudi Ophthalmology Congress at King Fahd Cultural Center in Riyadh, Saudi Arabia

Primary Guest Lecturer in Neuro-Ophthalmology at the Argentine Congress of Ophthalmology in Buenos Aires, Argentina

Richard S. Baker, MD

Associate Professor of Ophthalmology

Dean of the College of Medicine, Charles Drew University of Medicine and Science

Associate Dean of the David Geffen School of Medicine, UCLA

Member of the Jules Stein Eye Institute



Ophthalmic Epidemiology and Health Services Research

Dr. Baker's primary areas of research interest are in the fields of ophthalmic epidemiology, health services research, and health information technology including telemedicine. Current projects in ophthalmic epidemiology include statistical analysis of national and statewide databases to produce definitive population-based estimates of the distribution and the determinants of major ophthalmic diseases and their treatments.

As Director of the Charles Drew Center for Health Services Research, Dr. Baker works closely with collaborators at the Jules Stein Eye Institute and across UCLA on multiple projects related to improving access to care, optimizing quality of care, and the elimination of health disparities in diverse and underserved populations.

PUBLIC SERVICE

Co-Founder and Board Member, Los Angeles Eye Institute

Commissioner, Blue Ribbon Commission on Los Angeles Grocery Industry and Community Health

Member, South Los Angeles Health Care Leadership Roundtable

Reviewer for multiple NIH and AHRQ Special Emphasis Panels

Reviewer for many scientific journals

HONORS

Recipient of the California State Assembly Certificate of Recognition

RESEARCH GRANTS

Agency for Health Care Research and Quality: Drew MRISP Center for Health Services Research, 9/1/04–8/31/08

National Cancer Institute/Morehouse School of Medicine: National Black Leadership Initiative on Cancer Community Networks Program, 9/1/06–8/31/09



Suraj P. Bhat, PhD

Associate Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Molecular Biology of Vision

Dr. Bhat's laboratory conducts research in the regulation of gene expressions during differentiation and development of the vertebrate eye. This involves isolation and characterization of genes and gene products; identification of the attendant regulatory elements; and study of the regulatory controls in both *in vivo* and *in vitro* systems with manipulated gene sequences.

Two areas of research are currently under investigation that will provide insight into molecular mechanisms that developmentally predispose the eye to hereditary dysfunctions such as myopia, cataracts, and retinal diseases. One area of study is the developmental and tissue-specific control of the heat shock promoter of the α B-crystallin gene and the biological function of its gene product. This involves a focus on HSF4, which Dr. Bhat recently reported to be the only heat shock transcription factor of the developing ocular lens. Another area of study is control of the growth of the eye globe with special emphasis on neurogenesis (generation of neurons) in the retina.

PUBLIC SERVICE

Member, National Advisory Eye Council, National Eye Institute, National Institutes of Health

Member, University of California, Council on Research

Member, Scientific Advisory Board for the Eye Research Institute of Oakland University

Executive Editor, *Experimental Eye Research*

Editor, *Molecular Vision*

Reviewer for many scientific journals

HONORS

Keynote Speaker at the XXXIII Annual Conference of the Indian Society of Human Genetics and International Symposium on Genetics Revisited: The Genomics and Proteomics Advantage in Visakhapatnam, India

RESEARCH GRANTS

National Eye Institute: Gene Expressions in Normal and Cataractous Lens, 6/1/06–5/31/11

Dean Bok, PhD

Dolly Green Professor of Ophthalmology
 Professor of Neurobiology
 Member of the Jules Stein Eye Institute
 Member of the Brain Research Institute



Cell and Molecular Biology of the Retina

Dr. Bok's research interests involve the cell and molecular biology of the normal and diseased retina. In one research area, he is identifying and characterizing genes specific to retinal pigment epithelium (RPE) and exploring interactions that take place between RPE and retinal photoreceptors. The RPE performs a multitude of functions in the retina, including the transport of nutrients, ions, and fluid; the uptake and processing of vitamin A; and the daily removal of outer segment disc membranes that have been discarded by the photoreceptors. A second area of research involves the study of animal models for human retinitis pigmentosa and macular degeneration.

Dr. Bok is using the techniques of cell and molecular biology to determine the proteins responsible for photoreceptor degeneration. One of the proteins under study in mice and humans is rds/peripherin. Because of a gene mutation, this protein is defective in a strain of mice called rds. As a result, the photoreceptors fail to form their light-sensitive organelles and eventually die. Dr. Bok and his collaborators have prevented blindness in these mice by injecting an artificial gene for rds/peripherin that performs normally. They are currently placing human rds/peripherin mutations into mice in order to study the mechanisms that cause photoreceptor death. Attempts are being made to slow the process of photoreceptor degeneration by delivery of neurotrophic factors into the retina by nonpathogenic viruses. Finally, with new information regarding the genetics of age-related macular degeneration, Dr. Bok and collaborators are studying mechanisms whereby the alternative complement pathway of the immune system contributes to this disease.

PUBLIC SERVICE

Member, Scientific Advisory Board: Bank of America/Giannini Foundation, the E. Matilda Ziegler Foundation for the Blind, The Karl Kirchgessner Foundation, the Macula Vision Research Foundation, Research to Prevent Blindness, and the Ruth and Milton Steinbach Fund, Inc.

External Advisory Board, Center of Biomedical Research Excellence, University of Oklahoma Health Sciences Center and BRTT grant, Cole Eye Institute

Editorial Board Member, *International Review of Cytology*

Reviewer for many scientific journals

HONORS

Honorary Chair for the Foundation Fighting Blindness, Vision Walk

RESEARCH GRANTS

Macula Vision Research Foundation: Identification and Cellular Localization of Gene Products that Affect Photoreceptor Survival in Inherited Retinal Degeneration, 4/1/08–3/31/09

Foundation Fighting Blindness: Center Grant (Center Director, with other investigators), 7/1/05–6/30/10

National Eye Institute: Pathobiology of Inherited Retinal Degenerations, 12/1/01–11/30/07

Retina Research Foundation: Paul Kayser International Award in Retina Research, 12/1/06–11/30/07

Sarkaria Family Foundation: Clinical Studies of Stargardt Disease and Development of a New Mouse Model of Stargardt Disease (with other investigators), 7/1/07–6/30/11

National Eye Institute: Development of Complement Modulating Therapeutics for AMD (with other investigators), 8/1/06–7/31/11

National Eye Institute: RDS Mutations; Gene Therapy for ADRP, Macular Degeneration and Pattern Dystrophy (with other investigators), 9/1/07–8/31/11



Joseph Caprioli, MD

David May II Professor of Ophthalmology
 Chief of the Glaucoma Division
 Member of the Jules Stein Eye Institute

Dr. Caprioli's long-term objective in his clinical and basic research is to identify those individuals at greatest risk for visual loss and to implement new treatment strategies to prevent blindness. Currently, the only tool that physicians have to treat glaucoma is reduction of intraocular pressure. This treatment does not prevent visual loss in a substantial proportion of patients whose damage progresses quickly. The development of effective neuroprotective avenues of treatment will be a hallmark advance to eliminate blindness from this disease.

Evaluation of Methods to Measure Rates of Glaucomatous Optic Nerve Damage

Accurate assessment of optic nerve and nerve fiber layer is important to the early detection and timely treatment of glaucoma. Studies are underway to develop novel structural measures of the optic nerve and nerve fiber layer, which are sensitive and specific for early and progressive glaucomatous optic nerve damage. The goals of this work include identifying clinically implementable techniques to measure the rate of progressive damage. It is unlikely that a single structural or functional technique will be best throughout the course of the disease, and that different methods will need to be applied at different stages to best measure disease progression.

Molecular Mechanisms of Retinal Ganglion Cell Damage and Neuroprotective Approaches to Treatment

Basic science research under Dr. Caprioli's direction involves the mechanisms of glaucomatous optic nerve damage. The stress protein response in a glaucoma model is being intensively studied. An important goal in this research is to identify

neuroprotective drugs that prevent the death of retinal ganglion cells in mammalian models of glaucoma, and to apply these findings to clinical trials of human glaucoma.

PUBLIC SERVICE

Chair, American Academy of Ophthalmology, Practice Improvement Task Force

Clinical Volunteer, Venice Family Clinic

Editorial Board Member: *American Journal of Ophthalmology*, *Investigative Ophthalmology and Visual Science*, and *Journal of Glaucoma*

Reviewer for many ophthalmic journals

HONORS

Presented the H. Saul Sugar Lecture in Glaucoma in Dearborn, Michigan

Invited Distinguished Keynote Speaker at the State Institute of Eye Diseases of the Russian Academy of Medical Sciences in Moscow, Russia

RESEARCH GRANTS

Allergan: Oral Memantine Study, 8/31/99–7/8/07

Allergan: A 48-Month, Multicenter, Randomized, Double-Masked, Placebo-Controlled Clinical Study, 8/31/99–7/8/07

Pfizer: Retrospective, Long-Term, Longitudinal Analysis of HRT Image Data in Patients with Ocular Hypertension, 4/7/06–4/7/11

Pfizer: Measurement and Prediction of Progression Rates in Early and Moderately Advanced Glaucoma, 9/19/07–9/30/08

Richard Casey, MD

Associate Professor of Clinical Ophthalmology
Member of the Jules Stein Eye Institute
Lead Physician of the Martin Luther King, Jr. Multi-Service Ambulatory Care Center
Faculty of Charles Drew University of Medicine and Science



Cornea External Disease and Health Services/Health Access

Dr. Casey's primary research interest involves improving access to health care in underserved communities both in the United States and throughout the world. He is working to assess the unmet needs in vision health and to develop innovative strategies to meet these deficits.

PUBLIC SERVICE

Co-Founder/Chairman, The Los Angeles Eye Institute
President, Willowbrook Medical Center Project
President, The Los Angeles Ophthalmology Medical Group



Anne L. Coleman, MD, PhD

Frances and Ray Stark Professor of Ophthalmology

Professor of Epidemiology

Director of the UCLA Center for Eye Epidemiology and the UCLA Mobile Eye Clinic

Member of the Jules Stein Eye Institute

Glaucoma, Cataract, and Age-Related Macular Degeneration

Dr. Coleman's research is directed toward the diagnosis, treatment, and societal impact of glaucoma, cataracts, and age-related macular degeneration (AMD), including the study of lifestyle limitations imposed on patients with these kinds of eye diseases. Clinical projects include studies on dietary vitamin intake and open angle glaucoma, the effects of yoga on glaucoma, and glaucomatous visual field and optic nerve progression.

PUBLIC SERVICE

Trustee-at-Large, American Academy of Ophthalmology

Assistant Secretary for Quality of Care, American Academy of Ophthalmology

Planning Committee Member, National Eye Health Education Program, National Health Institute

Member, University of Arizona Review Committee

Executive Editor, *American Journal of Ophthalmology*

HONORS

Clinician Scientist Lecturer for the American Glaucoma Society

Member of the American Ophthalmological Society

RESEARCH GRANTS

National Eye Institute: Ocular Hypertension Treatment Study (OHTS), 1/1/00–12/31/08

National Eye Institute: Incidence of Late Macular Degeneration in Older Women, 8/15/02–7/31/08

American Health Assistance Foundation: Single Nucleotide Polymorphisms and AMD in Older Women, 4/1/07–3/31/09

Friends of the Congressional Glaucoma Caucus Foundation: Student Sight Savers Program, 12/21/04–11/30/10

Alcon Laboratories: Alcon Funding, 12/1/07–11/31/09

Joseph L. Demer, MD, PhD

Leonard Apt Professor of Pediatric Ophthalmology
 Professor of Neurology
 Chief of the Comprehensive Ophthalmology Division
 Chair of the EyeSTAR Program
 Director of the Ocular Motility Clinical Laboratory
 Member of the Jules Stein Eye Institute



Motility and Vision

Dr. Demer studies the role of the brain and extraocular muscles in the control of eye movements and visual perception. He is directing a National Eye Institute research project aimed at developing an understanding of the role of orbital connective tissues in the development of binocular coordination disorders, such as strabismus, and is developing new technologies for magnetic resonance imaging of extraocular muscles and nerves. This research has contributed to the knowledge of the functional anatomy of extraocular muscles and connective tissues, allowing development of new types of surgeries. The project also involves study of an animal model of strabismus, expressing genes which cause binocular misalignment in humans.

Dr. Demer is also conducting a National Eye Institute study on magnetic resonance imaging of the extraocular muscles, which may clarify the phenotypes and mechanisms of congenital cranial dysinnervation syndromes. Patients with these syndromes have severe forms of strabismus. A project funded by Roy and Lillian Disney through Research to Prevent Blindness investigates optic nerve size, to determine if subtle optic nerve disorders are associated with amblyopia, a common cause of visual loss in children.

PUBLIC SERVICE

Editorial Board Member, *Investigative Ophthalmology and Visual Science*

Editorial Board Member, *Strabismus*

Grant Reviewer, United States Public Health Service and United States Veterans Administration

Reviewer for many scientific journals

HONORS

Presented the Angeline Parks Lecture and was a Visiting Professor at Children's National Medical Center in Washington, D.C.

Visiting Professor at Case Western Reserve University in Cleveland, Ohio

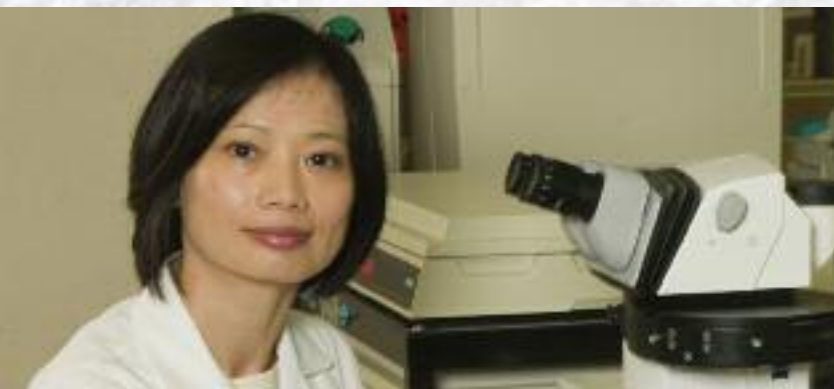
RESEARCH GRANTS

National Eye Institute: Biomechanical Analysis in Strabismus Surgery, 5/1/06–4/30/11

National Eye Institute/Children's Hospital Boston: Genetic and Anatomic Basis of the Fibrosis Syndrome, 4/1/07–11/31/09

Research to Prevent Blindness: Walt and Lilly Disney Award for Amblyopia Research, 7/1/04–6/30/09

National Institute on Deafness and Communicative Diseases: New Tests of Vestibular Function, 8/1/02–7/31/07



Sophie X. Deng, MD, PhD

Assistant Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Member of the UCLA Jonsson Comprehensive Cancer Center

Limbal Stem Cell Deficiency

Dr. Deng's research is focused on improving the current treatment for patients with limbal stem cell deficiency. To achieve this goal, her laboratory takes two different approaches. The first approach is to study the microenvironment/niche of the limbal stem cells to elucidate those factors that govern the fate of limbal stem cells. Unique gene expression in the limbus using an oligonucleotide microarray technique has revealed potential molecular components of the limbal stem cell niche. The functions of the genes in the corneal epithelial cells are being investigated in human limbal cell cultures. A transgenic mouse model is being used to study the homeostasis of the corneal

epithelial cells in normal and wound healing condition. Also under investigation is the role of Wnt signaling in the differentiation and proliferation of limbal stem cells. The second approach is to achieve patient specific therapy by regenerating autologous limbal stem cells from various types of pluripotent stem cells through *ex vivo* transdifferentiation. Multiple types of pluripotent stem cells will be tested for their ability to transdifferentiate into corneal epithelial cells.

Raymond S. Douglas, MD, PhD

Assistant Professor of Ophthalmology
Member of the Jules Stein Eye Institute



Characterizing the Molecular Events Occurring in Graves Disease

Dr. Douglas's research laboratory is undertaking studies to help identify important therapeutic targets for modifying the clinical behavior of Graves disease and limiting the morbidity associated with it.

The specific aims for this project are to identify the genes that participate in thyroid over-function and orbital connective tissue remodeling; to characterize the proteins that are produced abnormally in the orbit and thyroid in Graves disease; to determine the signaling events that occur in Graves disease; and to identify therapeutic targets for the thyroid, glandular, and orbital manifestations of Graves disease.

RESEARCH GRANTS

Research to Prevent Blindness: RPB Career Development Award, 7/1/07-6/30/11

National Eye Institute: Immune Activation of Fibroblasts, 10/1/04-9/1/09

Los Angeles Biomedical Research Institute/NIH: Immune Activation of Fibroblasts, 9/1/06-8/31/07

American Society of Ophthalmic Plastic and Reconstructive Surgery: ITEDS: Development of Clinical Response Index in TAO, 7/1/07-6/30/09



Gordon L. Fain, PhD

Distinguished Professor of Physiological Science,
Ophthalmology, and Neuroscience

Member of the Jules Stein Eye Institute

Physiology of Neurons

Dr. Fain's primary interest is in the physiology of photoreceptors in the vertebrate eye. He is particularly interested in the biophysical nature of the electric signal and the role of calcium in its production. Such information will help investigators understand how the eye works and may provide insight into the mechanisms of retinal degeneration.

RESEARCH GRANTS

National Eye Institute: Physiology of
Photoreceptors, 6/1/05-5/31/09

Debora B. Farber, PhD, DPhhc

Karl Kirchgessner Professor of Ophthalmology
 Member of the Jules Stein Eye Institute
 Member of the Brain Research Institute
 Member of the Molecular Biology Institute



Retinal Biochemistry, Molecular Biology, and Genetics of Retinal Degenerations

Dr. Farber's research focuses on the isolation and characterization of genes involved in inherited retinal diseases. Her team has cloned several genes encoding enzymes and proteins that play a key role in vision, including the β -PDE gene, that leads to blindness in mice and dogs, and causes one type of autosomal recessive retinitis pigmentosa (arRP) (utilizing gene therapy, they rescued mice photoreceptors by delivering the normal gene to these cells); *RPI* (responsible for a type of autosomal dominant RP); the gene causing disease in the *rd7* mouse—a model for Enhanced S-Cone Syndrome; the β -transducin gene, disrupted in the *Rd4* mouse, another model of retinal disease; and the mouse homologue of the gene causing X-linked juvenile retinosis (*Xlrs1*).

Dr. Farber's group is also working on the mechanisms that regulate transcription and expression of retinal genes. They found that the transcription factor SP4 controls the activity of the β -PDE promoter and that mutation in both SP4 and β -transducin cause digenic arRP and cone-rod dystrophy (arCRD). Other projects include the identification of cone genes (mutations in *7R* and *ZBED4* cause arRP and arCRD); the characterization of animal models of ocular albinism, which causes permanent visual impairment; and the study of microvesicles released by mouse embryonic stem cells that may transfer RNA or protein to other cells, *in vitro*.

PUBLIC SERVICE

Scientific Advisory Board Member: the Foundation Fighting Blindness; the Center for Vision Research, State University of New York at Syracuse; The Vision of Children Foundation; and an Advisor for The Canadian Retinitis Pigmentosa Foundation

Editorial Board Member: *Molecular Vision*; *The Open Ophthalmology Journal*; *The Journal of Ocular Biology, Diseases, and Informatics*; and *Stem Cells and Cloning Advances and Applications*

HONORS

Recipient of "Visitante Distinguida," Universidad Nacional de Cordoba, and Member of the National Academy of Medical Sciences of Cordoba in Republica Argentina

RESEARCH GRANTS

National Eye Institute: Molecular Mechanisms in Retinal Degenerations, 7/1/06–6/30/11

National Eye Institute: Stem Cell Microvesicles: Potential Tools for Retinal Regeneration, 12/1/07–11/30/09

Foundation Fighting Blindness: Center Grant (with other investigators), 7/1/05–6/30/10

Vision of Children Foundation: Studies in Ocular Albinism, 7/1/05–6/30/08

Vision of Children Foundation: Does a Constitutively Active G α 3 Protein Rescue the Oa1 -/- Mouse Phenotype?, 4/1/08–3/31/09

Hope for Vision (with Novrouz Akhmedov, PhD): Novel Locus for Retinitis Pigmentosa Associated with the Recently Identified 7R Protein, 4/1/08–3/31/09

Hope for Vision: Studies on the Ability of Stem Cell Microvesicles to Activate Quiescent Ciliary Margin Stem Cells and Enhance Their Proliferation, 9/1/07–8/31/08



JoAnn A. Giaconi, MD

Assistant Clinical Professor of Ophthalmology
Member of the Jules Stein Eye Institute

Glaucoma

Dr. Giaconi's primary research interests include how lifestyle impacts glaucoma, and the effect of glaucoma surgery on the cornea and vision. Using a database of women from the Multicenter Study of Osteoporotic Fractures, Dr. Giaconi is studying the association between glaucoma and the diet with Anne L. Coleman, MD, PhD. She is also enrolling patients in a clinical study to measure the effect of various glaucoma surgeries on the corneal endothelium, the layer of cells that keeps the cornea clear.

PUBLIC SERVICE

Member, Glaucoma Panel, American Academy of Ophthalmology Knowledge Base Development Project

Member, Women in Ophthalmology Board of Directors

Program Chair, Los Angeles Society of Ophthalmology

Reviewer for many scientific journals

HONORS

Recipient of the American Glaucoma Society's Clinician-Scientist Award

RESEARCH GRANTS

American Glaucoma Society: Nutritional Associations with Glaucoma/African American Women, 2/1/06–12/31/07

Ben J. Glasgow, MD

Edith and Lew Wasserman Professor of Ophthalmology
Professor of Pathology and Laboratory Medicine
Chief of the Ophthalmic Pathology Division
Member of the Jules Stein Eye Institute



Ophthalmic Pathology

Dr. Glasgow's research interests are primarily in the field of ophthalmic pathology. His major focus is the role of human lacrimal gland proteins in the protection and maintenance of the eye. His laboratory is investigating the structure-function relationship of tear lipocalin, the principal lipid carrier protein of tears. Currently, the laboratory has developed a technique called site-directed tryptophan fluorescence to probe and report information regarding molecular motion and solution structure. By studying the molecular mechanisms of tear proteins, Dr. Glasgow is seeking to learn the normal functions of tear lipocalin and its role in maintaining the health of the ocular surface and in the prevention of dry eye diseases. It is hoped that this research will lead to new treatments for dry eye and have broad application to numerous other members of this protein family that transport small, insoluble molecules through the body.

PUBLIC SERVICE

Member, National Institutes of Health, Anterior Eye Diseases Study Section

Reviewer for many scientific journals

RESEARCH GRANTS

National Eye Institute: Proteins in Molecular Mechanisms of Tear Film Formation, 6/30/06-7/1/11



Robert Alan Goldberg, MD

Karen and Frank Dabby Professor of Ophthalmology

Chief of the Orbital and Ophthalmic Plastic Surgery Division

Director of the UCLA Orbital Disease Center

Co-Director of the UCLA Aesthetic Center

Member of the Jules Stein Eye Institute

Diseases and Therapy of the Eyelid and Orbit

Research into the various surgical approaches to Graves orbitopathy (thyroid eye disease) has resulted in new techniques that include less invasive small incision surgical approaches. In addition, detailed clinical information gathered from patients with Graves orbitopathy is recorded in a shared database as a way to better understand the natural history and response to treatment of this multifaceted disease, which is a cause of significant visual loss and discomfort. Dr. Goldberg and Raymond S. Douglas MD, PhD, are also investigating the underlying causes of thyroid-related orbitopathy in collaborative research with Terry J. Smith, MD, in the Division of Molecular Medicine at Harbor-UCLA Medical Center. The goal of this research is to develop better tests to monitor disease activity, as well as new treatments to address the basic cause of the disease.

Research into orbital and eyelid anatomy, currently in progress, is resulting in improved techniques and approaches to deep orbital disease. Included is the use of high-resolution magnetic resonance imaging to evaluate motility problems following trauma and orbital surgery, and three-dimensional analysis of orbital anatomy. Improved understanding of eyelid and orbital anatomy is the basis for developing improved surgical techniques. Instrumentation and devices that allow less invasive surgical approaches, such as the hydrogel lacrimal stent, are being developed and studied.

Ongoing research related to the reconstruction of the ocular surface in severe trauma or cicatrizing disease includes the design and evaluation of improved instrumentation and surgery techniques. It is hoped that new treatment approaches can solve problems caused when damaged eyelids, conjunctiva, and support tissues fail to provide a supportive environment for the cornea.

PUBLIC SERVICE

Assistant Vice President Professional Education, California Academy of Ophthalmology

Fellow and Member, Awards Committee, American Society of Ophthalmic Plastic and Reconstructive Surgeons

Fellowship Program Director, American Academy of Cosmetic Surgery

Editorial Board Member: *Archives of Ophthalmology*, *Ophthalmic Plastic and Reconstructive Surgery*, and *Archives of Facial Plastic Surgery*

Section Editor, American Academy of Ophthalmology, O.N.E. Network

HONORS

Elected to the Editorial Board of the American Academy of Ophthalmology, *Ophthalmic News and Education*

Featured Invited Speaker at the Turkish Society of Ophthalmology in Antalya, Turkey

Visiting Professor and Featured Speaker at the LV Prasad Eye Institute in Hyderabad, India

Presented the King Khaled Memorial Lecture at King Khaled Eye Specialist Hospital in Riyadh, Saudi Arabia

Featured Invited Speaker at the Asia Pacific Ophthalmic Plastic Surgery Association Meeting in Seoul, Korea

RESEARCH GRANTS

Medicis Pharmaceuticals Corp.: A Phase III, Randomized, Placebo-Controlled, Multicenter, Double-Blind Study of Reloxin, 1/22/07-1/22/09

Christine R. Gonzales, MD

Assistant Professor of Ophthalmology
Member of the Jules Stein Eye Institute



Vitreoretinal Diseases

Dr. Gonzales is primarily interested in retinal disease with abnormal angiogenesis such as age-related macular degeneration (AMD), diabetic retinopathy, and retinopathy of prematurity (ROP). She is the principal investigator in many clinical trials evaluating a new pharmacologic treatment for exudative macular degeneration. This treatment involves an intravitreal injection of an agent that blocks vascular endothelial growth factor (VEGF). This growth factor is known to play an important role in abnormal blood vessel growth in AMD. VEGF is also known to increase vascular permeability in patients with diabetic retinopathy and other retinal vascular diseases leading to macular edema. Dr. Gonzales is the principal investigator in other clinical trials in which an anti-VEGF agent is injected into the eye in patients with macular edema secondary to diabetic retinopathy and central retinal vein occlusion. These treatments are also being considered for ROP, in an upcoming clinical trial.

RESEARCH GRANTS

Opko Health: A Phase III, Randomized DM, Parallel-Assignment Study of Intravitreal Bevasiranib Sodium, 3/13/08–3/14/10

Ophthotech Corp.: A Phase I, Trial to Establish the Safety, Tolerability, and Pharmacokinetic Profile of Intravitreal Injections, 2/25/08–2/26/10

Palmetto Retina Center: Open Label Macugen for the Treatment of Macular Edema Secondary to Branch Retinal Vein Occlusion, 11/3/06–10/2/08

EyeTech Pharmaceuticals, Inc.: Intravitreal Injections for Patients with Exudative (EOP1004) Age-Related Macular Degeneration, 10/16/01–4/1/08

Eyetechn Pharmaceuticals, Inc.: Macugen with Sham Photodynamic Therapy (EOP1012), 7/28/05–4/30/08

Eyetechn Pharmaceuticals, Inc.: A Phase IV, Open Label, Multicenter Trial of Maintenance Intravitreal Injections (EOP1023), 9/7/06–8/31/08

Eyetechn Pharmaceuticals, Inc.: Pegaptanib Sodium (Macugen) for Macular Edema (EOP1013), 2/3/06–2/2/10

Oxigene, Inc.: Combretastin A4 Phosphate for Subfoveal Choroidal Neovascularization, 11/1/05–3/31/08

NEI/JAEB Center for Health Research: The Diabetic Retinopathy Clinical Research Network, 6/1/03–12/31/09



Lynn K. Gordon, MD, PhD

Associate Professor of Ophthalmology

Chief of the Section of Ophthalmology, Department of Veterans Affairs Greater Los Angeles Healthcare System

Chair of the College of Applied Anatomy, David Geffen School of Medicine at UCLA

Member of the Jules Stein Eye Institute

Retinal Cell Biology and Inflammatory Diseases

Dr. Gordon's laboratory is involved in three areas of research. One project identifies that the cell line ARPE-19 uses the FAK signal transduction pathway to accomplish contraction of collagen gels, an *in vitro* correlate of proliferative vitreoretinopathy (PVR). PVR is observed in up to 10% of individuals following repair of retinal detachments and may lead to recurrent tractional retinal detachment and result in loss of vision. Modulation of gel contraction is accomplished by altering the expression levels of EMP2, and this modulation is mediated through a direct interaction between EMP2 and FAK, resulting in FAK activation.

In a second project, Dr. Gordon's group, collaborating with Kathleen A. Kelly, PhD, in UCLA's Department of Pathology and Laboratory Medicine, proposes that interference with EMP2 would be a potential new target for therapeutic development in prevention of chlamydial infections. Chlamydia produces trachoma, the most common cause of preventable blindness in the world. In both ocular and genitourinary tract cell lines they identified EMP2 as a new host receptor protein, which is important for chlamydial attachment and subsequent infection. They have recently developed a recombinant antibody against EMP2 that abrogates both infection and the resultant inflammatory host response.

The final area of interest of Dr. Gordon's group is the developmental role of programmed death 1 (PD-1), a molecule that is known to play an important role in immune regulation in retinal formation. Programmed cell death 1 (PD-1) has a major function as a negative regulator in the immune system. Although previous studies identified PD-1 expression in the lymphoid system, Dr. Gordon and her colleagues have recently identified its expression in neuronal cells of the retina. This observation raises the possibility of a developmental role for

PD-1 in maturation of the ganglion cell layer and retinal remodeling process as well as a possible role for PD-1 in degenerative neuronal diseases.

PUBLIC SERVICE

Member, Scientific Review Committee, Fight for Sight

Participant, Executive Leadership Program for Women in Academic Medicine (ELAM)

President, Los Angeles Society of Ophthalmology

Chair, Neuro-Ophthalmology Pilot Grant Program, North American Neuro-Ophthalmology Society

Councilor, American Academy of Ophthalmology, Representing Women in Ophthalmology

Treasurer and Executive Board Member, Women in Ophthalmology

Chair, David Geffen School of Medicine, Clinical Education Taskforce, Faculty Development/Clinical Teaching Work Group

HONORS

Visiting Professor at the University of Michigan Kellogg Eye Center in Ann Arbor, Michigan

Invited Speaker at China's First International Symposium on Uveitis in Guangzhou, China

RESEARCH GRANTS

VA Merit Grant: EMP2, a Molecular Switch for Function of RPE2, 3/5/05–9/30/09

Research to Prevent Blindness: James S. Adams Scholar Award, 7/1/02–11/1/07

Michael B. Gorin, MD, PhD

Harold and Pauline Price Professor of Ophthalmology
 Chief of the Division of Retinal Disorders and
 Ophthalmic Genetics
 Member of the Jules Stein Eye Institute



Hereditary Eye Disorders and Molecular Genetics of Age-Related Maculopathy

Dr. Gorin's primary research focus is in the field of molecular genetics of hereditary eye disorders, specifically in the complex genetics of age-related maculopathy (ARM). His research group was the first to identify specific regions of the genome that contributed to the development of age-related maculopathy in families, leading to discovery of variations in several genes that contribute to the risk of developing ARM.

Dr. Gorin and other scientific collaborators investigate the molecular genetics of complex disorders such as cystoid macular edema, age-related cataracts, glaucoma, as well as monogenic disorders such as hereditary retinal degenerations, glaucoma, cataracts, and ocular syndromes. He is also pursuing studies to identify genetic variations that contribute to the severity, complications, and therapeutic responses of these conditions.

A major new focus of his laboratory research will be the neurobiology of ocular pain and photophobia (sensitivity to light) using a combination of cell biology, behavioral, and molecular genetic methods. The goal of these studies is to understand the basic biology and neural pathways that contribute to photophobia so that new therapeutic strategies can be developed and tested.

Clinical research efforts are also directed towards the development of methods to monitor and quantify retinal function in progressive retinal disorders (such as diabetic retinopathy, Stargardt disease, and retinitis pigmentosa) and in patients with potential ocular toxicities from systemic medications (such as Plaquenil and tamoxifen).

Applied research interests include bioinformatics in clinical ophthalmic practice and public health issues pertaining to ocular disease.

PUBLIC SERVICE

Co-Editor, *Current Eye Research*

Member, Association of University Professors of Ophthalmology, Consortium of Medical Education Directors
 Member, Special National Institutes of Health Study Sections for the National Eye Institute, National Institute on Aging (Claude Pepper Grants), National Human Genome Research (GEI), Center for Inherited Disease Research

Grant Reviewer, American Health Assistance Foundation

Member, Data Safety Monitoring Committee for Retinitis Pigmentosa Clinical Trial

Speaker, Alliance for Eye and Vision Research (AEVR)

Congressional Briefing on Age-Related Macular Degeneration

Reviewer for many scientific journals

RESEARCH GRANTS

National Eye Institute: Genetics in Age-Related Maculopathy, 4/1/07-3/31/12

American Health Assistance Foundation: Linkage and Association Studies for Macular Degeneration, 4/1/06-3/31/09

Neuro Kinetics/NIH-NEI: Diabetic Retinopathy Diagnosis Device, 9/1/07-8/31/08

Foundation Fighting Blindness: Center Grant (with other investigators), 7/1/05-6/30/10

Sarkaria Family Foundation: Clinical Studies of Stargardt Disease and Development of a New Mouse Model of Stargardt Disease (with other investigators), 7/1/07-6/30/11



Anurag Gupta, MD

Assistant Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Retinal Surgery

Dr. Gupta's research interests are in the area of complex retinal detachments, retinal vascular diseases, novel drug delivery systems, and ocular imaging strategies.

Dr. Gupta was the principal investigator of the first gene therapy clinical trial at the Jules Stein Eye Institute. His clinical trials span the development of novel surgical approaches for complex post-segment conditions to elegant drug delivery solutions for the back of the eye. He is the principal investigator in the only national trial seeking a preventive treatment for macular degeneration.

As director of the Ophthalmic Ultrasound Laboratory, he has helped to pioneer novel imaging techniques for the retinal periphery. His work with the underserved at Harbor-UCLA in Torrance has led to an interest in health care delivery strategies.

PUBLIC SERVICE

Reviewer for many scientific journals

RESEARCH GRANTS

Alcon Research, Ltd.: Post Juxtapapillary Administration of Anecortave Acetate v. Sham Administration for Patients with Exudative AMD, 6/1/04-5/31/10

Sirna Therapeutics: Subfoveal Choroidal Neovascularization, 4/29/05-4/1/08

Allergan Pharmaceutical Corp.: Standard Care v. Corticosteroid (SCORE), 8/20/04-2/19/09

Gen Vec, Inc.: Intravitreal Injections in Patients with Exudative AMD, 1/31/03-12/31/09

David Rex Hamilton, MD, FACS

Assistant Professor of Ophthalmology
Director of the UCLA Laser Refractive Center
Member of the Jules Stein Eye Institute



Corneal and Intraocular Refractive Surgery

Dr. Hamilton's research interests are in the areas of corneal biomechanics, screening for corneal ectatic disorders, and refractive surgical techniques to treat patients with complications from previous refractive surgery. He is also interested in the clinical study of intraocular lenses (IOLs) for the treatment of high myopia (Phakic IOLs) and presbyopia (multifocal and accommodating IOLs).

Dr. Hamilton is actively involved in training residents and fellows in the surgical treatment of refractive errors.

PUBLIC SERVICE

Editorial Board Member: *Ophthalmology*, *Journal of Refractive Surgery*, and *Journal of Cataract and Refractive Surgery*

Member, American Academy of Ophthalmology, Preferred Practice Patterns Committee for Refractive Surgery

Member, American Academy of Ophthalmology, Ophthalmic News and Education Network, Refractive Surgery



Gary N. Holland, MD

Vernon O. Underwood Family Professor
of Ophthalmology

Chief of the Cornea and Uveitis Division

Director of the Ocular Inflammatory Disease Center

Director of the Jules Stein Eye Institute Clinical
Research Center

Member of the Jules Stein Eye Institute

Uveitis, Cornea, and External Ocular Disease

Dr. Holland's research interests involve infectious and inflammatory diseases of the eye. A major focus of current research is ocular toxoplasmosis, the most common retinal infection in the general population. This infection, caused by the parasite *Toxoplasma gondii*, occurs worldwide and can lead to severe vision loss. Dr. Holland is conducting epidemiological and laboratory investigations in collaboration with investigators at the National Institutes of Health, the US Centers for Disease Control and Prevention, and other universities to understand the sources of infection, course of disease, response to treatment, and disease outcomes. Studies are being conducted to identify host and parasite factors that are related to disease severity. This information may lead to better strategies for treatment of active infections and possibly for prevention of eye involvement altogether.

Since 1981, Dr. Holland has been involved in the study of HIV-related eye disease. Studies are being performed to investigate risk factors for development of cytomegalovirus (CMV) retinitis, a blinding infection among severely immunosuppressed patients. The introduction of potent antiretroviral therapies to treat HIV infections has reduced, but not eliminated, the risk of developing CMV retinitis. Dr. Holland is participating in a large, multicenter study to investigate how the ocular manifestations of HIV disease have changed since the introduction of potent antiretroviral drugs. He is also investigating subtle changes in vision known to occur in HIV-infected individuals. These visual changes may affect an individual's quality of life and may reflect changes in general health.

In conjunction with members of the Department of Pediatrics, Dr. Holland has established a program to provide care for children with uveitis. He is studying the most effective techniques for evaluation and treatment of uveitis in this age group.

Dr. Holland is also investigating corneal infections, corneal transplantation in patients with glaucoma, and treatment of non-infectious uveitis in adults using various immunosuppressive drugs.

PUBLIC SERVICE

Associate Editor, *American Journal of Ophthalmology*

Executive Committee Member, American Uveitis Society

Steering Committee Member, Studies of the Ocular
Complications of AIDS (SOCA)

Steering Committee Member, Multicenter Uveitis Steroid
Treatment (MUST) Trial

Board of Managers Member, Fellowship Compliance
Committee, Association of University Professors of
Ophthalmology

International Council Member, International Ocular
Inflammation Society

HONORS

Elected to the American Ophthalmological Society

RESEARCH GRANTS

National Eye Institute/Johns Hopkins University: Studies of
the Ocular Complications of AIDS (SOCA), 8/1/05–7/31/08

National Eye Institute/Johns Hopkins University: Studies of
the Ocular Complications of AIDS (LSOCA), 8/1/03–6/30/08

National Eye Institute: Multicenter Uveitis Steroid Treatment
Trial (MUST), 5/1/06–4/30/09

Centers for Disease Control and Prevention: Factors Related to
the Severity of Ocular Toxoplasmosis, 6/1/06–12/31/07

Research to Prevent Blindness: Physician-Scientist Award,
1/1/03–12/31/07

Joseph Horwitz, PhD

Oppenheimer Brothers Professor of Ophthalmology
Member of the Jules Stein Eye Institute



Biochemistry and Biophysics of the Crystalline Lens

Dr. Horwitz is conducting research on the biochemical and biophysical properties of normal and cataractous lens proteins. In his laboratory, techniques have been developed for the microdissection of single human cataractous lenses and for separating, with the aid of a microscope, opaque areas and adjacent normal areas. The cataractous and normal lens sections are then studied with the aid of a high-performance liquid chromatography system that separates the chemical substances. This work should provide valuable information about the lens proteins, and contribute directly to understanding the processes involved in the development of cataracts. In addition, Dr. Horwitz is investigating the molecular chaperone properties of the eye lens α -crystallin, a protein that plays an important role in keeping the eye lens clear during normal aging. Alpha-crystallin is also involved in age-related macular degeneration, as well as in many other neurodegenerative diseases.

PUBLIC SERVICE

Ad hoc Member, National Institutes of Health, Anterior Eye Disease Study Section

Reviewer for many scientific journals

RESEARCH GRANTS

National Eye Institute: Alpha-Crystallin & Cataractogenesis, 8/1/04-7/31/09



Wayne L. Hubbell, PhD

Jules Stein Professor of Ophthalmology
 Distinguished Professor of Chemistry and Biochemistry
 Co-Chief of the Vision Science Division
 Associate Director of the Jules Stein Eye Institute

Retinal Photoreceptor Membrane Structure and Function

Dr. Hubbell's research is focused on understanding the relationship between the molecular structure of a protein and the conformational changes that control its function. Of particular interest are membrane proteins that behave as "molecular switches," proteins whose structures are switched to an active state by a physical or chemical signal. A primary example under study is light-activated rhodopsin, the visual pigment in photoreceptor cells of the retina. The goal is to elucidate the structure of rhodopsin, the mechanism of the molecular switch, and regulation of this switch by associated proteins, transducin and arrestin. Recently, this research has broadened to include structure/function relationships in water soluble proteins such as the lens protein α -crystallin and the family of retinoid-carrying proteins that transport vitamin A throughout photoreceptor cells.

To investigate these proteins, Dr. Hubbell's laboratory has developed the technique of site-directed spin labeling (SDSL), a novel and powerful approach to the exploration of protein structure and dynamics. By changing the genetic code, a specific attachment point in the protein is created for a nitroxide spin label probe. Analysis of the electron paramagnetic resonance (EPR) spectrum of the spin label provides information about the local environment in the protein. With a sufficiently large set of labeled proteins, global information on structure is obtained and changes in the structure during function can be followed in real time.

Using SDSL, Dr. Hubbell's laboratory, in collaboration with colleagues at the Massachusetts Institute of Technology, has developed a topological map of rhodopsin and followed the detailed structural changes that take place upon activation by a single photon of light. Determining such molecular details is essential to understanding the underlying causes of retinal diseases such as retinitis pigmentosa.

PUBLIC SERVICE

Member, National Academy of Sciences
 Member, American Academy of Arts and Sciences
 Chairman, Advisory Committee of the National Biomedical ESR Center, Medical College of Wisconsin
 Member, Advisory Committee of the Center for Very Low Frequency Imaging for In Vivo Physiology, University of Chicago
 Member, Advisory Committee for the Advanced ESR Technology Research Center, Cornell University

HONORS

Presented the Keynote Address at the EUROMAR 2007 Conference in Tarragona, Spain
 Presented a Plenary Lecture at the Sfb-498 Conference on "Protein Cofactor Interactions in Biological Processes" in Berlin, Germany

RESEARCH GRANTS

National Eye Institute: Molecular Basis of Membrane Excitation, 5/1/05–4/30/10
 National Eye Institute: Core Grant for Vision Research, 3/1/04–2/28/09

Sherwin J. Isenberg, MD

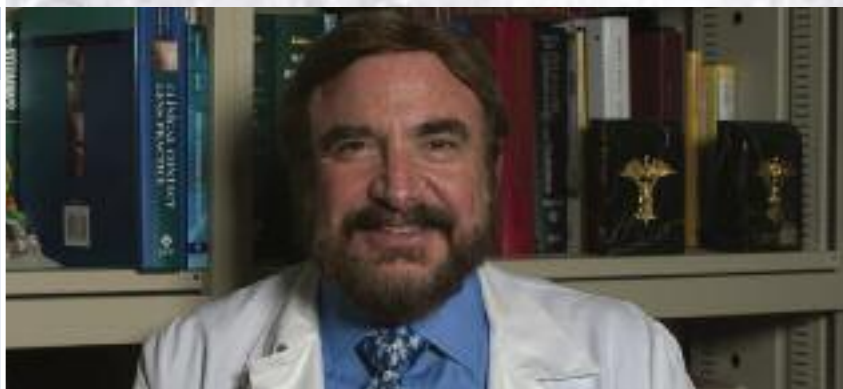
Laraine and David Gerber Professor of Pediatric Ophthalmology

Professor of Pediatrics

Vice-Chairman of the UCLA Department of Ophthalmology

Chief of the Ophthalmology Division, Harbor-UCLA Medical Center, Torrance

Member of the Jules Stein Eye Institute



Pediatric Ophthalmology, Amblyopia, and Ophthalmic Pharmacology

Dr. Isenberg's research activities have concentrated on various aspects of surgical and medical diseases of children's eyes. The goal is to decrease the frequency of blindness in children worldwide. In a series of studies of newborns, Dr. Isenberg has characterized a number of elements: the type and source of bacteria of the external eye; the evolution of iris structural changes; the development of the macula, which is the source of central vision; and pupillary responses after birth. Recent publications have characterized the production and nature of tears of infants and how the cornea develops in the first year of life. He has also reported the ocular signs in newborns whose mothers abuse cocaine, facilitating the diagnosis of newborn cocaine intoxication.

In another avenue of research, povidone-iodine eye drops have been found to successfully treat bacterial conjunctivitis in a three-year, international study with the University of the Philippines. The eye drops were also found to be safer and more effective in preventing eye infections than the currently used agents. Dr. Isenberg and other investigators have now proven that the povidone-iodine eye drops can treat the number one cause of preventable pediatric blindness in the world—corneal infections due to bacteria. These studies, conducted in children and adults in India and the Philippines, should reduce the number of 400,000 children now blind from corneal infections. Another study in Kenya evaluating new treatment schedules using povidone-iodine eye drops to prevent conjunctivitis of newborns was recently published.

Lastly, a new device that reports blood gases from the conjunctiva, such as oxygen and carbon dioxide, is being developed. Preliminary trials have been completed in animals and in adults undergoing cardiac bypass surgery. The hope

is to eventually apply the device to the eyes of premature newborns. The continuous readout of tissue blood gas levels should enable the pediatrician to prevent damage to the baby's brain and should keep the oxygen at an appropriate level, minimizing the possibility of blindness from retinopathy of prematurity.

PUBLIC SERVICE

Member, Medical Advisory Board and Board of Directors; and Research Committee Chair, Blind Children's Center

HONORS

2007 Distinguished Alumnus of the Year (Ophthalmology) at Children's Hospital National Medical Center in Washington, D.C.

RESEARCH GRANTS

Research to Prevent Blindness: RPB Physician Scientist Award, 1/1/06–12/31/07

Thrasher Research Foundation: A Clinical Trial of Povidone-Iodine for the Treatment of Fungal Corneal Ulcers, 3/10/08–8/31/09

National Eye Institute/ Intelligent Optical Systems, Inc.: Conjunctival Tissue Gas Monitoring in the Animal Model, 2/25/08–7/31/08



Allan E. Kreiger, MD

Professor of Ophthalmology Emeritus (Active Recall)

Member of the Jules Stein Eye Institute

Retinal Disease and Vitreoretinal Surgery

Dr. Kreiger is interested in the expanding field of vitreoretinal surgery. He has worked to clarify the indications for improved outcomes of operations on complex forms of vitreous and retinal diseases, including diabetic retinopathy, complicated rhegmatogenous retinal detachment, and ocular trauma. He has designed numerous surgical instruments and has developed a wide array of surgical techniques. He is particularly interested in the surgical incisions made in the pars plana during vitrectomy and has reported several basic science and clinical investigations that define normal healing as well as the complications that can occur when healing is abnormal. His most recent work examined the epidemiology of proliferative vitreoretinopathy, the most complex form of retinal detachment. In this work, the risk of visual loss in the fellow eye was surveyed and found to be much higher than previously suspected.

PUBLIC SERVICE

Reviewer for many scientific journals

HONORS

Presented the Taylor Smith Lecture at the 36th Aspen Retinal Detachment Society Meeting in Snowmass, Colorado

Presented the Delbert Nachazel Memorial Lecture at the 27th Annual William Beaumont Hospital Conference in Royal Oak, Michigan

RESEARCH GRANTS

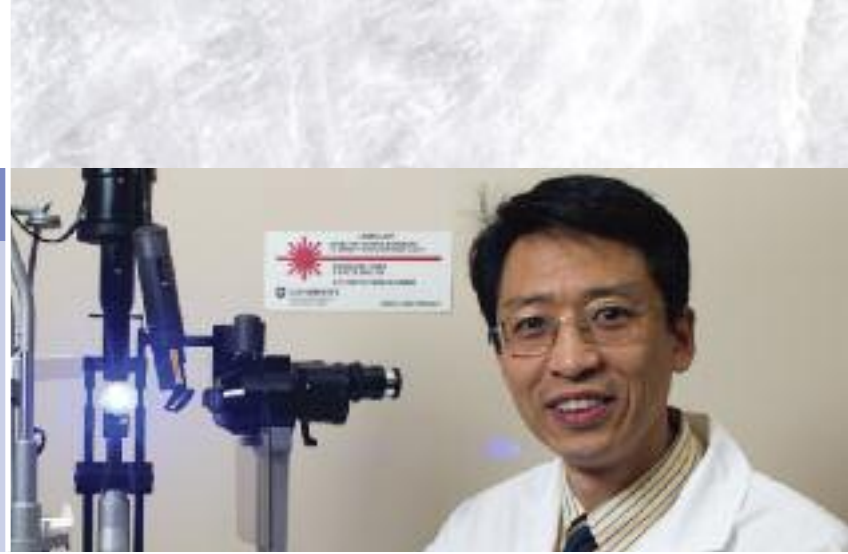
Foundation Fighting Blindness: Center Grant (with other investigators), 7/1/05-6/30/10

Simon K. Law, MD, PharmD

Associate Professor of Ophthalmology

Chief of the Section of Ophthalmology Surgical Services,
Department of Veterans Affairs, Greater Los Angeles
Healthcare System

Member of the Jules Stein Eye Institute



Optic Disc Evaluation

Dr. Law's principal research interest focuses on the optic disc. He is working to create a computer-based internet-accessible training program for residents, fellows, general ophthalmologists, and optometrists to improve their ability to evaluate and interpret the optic disc. The course will be delivered via an Internet website to reach as many clinicians as possible.

In one study, Dr. Law is evaluating the optic nerve appearance in patients with age-related macular degeneration. Its purpose is to characterize the appearance of the optic nerve at different stages of macular degeneration and evaluate for any change in appearance over time corresponding to the progression of macular degeneration. The appearance of the optic nerve will be monitored with photos and imaging studies for two years. Patients with age-related macular degeneration are invited to participate in the research and have their optic nerve evaluated by optic nerve photos and confocal imaging studies.

In other studies, Dr. Law is comparing the results of two commonly used tube shunt devices for glaucoma, the Baerveldt implant and Ahmed glaucoma valve. Patients who require a tube shunt procedure to control glaucoma are randomized to receive either one of the two devices and are followed over a period of five years. He also is evaluating the difference in progression of optic neuropathy, visual field changes, IOP control, and management with a case-controlled comparison between all patients seen in his glaucoma clinic with high myopia and patients with primary open angle glaucoma.

PUBLIC SERVICE

Reviewer for many scientific journals

RESEARCH GRANTS

The American Geriatrics Society: Optic Nerve Appearance in Age-Related Macular Degeneration, 7/1/07-6/30/09

Southern California Permanente Medical Group: An Evaluation of the Incidence of Glaucoma Risk Factors in Patients from a Managed Care Setting, 10/1/05-7/31/07



Ralph D. Levinson, MD

Associate Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Ocular Inflammatory Diseases

Dr. Levinson's research interest is ocular inflammatory diseases. He is the primary investigator on international research projects in both the clinical aspects of uveitis and the immunogenetics of ocular inflammation. Current projects include a collaborative longitudinal study of a chronic inflammatory disease, birdshot chorioretinopathy, with investigators in France. The study focuses on the interrelationship of disease factors, as well as the course of disease and response to treatment. Dr. Levinson is also studying the genetic components of the several forms of ocular inflammation in collaboration with investigators in the United States, France, Mexico, and Japan.

PUBLIC SERVICE

Reviewer for many scientific journals

RESEARCH GRANTS

MacDonald Family Foundation: Studies in Immunogenetics of Ocular Inflammatory Disease, 5/1/02-6/30/09

Kevin M. Miller, MD

Kolokotronos Professor of Ophthalmology
Member of the Jules Stein Eye Institute



Cataract and Refractive Surgery

Dr. Miller's research interests are in cataract and refractive surgery, intraocular lenses, ophthalmic optics, ophthalmic devices, and surgical outcomes. He performs much of his research in collaboration with Michael D. Olson, OD, PhD, with residents and fellows at the Institute, and medical students at UCLA.

Dr. Miller's clinical practice is focused primarily on refractive cataract surgery. He developed an Astigmatism Management Service for treating corneal astigmatism at the time of cataract surgery that optimizes uncorrected visual acuity following surgery. This service has been adopted by leading surgeons throughout the United States.

The need for cataract surgery is expected to reach epidemic proportions in the United States in the next 10 to 20 years as baby boomers reach the age of cataract development. Dr. Miller is actively working to establish a Comprehensive Cataract Center at UCLA, seeking gifts of all sizes to endow and fund facilities, research projects, equipment purchases, and fellowships.

Dr. Miller is also working with Physical Optics Corporation to develop an adaptive optics eye-tracking scanning laser ophthalmoscope or TASLO. The 2 μ theoretical transverse resolution of the new instrument should allow visualization of retinal details not previously seen by other imaging techniques.

The iris is the colored portion at the front of the eye that contains the pupil. Traumatic aniridia is a condition in which all or part of the iris is damaged in an eye injury. Dr. Miller obtained an individual device exemption from the FDA to study Morcher GmbH implants, and he is an investigator for Ophtec USA in the clinical trial of the 311 iris reconstruction lens. These artificial iris implants have a positive impact on the lives of many unfortunate patients who suffer from severe eye trauma.

PUBLIC SERVICE

Chairman, American Academy of Ophthalmology, Anterior Segment COMPASS Committee

Course Faculty Member, American Academy of Ophthalmology Maintenance of Certification

Member, American Academy of Ophthalmology, Preferred Practice Patterns Committee

Member, American Society of Cataract and Refractive Surgery Cataract Clinical Committee

Editorial Board Member, *Comprehensive Ophthalmology Update*

HONORS

Inducted into the International Intraocular Implant Club

Recipient of the Senior Honor Award from the American Academy of Ophthalmology

RESEARCH GRANTS

Ophtec, USA: Device Study, 7/14/04–7/15/09

Hoya Corp.: UV Absorbing Acrylic Posterior, 11/1/04–6/30/08



Bartly J. Mondino, MD

Bradley R. Straatsma Professor of Ophthalmology
 Chairman of the UCLA Department of Ophthalmology
 Director of the Jules Stein Eye Institute
 Member of the UCLA Brain Research Institute

Cornea and External Ocular Diseases and Immunological Disorders

Dr. Mondino's research activity is focused on cornea-external ocular diseases, with particular emphasis on immunological disorders. He is studying the role of lymphocytes and the complement system in the immunopathogenesis of anterior segment diseases. In addition, a model of staphylococcal hypersensitivity lesions of the cornea is being explored as well as the immune response to staphylococcal endophthalmitis. Other research interests include corneal dystrophies, peripheral corneal ulcers, bullous diseases of the skin and mucous membranes, collagen shields, and contact lens-related corneal ulcers.

PUBLIC SERVICE

Board of Directors Member, Braille Institute
 Board of Trustees Member, Association of University Professors of Ophthalmology
 Executive Vice-President, Association of University Professors of Ophthalmology
 Editorial Board Member, *Ophthalmic Surgery, Lasers and Imaging*
 Editor, Association of University Professors of Ophthalmology, *News & Views*
 Board of Directors Member, National Alliance for Eye and Vision Research
 Board of Directors Member, Alliance for Eye and Vision Research

RESEARCH GRANTS

Research to Prevent Blindness: Departmental Unrestricted Grant Award, 1/1/07–12/31/08

Steven Nusinowitz, PhD

Assistant Professor of Ophthalmology
Co-Director of the Visual Physiology Laboratory
Member of the Jules Stein Eye Institute



Mechanisms of Retinal Degeneration

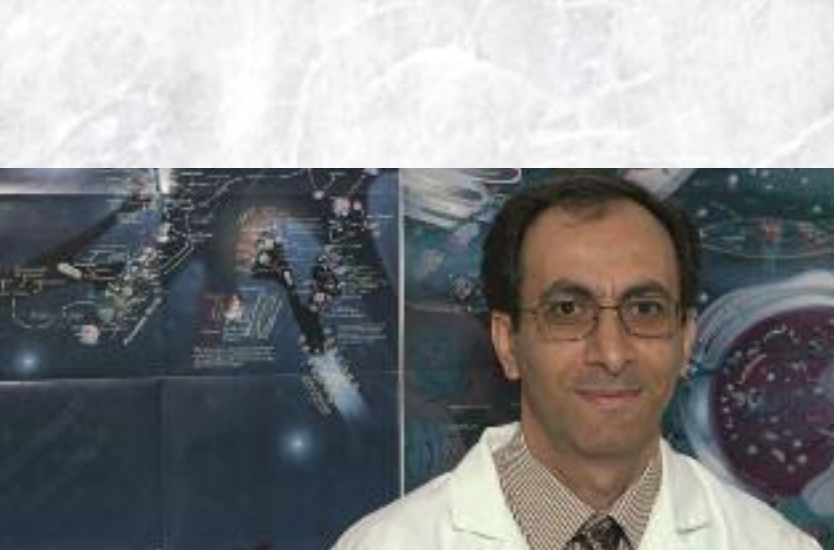
Dr. Nusinowitz's primary research interest is focused on understanding the cellular contributions to non-invasive measures of visual function and defining the sites and mechanisms of disease action in inherited retinal and visual pathway disorders. His main approach to gaining an understanding of the site and underlying mechanism of disease action in humans is to study the patterns of electrophysiological and psychophysical responses obtained from mice in which the disruption of different cells or pathways in the visual system are specifically targeted by genetic manipulation. By comparing the patterns of responses in human disease with the patterns of responses from rodents with targeted cellular disruption, Dr. Nusinowitz is able to test hypotheses about the underlying pathophysiology in human disease, to provide a mechanism for the development of novel non-invasive diagnostic tools, to develop tools for better diagnosis of clinical disease, and to determine the efficacy of a variety of treatment strategies.

PUBLIC SERVICE

Editorial Board Member, *Current Eye Research*
Ad hoc Editorial Board Member, *Investigative Ophthalmology and Visual Science*
Advisor, Mutant Mouse Resource at the Jackson Laboratories
Scientific Advisory Board Member, SYTERA, Inc. and SIRION Pharmaceuticals
Director, JSEI Electrophysiology Reading Center (ERC)

RESEARCH GRANTS

The Karl Kirchgessner Foundation: Unrestricted Grant, 12/1/04–6/30/08
The Vision of Children: Photoreceptor and Retinal Pigment Epithelium, 4/30/06–6/30/08
Foundation Fighting Blindness: Center Grant (with other investigators), 7/1/05–6/30/10
Stein Oppenheimer Award, 4/29/06–4/30/08
Sirion Therapeutics: A Phase II Study of the Safety and Efficacy of Fenretinide, 9/1/07–8/31/09
Drs. Daljit S. and Elaine Sarkaria Fund: Clinical Studies of Stargardt Disease and Development of a New Mouse Model of Stargardt Disease (Principal Investigator, with other investigators), 7/1/07–6/30/11



Natic I. Piri, PhD

Assistant Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Biochemistry and Molecular Biology of Retinal Ganglion Cells; Mechanism of Retinal Ganglion Cell Death in Glaucoma

Dr. Piri's research is aimed toward understanding the molecular mechanisms leading to retinal ganglion cell (RGC) death in glaucoma. It has been established that RGCs die by apoptosis in glaucoma, but the exact pathway from death stimulus to cell death is not understood. As an initial step in identifying potential factors responsible for RGC apoptosis, Dr. Piri's laboratory is analyzing gene expression patterns that are altered in glaucomatous retinas using DNA microarrays and proteomic technologies, as well as conventional molecular biology, biochemistry, and genetic methods.

Another area of interest is the identification of new genes that are expressed exclusively or preferentially in RGCs. Currently, Dr. Piri is investigating the roles of several RGC-expressed novel genes in RGC differentiation and

metabolism, and their possible involvement in glaucomatous or other optic neuropathies.

Gene and protein expression studies may lead to a better understanding of the regulatory events involved in RGC apoptosis, and provide molecular targets for the development of new therapeutic agents with neuroprotective effects in order to prevent or delay the loss of ganglion cells in glaucoma.

PUBLIC SERVICE

Reviewer for many scientific journals

Arthur L. Rosenbaum, MD

Brindell and Milton Gottlieb Professor of Pediatric Ophthalmology

Chief of the Pediatric Ophthalmology and Strabismus Division

Vice-Chairman of the UCLA Department of Ophthalmology

Member of the Jules Stein Eye Institute



Pediatric Ophthalmology, Strabismus, Retinal Disease, and Ophthalmic Surgery

Dr. Rosenbaum's research emphasis is in the field of strabismus (misalignment of the eyes). He is one of the original investigators in the area of botulinum toxin injection of extraocular muscles in the treatment of strabismus and facial spastic disorder. He continues to be involved in research projects utilizing this treatment following surgical overcorrection and undercorrection in an attempt to avoid reoperation; and for sixth nerve palsy.

Dr. Rosenbaum is presently working on new surgical approaches to complicated strabismus problems resulting from trauma and congenital problems, where most of the ocular muscles are not functioning correctly. He has recently completed studies on strabismus complications following cosmetic blepharoplasty and on the use of adjustable suture strabismus surgery in children. Dr. Rosenbaum has recently co-authored a major textbook on strabismus.

HONORS

Presented the Von Noorden Lecture at Baylor University in Houston, Texas

RESEARCH GRANTS

National Eye Institute: Lateral Rectus Reanimation Following Sixth Nerve Palsy, 9/1/04-8/31/08

Research to Prevent Blindness: Physician-Scientist Award, 1/1/04-12/31/08



David Sarraf, MD

Associate Clinical Professor of Ophthalmology
Member of the Jules Stein Eye Institute

Age-Related Macular Degeneration and Diabetic Retinopathy

Dr. Sarraf's research activity has focused on two major diseases: age-related macular degeneration and diabetic retinopathy.

Dr. Sarraf has studied complications of the revolutionary new anti-VEGF therapies. He has determined the incidence of retinal pigment epithelial tears associated with intraocular anti-VEGF therapy and has determined the imaging (including fluorescein angiography and optical coherence tomography) risk factors for development of this event, allowing retinologists a better ability to predict this complication and better inform their patients. Future studies will aim to better classify this complication and to develop therapies to decrease the incidence of this visually debilitating event.

Having studied the racial presentation of diabetic retinopathy, Dr. Sarraf determined that the clinical phenotype of diabetic retinopathy differs between the African American and Hispanic populations.

Dr. Sarraf has also identified novel diseases and signature imaging characteristics for various conditions, including crystalline retinopathy and solar retinopathy.

PUBLIC SERVICE

Director, Annual JSEI and DEI Comprehensive Ophthalmology Review Course

Director, Lasers in Ophthalmology Course

Co-Director, Los Angeles Imaging Conference for Retinal Specialists

Interspecialty Committee Member, American Academy of Ophthalmology

Reviewer for many scientific journals

HONORS

Recipient of the Achievement Award and the Secretariat Award from the American Academy of Ophthalmology

Steven D. Schwartz, MD

Ahmanson Professor of Ophthalmology
 Chief of the Retina Division
 Director of the UCLA Diabetic Eye Disease
 and Retinal Vascular Center
 Co-Director of the Macula Center
 Associate Professor of Ophthalmology
 Member of the Jules Stein Eye Institute



Retinal Diseases

Dr. Schwartz's research interests involve retinal diseases, with particular emphasis on vasoproliferative diseases, such as retinopathy of prematurity and diabetic eye disease; and degenerative diseases like macular degeneration. His basic research includes novel medical device technologies such as scanning lasers, imaging technologies, and surgical equipment including surgical robotics, with particular emphasis centered on diagnostic and treatment applications. Dr. Schwartz's clinical research focuses on clinical trials where novel pharmacotherapeutic agents are studied to discover treatments for both wet and dry age-related macular degeneration, retinopathy of prematurity (ROP), and diabetic retinopathy.

Dr. Schwartz also has a strong interest in improving both the quality of and access to specialized ophthalmology care through innovative teleophthalmological approaches to screening for eye diseases, specifically diabetic retinopathy and ROP. Currently, a collaborative program with the Gonda Diabetes Center and the Venice Family Clinic is underway, in which screening for diabetic retinopathy is conducted with a nonmydriatic camera (a camera that does not require dilation of the eyes) as part of each patient's regular diabetes treatment. Results are telecommunicated to specialists at the Jules Stein Eye Institute for interpretation and follow-up.

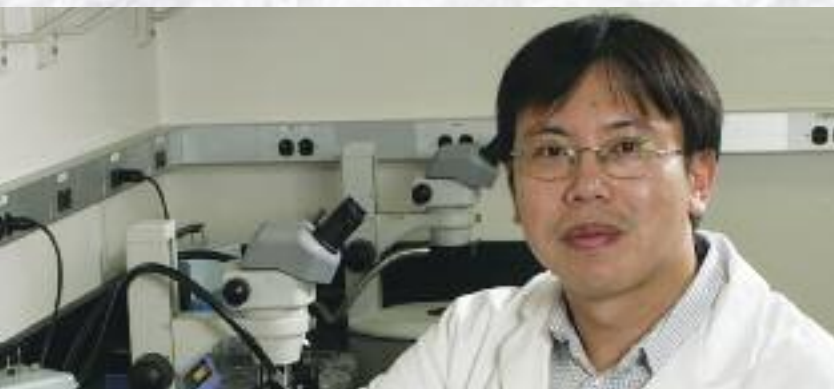
A number of novel imaging devices are now being studied to determine if early detection of retinal problems can lead to better outcomes for individuals and for patient populations.

PUBLIC SERVICE

Board Member, American Society of Retinal Specialists
 Program Committee Member, Association for Research in
 Vision and Ophthalmology
 Diabetic Eye Disease Screening, Venice Family Clinic

RESEARCH GRANTS

Research to Prevent Blindness: Mrs. Merrill Park Award,
 6/15/01–6/30/08
 Alcon Research, Ltd.: Post Juxtasclear Administration of
 Anecortave Acetate v. Sham Administration in Patients with
 Exudative AMD, 6/1/04–5/31/10
 Sirna Therapeutics: Subfoveal Choroidal Neovascularization,
 4/29/05–4/1/08
 Allergan Sales, LLC: Dexamethasone Posterior Segment Drug
 Delivery System, 8/16/04–1/31/09
 Allergan Sales, LLC: DEX PS DDS Applicator System in the
 Treatment of Patients with Diabetic Macular Edema,
 8/25/05–12/31/09
 Chiltern Int.: A Multicenter, Randomized, Placebo-Controlled,
 Double-Masked, Parallel Group, Dose Ranging Clinical Trial,
 4/1/07–3/31/09
 Emmes Corp.: Age Related Eye Disease Study II,
 1/1/06–12/31/08
 Genentech, Inc.: Ranibizumab with CNV, 3/1/06–2/28/09
 Genentech, Inc.: Ranibizumab Injection, 10/5/07–8/31/12
 Lowy Medical Research Institute/NEI: Macular Telangiectasia,
 9/1/05–8/31/10
 NEI/JAEB Center for Health Research: The Diabetic
 Retinopathy Clinical Research Network, 6/1/03–12/31/09
 University of Pennsylvania: Comparison of AMD Treatment
 Trials (Coordinating Center), 9/1/07–7/31/08



Hui Sun, PhD

Assistant Professor of Physiology and Ophthalmology
Member of the Jules Stein Eye Institute

Molecular Mechanism of Vitamin A Transport; Macular Degeneration

Dr. Sun's laboratory studies mechanisms of macular degeneration and vitamin A transport for vision. Macular degeneration is a leading cause of blindness in the developed world and vitamin A deficiency is the leading cause of blindness in the third world. Vitamin A is essential for vision because it is the precursor for the chromophore of photoreceptor proteins and also plays critical roles in eye development. Plasma retinol binding protein (RBP) is the principal carrier of vitamin A in the blood. Despite an overwhelming amount of evidence accumulated during the past three decades supporting the existence of a cell-surface receptor for RBP, it has eluded identification.

Using a novel biochemical strategy, Dr. Sun's laboratory identified the RBP receptor as a multi-transmembrane protein of previously unknown function. Expression of this protein is highly enriched in blood-organ barriers such as the retinal pigment epithelium (RPE). The RBP receptor specifically binds to RBP and facilitates the release of vitamin A from the vitamin A/RBP complex and the transport of vitamin A into the cell. In this process, it simultaneously functions as a membrane receptor and a membrane transporter. The RBP/RBP receptor system represents a rare example in eukaryotic cells of a small molecule delivery system that involves an extracellular carrier protein but does not depend on endocytosis.

Recent human genetic studies found that the RBP receptor is essential for the formation of human eyes, consistent with the critical role of vitamin A in eye development. Dr. Sun's laboratory is using a variety of techniques to study this new membrane transport system. To elucidate the etiology of macular degeneration, his group is studying both the

pathogenic and protective mechanisms of this puzzling disease. The long-term goal of these studies is to reveal the fundamental causes of the disease so that more effective and efficient therapies can be developed.

PUBLIC SERVICE

Ad hoc reviewer, National Institutes of Health, National Eye Institute

Ad hoc reviewer, Medical Research Council, U.K.

Reviewer for many scientific journals

HONORS

Ellison Medical Foundation Scholar

RESEARCH GRANTS

National Eye Institute: Molecular Mechanism of Vitamin A Uptake for Vision, 9/30/07–8/31/12

Karl Kirchgessner Foundation: Research Award, 3/1/07–2/28/08

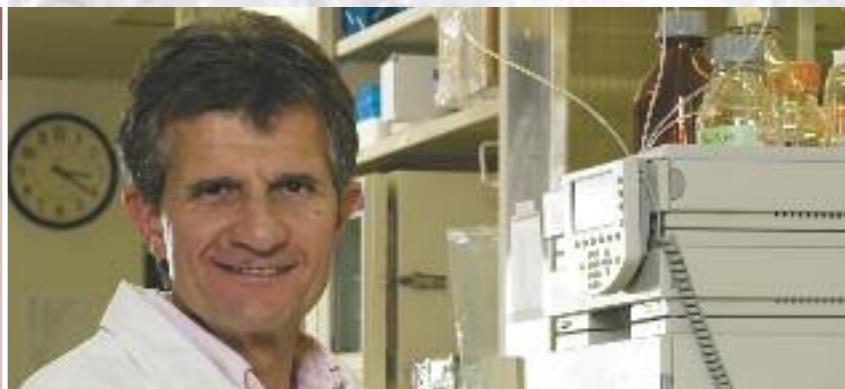
Ellison Medical Foundation: New Scholar Award, 9/1/06–8/31/10

Foundation Fighting Blindness: Research Grant, 5/1/07–4/30/10

E. Matilda Ziegler Foundation, 12/1/04–11/30/07

Gabriel H. Travis, MD

Charles Kenneth Feldman Professor of Ophthalmology
Associate Director of the Jules Stein Eye Institute
Co-Chief of the Vision Science Division



Biochemistry of Vertebrate Photoreceptors and Mechanisms of Retinal Degeneration

Dr. Travis's research group uses biochemical and genetic approaches to study the function of photoreceptor cells. Vision in vertebrates is mediated by two types of light-sensitive cells, rods, and cones. The light-sensitive structure of rods and cones is the outer segment, comprising a stack of flattened disks filled with opsin visual-pigment. Mice with the spontaneous mutation, retinal degeneration slow or rds, completely lack outer segments. Dr. Travis originally cloned the gene for rds and helped to show that in some families, mutations in the corresponding human gene are responsible for an inherited blinding disease called retinitis pigmentosa. One project in his laboratory is to define the role of rds in the folding of outer-segment discs. A second project is to study the function of a newly identified transporter protein called ABCR. Mutations in the human ABCR gene are responsible for Stargardt disease, the most common form of inherited juvenile macular degeneration. Dr. Travis's group generated mice with a mutation in this gene. Biochemical analysis of the phenotype in abcr-mutant mice led them to the molecular cause of Stargardt disease. This understanding suggested a pharmacological strategy to reverse the biochemical defect in abcr-mutant mice. Testing of this strategy is underway with encouraging preliminary results. Another project ongoing in his laboratory concerns the mechanism of visual-pigment regeneration in cone photoreceptors. Despite the importance of cones, little is known about how visual pigments are replenished to permit sustained vision under daylight conditions. Recent results from his group point to the existence of a new pathway for regenerating visual pigments in cones. The Travis group is currently working to purify and clone the enzymes that define this new biochemical pathway.

PUBLIC SERVICE

Scientific Advisory Panel Member, The Karl Kirchgessner Foundation Vision Science Program

Reviewer for many scientific journals

RESEARCH GRANTS

Research to Prevent Blindness: Stein Professorship Award, 7/1/01-6/30/08

National Eye Institute: The Role of Muller Cells in Visual Pigment Regeneration, 3/1/08-2/28/13

National Eye Institute: Biochemical and Genetic Analysis of the Visual Cycle, 9/9/05-7/31/10

Bruce Ford and Anne Smith Bundy Foundation Grant, 7/1/03-8/15/08

National Eye Institute: Vision Science Training Grant, 9/30/05-9/29/10

Macula Vision Research Foundation: A2E Accumulation in the Macular Degenerations: Pathogenic Significance & Implications for Treatment, 7/31/07-6/30/10

Foundation Fighting Blindness: Center Grant (with other investigators), 7/1/05-6/30/10



Barry A. Weissman, OD, PhD

Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Corneal Contact Lenses and Corneal Oxygen Transport

Dr. Weissman continues to study the optics and physiological tolerance of contact lens systems. He has specified a model that predicts optical changes that are induced when a hydrogel (soft) contact lens “wraps” onto a human cornea. This model has shown its applications in lens design. Dr. Weissman investigates the severe complications occasionally encountered with contact lens wear, such as neovascularization, abrasion, and corneal infection. He is interested in systems for oxygen supply to the corneas of contact lens wearers, and in the ability of contact lenses and emerging ophthalmic devices to transmit oxygen. He recently published a model that predicts the tear layer oxygen under different contact lens designs. Keratoconus, a corneal disease treated with contact lenses, is another area of interest. Dr. Weissman was the principal investigator for the UCLA center of the National Eye Institute-sponsored Collaborative Longitudinal Evaluation of Keratoconus (CLEK) study.

PUBLIC SERVICE

Education Committee Member and Board Member, Los Angeles County Optometric Society

David S. Williams, PhD

Professor of Ophthalmology and Professor of Neurobiology

Member of the Jules Stein Eye Institute



Cell Biology of the Retina and Inherited Retinal Disease

Dr. Williams's laboratory focuses on the cell biology of photoreceptor and RPE cells. His group is especially interested in the proteins that underlie Usher syndrome, and one area of his research involves gene therapy experiments aimed at preventing the blindness that ensues from Usher syndrome type 1B. Past studies have elucidated transport roles for the Usher 1B protein, myosin VIIa, in the retina. Recently, a proof-of-principle study was published, showing that virus-based delivery of the myosin VIIa gene to the retina could correct defects in a mouse model of Usher 1B. In more basic studies, his laboratory is investigating how proteins and organelles are moved around within the photoreceptor and RPE cells.

PUBLIC SERVICE

Scientific Advisory Board, Foundation Fighting Blindness
Executive Board Member, Sustainability Council of New Zealand

Invited Panel Member, United Nations FAO Workshop on Safety of Genetic Engineering

Founding Committee Member, International Society for Ocular Cell Biology

Organizing Committee, First International Symposium on Usher Syndrome and Related Disorders

Associate Editor, *Visual Neuroscience*

Reviewer for many scientific journals

HONORS

Presented the Centre of Excellence in Vision Science Plenary Lecture at the AOVSM Meeting in Canberra, Australia

Recipient of a Research to Prevent Blindness, Jules and Doris Stein Professorship

RESEARCH GRANTS

National Eye Institute: Retinal Cell Biology of Usher 1 Proteins, 12/1/07–11/30/08

National Neurovision Research Institute/FFB: Development of Lentivirus-Based Usher 1B Gene Therapy, 10/1/07–6/30/08

Research to Prevent Blindness: Doris and Jules Stein Professorship, 1/1/08–12/31/12



Xian-Jie Yang, PhD

Associate Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Development and Disease Therapy of the Retina

Dr. Yang is interested in the molecular and cellular mechanisms underlying retinal development and disease. Her research efforts are directed toward understanding how retinal progenitor (precursor) cells become different types of mature retinal neurons during formation of the retina. To achieve these goals, her laboratory uses a variety of molecular and cellular approaches to study genes involved in cell-to-cell communication and neuronal differentiation. As important research tools Dr. Yang utilizes special laboratory-based viruses to mediate gene transfer and advanced transgenic technologies. In addition, Dr. Yang's laboratory is developing viral vector based gene therapy and stem cell based cell therapy for a variety of retinal degenerative diseases. Her research will enhance researchers' capabilities to manipulate retinal progenitor and stem cells, thereby contributing to the effort to combat retinal degenerative diseases.

RESEARCH GRANTS

National Eye Institute: Cytokine Signal Transduction in Retinal Development, 9/30/05–7/31/09

Foundation Fighting Blindness/UC San Diego: Development of Lentivirus-Based Usher 1B Gene Therapy, 7/1/06–4/29/08

Research to Prevent Blindness: Dolly Green Scholar Award, 7/1/03–6/30/08

Foundation Fighting Blindness: Center Grant (with other investigators), 7/1/05–6/30/10

Tara A. Young, MD, PhD

Assistant Professor of Ophthalmology
Director of the Ophthalmic Oncology Center
Member of the Jules Stein Eye Institute



Metastatic Ocular Melanoma

The Ophthalmic Oncology Center, under Dr. Young's direction, is researching molecular markers in ocular melanoma to provide prognostic information to patients and to better understand metastatic disease. This information may be important to establish better treatments for this cancer. New modalities are being investigated to predict, detect, and ultimately treat choroidal melanoma metastasis.

Surgical Approaches to Vitreoretinal Disease and Cancer

Dr. Young is one of a very few physicians who is a vitreoretinal surgeon and an ophthalmic oncologist. She manages the spectrum of vitreoretinal disease in addition to the surgical management of ocular melanoma, allowing patients to maximally benefit from a wide range of surgical prognostic and therapeutic expertise she brings to the Jules Stein Eye Institute.

PUBLIC SERVICE

Member, Macula Society
Member, Retina Society
Member, American Academy of Ophthalmology
Member, International Congress of Ophthalmic Oncology
Member, Association for Research and Vision in Ophthalmology
Fellow, Royal College of Physicians and Surgeons of Canada, Ophthalmology
Reviewer for many scientific journals

RESEARCH GRANTS

Council on Research: Faculty Research Grant, 7/1/07-6/30/08
American Association of Cancer Research: Career Development Award, 7/1/08-6/30/10

INSTITUTE MEMBERS BASED AT OTHER SITES

James W. Bisley, PhD

Assistant Professor of Neurobiology

Vision and Visual Perception

Dr. Bisley's research revolves around understanding the neural mechanisms underlying the cognitive processing of visual information. These cognitive processes include visual perception, visual memory and visual attention. Recent work has focused on how the responses of neurons in posterior parietal cortex are involved in the allocation of visual attention and how they drive eye movements.

Nicholas C. Brecha, PhD

Professor of Neurobiology and Medicine

Vice Chair of the Department of Neurobiology

Member of the Jules Stein Eye Institute

Member of the Brain Research Institute

Member of CURE: Center for Digestive Diseases

Functional Organization of the Mammalian Retina

Dr. Brecha's research focuses on the elucidation of the cellular and neurochemical organization of the outer and inner retina. Morphological studies have defined cell types and classes, and neurochemical studies have investigated the modulatory action of neurotransmitters and neuroactive peptides. Experimental work has led to the formulation of a model to investigate the functional role of neuropeptides in the retina and provide evidence for the current hypothesis that neuropeptides are modulators of retinal neurons and circuitry. Other experimental work has suggested a vesicular mechanism underlies transmitter release from horizontal cells in the mammalian retina. These investigations are fundamental steps in establishing the retina's functional organization and provide the basis for understanding the pathophysiology of retinal dysfunction.

Michael Danciger, PhD

Research Ophthalmologist

Professor of Biology at Loyola-Marymount University, Los Angeles

Member of the Jules Stein Eye Institute

Genetic Factors Influencing Retinal Degenerations

The focus of Dr. Danciger's research is twofold: Identify genetic factors (especially those that are protective) that influence or modify the course of retinal degenerations as a result of light exposure or inherited mutations; and identify the genetic factors that contribute to age-related retinal degeneration. It is hoped that this research will open pathways of study leading to treatments that will prevent retinal degenerations or decrease their severity.

Dario L. Ringach, PhD

Professor of Neurobiology and Psychology

Member of the Jules Stein Eye Institute

Visual Perception, Eye Movement and Sensorimotor Integration

Dr. Ringach's research focuses on the relationship between eye movements and visual perception, as well as how motor planning and execution, such as reaching, grasping and navigating, is influenced by visual information. Using virtual reality environments, he and his colleagues are studying how human subjects interact with visual stimuli that can be controlled in real time depending on the individual's eye, head, and limb movements. They are examining how visual feedback is used to guide motor actions as well as how the brain adapts to novel situations, such as simulated increases in the total feedback delay.

Terry J. Smith, MD

Professor of Medicine

Milly and Steve Liu Scholar

Chief of the Division of Molecular Medicine at Harbor–UCLA Medical Center

Member of the Jules Stein Eye Institute

Orbital Connective Tissue and its Involvement in Graves Disease

Dr. Smith's research involves the molecular pathogenesis of thyroid-associated ophthalmopathy (TAO). He and his colleagues have been characterizing the unique phenotype of human orbital fibroblasts because those cells appear to be intimately involved in TAO. In particular, Dr. Smith has applied a wide array of molecular techniques to identify specific fibroblast genes and their products, which he believes lead to the dramatic inflammation and tissue remodeling that occurs in the orbit in TAO. The relationship between the orbit and thyroid gland is uncertain and why the two tissues should share involvement in Graves disease is unknown at this time. One feature common to both, is the infiltration of activated T lymphocytes. Dr. Smith has found that both orbital fibroblasts and thyrocytes, when activated, participate in the trafficking of T lymphocytes to diseased tissues. He and his colleagues have discovered that Graves disease-specific antibodies bind to and activate the insulin-like growth factor receptor. In so doing, powerful T lymphocyte chemoattractant molecules are expressed. His research group is currently studying intracellular signaling pathways utilized in this gene inductive process.

Guido A. Zampighi, PhD

Professor of Neurobiology

Member of the Jules Stein Eye Institute

Intercellular Junctions and Communication

A fundamental property of cells organized in tissues is their ability to communicate with each other via highly specialized areas of plasma membrane contact, called junctions. Dr. Zampighi is studying the gap junction and the chemical synapse, two specialized junctions that mediate electrical and chemical transmission, respectively. The gap junction is composed of specialized channels containing small hydrophilic pores that span the two plasma membranes and the intervening extracellular space (the cell-to-cell channel). He is investigating the high resolution structure of the channels as well as the mechanisms of assembly, insertion, and retrieval of the connexin proteins which form them. The chemical synapse is composed of a presynaptic neuron filled with small diameter vesicles that contain high concentration of neurotransmitters and a postsynaptic neuron with receptors. He is studying the mechanisms by which the synaptic vesicles attach ("dock") to the presynaptic membrane. He uses structural (electron microscopy), biochemical, and electrophysiological techniques in an attempt to identify, purify, and characterize the channels and transporters of both junctions in an effort to further understand the mechanisms mediating cell communication.

PROFESSIONAL RESEARCH SERIES

Novrouz Akhmedov, PhD

Assistant Research Ophthalmologist

Molecular Biology of the Retina

Dr. Akhmedov's primary research objectives include the identification of differentially expressed and novel retinal genes, the evaluation of their function in the maintenance of the retina, and their possible involvement in human hereditary retinal degenerative diseases. His initial studies on the 7R (recently isolated) gene revealed that a mutation in its sequence is associated with autosomal recessive retinitis pigmentosa. He showed that 7R is a membrane-associated protein and detected its juxtannuclear localization in the ER/Golgi apparatus region of transfected HEK 293 cells. Dr. Akhmedov is currently investigating how the 7R protein, in conjunction with other partner proteins, exerts an effect on the structural and functional organization of the Golgi apparatus.

Christian Altenbach, PhD

Research Ophthalmologist

Structure and Function of Rhodopsin

The membrane protein rhodopsin is a critical first step in visual transduction, converting light energy into a chemical form in the photoreceptor cell of the eye. To understand this process on a detailed, molecular level, Dr. Altenbach is using site-directed spin labeling (SDSL) and electron paramagnetic resonance spectroscopy (EPR) to study the structure of rhodopsin in the absence of light, as well as the changes in structure caused by light. This research will add to the scientific base for hereditary eye diseases.

Qingling Huang MD

Assistant Research Ophthalmologist

Structure and Function of Alpha-crystallin

Dr. Huang's research is focused on understanding the function and structure of alpha-crystallin. Alpha-crystallin is one of the major structure proteins of the eye lens. This protein is a member of the small heat-shock proteins and is capable of protecting other proteins from denaturation and aggregations. This protein is very important because it is over-expressed in many neurological diseases.

Minghao Jin, PhD

Associate Research Ophthalmologist

Molecular Biology and Biochemistry of the Visual Cycle and Retinal Degeneration

Dr. Jin's research focuses on the molecular and biochemical mechanisms that regulate the retinoid visual cycle. His major activities include cloning and characterization of novel or unidentified genes involved in the visual cycle. With his colleagues, he has identified the *Rpe65* gene, and demonstrated that the disease-causing mutations in the *Rpe65* gene abolish the isomerase activity. Loss of Rpe65 isomerase activity has been linked to the early onset blinding disease known as Leber's congenital amaurosis. Dr. Jin is also investigating the function of interphotoreceptor retinoid-binding protein (IRBP), a major soluble protein component of the interphotoreceptor matrix in the visual cycle and retinal degeneration. Using mice that lack IRBP, he recently found that it plays an essential role for cone vision and cone survival. Understanding the detailed function of IRBP at the molecular level may provide valuable knowledge for the development of a novel therapeutic intervention for photoreceptor degeneration.

Jacky M.K. Kwong, PhD

Assistant Research Ophthalmologist

Degeneration of Retinal Ganglion Cells and Neuroprotection

Dr. Kwong's research goal is to understand the mechanisms of glaucomatous optic nerve damage and to identify novel neuroprotective therapies for glaucoma. He is studying the response and the cell death pathway of retinal ganglion cells in experimental animal models related to optic nerve injury and glaucoma. He is also applying pharmacologic techniques to evaluate therapies that enhance endogenous neuroprotective responses against glaucomatous, excitotoxic and axonal damage to nerve cells, and utilizing multi-disciplinary methods to understand the protective mechanisms.

Michael D. Olson, OD, PhD

Associate Research Ophthalmologist

Comprehensive Ophthalmology

Dr. Olson's research activities focus on the visual and surgical outcomes following cataract surgery and the surgical correction of refractive errors. He is currently studying the Hoya YA-60BB intraocular lens, which absorbs UV and Blue Light for improved protection of the retina, and the Ophtec Reconstruction Lens for the treatment of partial or complete aniridia. With Kevin M. Miller, MD, he obtained a humanitarian device exemption from the U.S. Food and Drug Administration for Morcher GmbH aniridia implants to treat eyes with congenital and acquired iris defects. This investigation has recently been expanded to include additional Morcher devices, and patients with compromised corneas. Other research includes surgical and visual performance outcomes of functionally monocular patients, thermal imaging comparison of phacoemulsification instruments, efficacy and safety of minus power intraocular lens (IOL) implantation in highly myopic eyes having cataract surgery, and the evaluation of Pentacam vs. standard corneal topography for IOL power calculation following keratorefractive surgery.

Maria Carolina Ortube, MD

Assistant Research Ophthalmologist

Ocular Genetics

Dr. Ortube is currently an investigator in four clinical and translational research projects related to ocular genetics. The Genetics of Age-Related Maculopathy (GARM) study focuses on the genetic and environmental risks that contribute to age-related maculopathy (ARM). Findings may contribute to the development of therapeutic and preventive strategies for ARM and to the identification of risk factors for developing this disease. The genetics of inherited eye disorders protocol and the Stargardt studies provide for the clinical characterization of affected individuals and at-risk family members, using state-of-the-art imaging and functional technologies in conjunction with molecular genetic testing to identify causative genes and mutations. A major goal of the Stargardt Study is to establish the most sensitive and reliable methods for assessing disease severity and progression for future clinical trials. Dr. Ortube is also investigating a simple, noninvasive, rapid method for widespread screening of diabetics in order to identify those who may require medical attention and/or therapy for diabetic retinopathy. The study monitors the responses of the pupil to light as a method for detecting regional losses of function of the retina.

Roxana A. Radu, PhD

Assistant Research Ophthalmologist

Retinoids Metabolism in the Eye and Underlying Mechanisms of Macular Degeneration

Dr. Radu's research focuses on the visual cycle and underlying biochemical and molecular mechanisms of macular degeneration. Several research groups have observed that the gene for complement factor H (CFH), a component of the innate immune system, is a strong susceptibility locus for AMD. However, the mechanism by which dysfunction of CFH causes AMD is not known. Using the *abca4* null mutant mouse, a well established animal model for lipofuscin-based maculopathies, Dr. Radu will test the hypothesis that abnormal metabolism of vitamin A and its derivatives could lead to overt activation of the complement system. She will also generate two new mouse models for AMD to investigate the biochemical and molecular mechanisms used by the retinal pigment epithelium to deal with abnormal build-up of vitamin A-based toxic compounds such as A2E. These complex mouse genetic models will advance understanding of the relationship between lipofuscin accumulation, complement activation, and photoreceptor degeneration in AMD, and will be a valuable tool for developing new treatments for this disease.

Jun-ru Tian, MD, PhD

Associate Research Ophthalmologist

Interaction Between Vestibulo-Ocular Reflex (VOR) and Saccadic Eye Movements During Eye-Head Coordination

Dr. Tian is investigating the mechanism of abnormal gaze reflexes caused by cerebellar dysfunction, inner ear disturbances, and aging. These impairments can affect eye and head coordination. Specifically, she is studying the interaction of vestibular-ocular reflex or VOR (involuntary rotation of the eyes in the opposite direction from head rotation) and saccadic eye movements that normally occur to shift the gaze promptly from one cued target location to another. Investigation of this interaction may provide insight into the neural reflex system that coordinates eye and head movement, leading to the development of synergistic strategies for compensation.

PROFESSIONAL CLINICAL SERIES

John D. Bartlett, MD

Clinical Instructor of Ophthalmology

Cataract Surgery

Dr. Bartlett provides clinical supervision to resident physicians at the University Ophthalmology Associates and teaches medical students during their ophthalmology surgical subspecialties clinical rotation.

Melissa W. Chun, OD

Associate Clinical Professor of Ophthalmology

Director of the UCLA Vision Rehabilitation Center

Vision Rehabilitation

Dr. Chun's research interest is in the area of vision rehabilitation for patients with low vision. She is currently conducting research on the effect of internet access training on quality of life of patients with age-related macular degeneration. She is also participating in a multi-center pilot study to evaluate the effectiveness of visual rehabilitation services and how to improve methods of vision rehabilitation care.

Jean-Pierre Hubschman, MD

Clinical Instructor of Ophthalmology

Advanced Vitreoretinal Surgical Interventions and Robotics

Dr. Hubschman's clinical research focuses on the development and evaluation of new vitreoretinal surgical techniques and robotics for ophthalmic surgery. Automated surgery utilizing robotics promises to increase surgical precision and accuracy, and improve access to medical care. His recent publications include research papers as well as a book chapter about the feasibility of robotic surgery in ophthalmology.

Tanuj Nakra, MD

Clinical Instructor of Ophthalmology

Diseases and Therapy of the Eyelid and Orbit

Dr. Nakra is participating in several clinical research projects related to diseases and therapy of the eyelid and orbit. His investigation of Graves disease has led to the description of the lateral displacement of the globe in Graves disease, and the clinical and surgical implications of this finding. He is quantifying patterns of facial asymmetry and their predictive relationship with pathologic eyelid positions. Other clinical projects underway include novel methods of post-cancer reconstruction and the extended uses of fluorouracil in treating periocular lesions. This past year, Dr. Nakra authored the Ophthalmic Plastic Surgery chapter in the textbook "Risk Prevention in Ophthalmology."

Susan S. Ransome, MD

Clinical Instructor of Ophthalmology

Cytomegalovirus (CMV) Retinitis

Dr. Ransome is participating in several clinical research studies involving HIV-infected patients, some of whom have AIDS and cytomegalovirus (CMV) retinitis. In one study, investigators are following patients over time to see what types of eye problems develop in HIV-infected individuals in the era of potent antiretroviral therapies.

Meryl L. Shapiro-Tuchin, MD

Assistant Clinical Professor of Ophthalmology

Director of the Ophthalmology Inpatient Consultation Service

Comprehensive Ophthalmology

Dr. Shapiro-Tuchin provides clinical supervision to resident physicians while they are attending patients at University Ophthalmology Associates clinics. She also functions as Director of the Ophthalmology Inpatient Consultation Service, assisting resident physicians in their evaluation of inpatients admitted to the David Geffen School of Medicine at UCLA. She provides clinical instruction to medical students during their rotation in Ophthalmology.

Angelo Tsirbas, MD

Clinical Instructor of Ophthalmology

Orbital Diseases and Ophthalmic Plastic Surgery

As part of a multidisciplinary team of researchers, Dr. Tsirbas is studying the mechanisms of thyroid orbitopathy and is involved in the development of new minimally invasive surgical approaches for the treatment of complicated orbital lesions. He is currently working on robotic applications of eye surgery and endoscopic orbital approaches. Dr. Tsirbas is also actively involved in the evaluation of new minimally invasive aesthetic procedures for facial rejuvenation.

Federico G. Velez, MD

Clinical Instructor of Ophthalmology

New Approaches to Strabismus

As part of a multidisciplinary team of researchers, Dr. Velez is studying the mechanisms of congenital and acquired forms of strabismus and is involved in the development of new surgical approaches for the treatment of complicated forms of ocular motor deficiencies. He has participated in the development of guidelines for preoperative assessment and surgical approaches to patients with convergent (esotropia), divergent (extropia), and vertical forms of strabismus, and has developed new techniques to treat pediatric patients with eyelid abnormalities and cataracts.

EMERITUS FACULTY

Leonard Apt, MD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Chief of the Division of Pediatric Ophthalmology and Strabismus

Member of the Jules Stein Eye Institute

Michael O. Hall, PhD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Member of the Jules Stein Eye Institute

Robert S. Hepler, MD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Chief of the Neuro-Ophthalmology Division

Member of the Jules Stein Eye Institute

Bradley R. Straatsma, MD, JD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Chairman of the Department of Ophthalmology

Founding Director of the Jules Stein Eye Institute

Richard W. Young, PhD

Professor of Neurobiology Emeritus

Member of the Jules Stein Eye Institute

LECTURERS

Kathleen L. Boldy, V. MD

Lecturer in Ophthalmology

Samuel M. Genensky, PhD

Lecturer in Ophthalmology

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Jules Stein Eye Institute

Programs



PATIENT CARE SERVICES

The Institute's program of care for patients encompasses the full range of eye diseases. Nationally and internationally renowned faculty, along with highly skilled clinical fellows and physician residents, provide integrated consultation and treatment, including new diagnostic and therapeutic procedures that have been made available through recent scientific advances. Institute ophthalmologists are supported by optometrists, orthoptists, technicians, and nurses. Care is delivered in distinctive subspecialty treatment centers, service areas, and clinical laboratories, as well as in specially equipped ophthalmic surgical suites and a dedicated inpatient unit.

Faculty Consultation Service

Institute faculty provide direct consultation and treatment, including surgery, to patients through the Ophthalmology Faculty Consultation Service. This service offers both referring physicians and patients a valuable and unique resource for special eye problems. Faculty have extensive, advanced training in ophthalmic subspecialties, which enables them to offer emerging therapies.

University Ophthalmology Associates

Comprehensive and subspecialty eye care in all medical and surgical areas of ophthalmology is offered through University Ophthalmology Associates (UOA). **Dr. John D. Bartlett** leads UOA as Medical Director. Ophthalmologists, who are members of the UCLA Medical Group, staff the practice.

Inpatient Services

Inpatient ophthalmology services are provided within the medical center to both pediatric and adult patients. The Ophthalmology Inpatient Consultation Service, operating 24 hours a day through the Ronald Reagan UCLA Medical Center, provides consultation and treatment to patients admitted to the hospital's medical and surgical inpatient services. Led by **Dr. Meryl L. Shapiro-Tuchin**, the consultation team consists of physician resident staff. Subspecialty coverage from faculty is called upon as needed.

Surgical Services

Ophthalmic surgery of all types, from cataract extraction to removal of ocular and orbital tumors, is performed in the Institute's dedicated operating rooms. Additionally, a number

of laser surgeries, such as laser-assisted in situ keratomileusis (LASIK), and certain aesthetic and retinal laser surgeries and injection procedures, are performed in designated outpatient procedure rooms. Faculty perform surgical procedures according to their specific ophthalmic specialty. They are joined by other medical specialists, including anesthesiologists, nurses, and technicians, to ensure the highest quality pre- and post-operative care.

UCLA Mobile Eye Clinic

The UCLA Mobile Eye Clinic, a 39-foot-long bus specially outfitted with eye examination equipment, was donated to the Jules Stein Eye Institute in 1996 by The Karl Kirchgessner Foundation, Barbara Mott McCarthy, and the Burton C. Bettingen Corporation. This is the third bus to be donated since the program's founding by the Uncle Claude Fund in 1975. The Mobile Eye Clinic's staff of trained ophthalmic personnel, led by **Dr. Anne L. Coleman**, includes **Drs. Lawrence M. Hopp, Eddy Nguyen, and Andrew Young**. They provide general eye care to over 4,000 adults and children annually throughout Southern California, traveling to schools, shelters, community health and senior citizen centers, health fairs, and organizations that assist homeless and low-income families. Vision services offered include ophthalmic examination and refraction, diagnosis of potential or existing eye disorders, treatment of some ocular diseases, and appropriate referral of patients who need additional services.

Eye and Tissue Bank and Donor Eye Program

The Donor Eye Program, under the direction of **Dr. Anthony J. Aldave**, was established at the Jules Stein Eye Institute to inform the public of the need for eye tissue and to retrieve donated eyes. The program endeavors to increase the availability of eye tissue for corneal transplantation and for scientific study of underlying causes of various eye diseases. Potential donors are recruited through patient contact by ophthalmology faculty and by a donor information brochure containing all of the documents necessary for donating to the UCLA Eye and Tissue Bank in accordance with the Uniform Anatomical Gift Act. The UCLA Eye and Tissue Bank has established a strong relationship with the Doheny Eye Bank to ensure coordinated efforts.



Dr. Gary Holland, Chief of the Cornea and Uveitis Division, examines a young patient.

In the two decades that the Eye and Tissue Bank has been in operation, the waiting time for corneal transplantation has decreased from several months to less than two weeks, not only at the Jules Stein Eye Institute, but also at the UCLA-affiliated hospitals where this surgical procedure is performed. For emergency cases, tissue is available within 24 hours.

SUMMARY OF PATIENT CARE STATISTICS

	2006–2007	2007–2008
Faculty Consultation Service		
Patient visits	63,146	63,058
University Ophthalmology Associates		
Patient visits	19,653	20,819
Inpatient Consultation Service		
Patient evaluations	331	335
Clinical Laboratories		
Procedures	24,699	25,699
Surgery Services		
Number of procedures	7,462	9,204
Mobile Eye Clinic		
Number of patients seen	3,792	3,655
Ocular abnormalities	38%	40%
Number of trips	165	179

RESEARCH AND TREATMENT CENTERS

The Ophthalmology Treatment Centers provide subspecialty care from faculty physicians who are actively involved in related research, enabling emerging and experimental treatment options to be developed for a gamut of eye disorders. In addition to comprehensive treatment, the centers provide both patients and physicians expert diagnostic and consultation services for diseases that are difficult to identify and treat. Ophthalmology faculty work closely with other specialists, both within the Jules Stein Eye Institute and other UCLA clinical departments, to create a multidisciplinary team customized for each patient’s unique medical needs. Services provided by the centers may be inpatient or outpatient in nature, draw upon the surgical skills of ophthalmology faculty when necessary, and be coordinated with patients’ nonvision treatment needs when appropriate.

Aesthetic Center

The Aesthetic Center, under the direction of **Dr. Robert Alan Goldberg**, provides services to patients who are interested in enhancing their appearance through aesthetic surgery. Established in 1998, the Center has rapidly earned a reputation for high quality, individualized care delivered by surgeons trained in both ophthalmic and plastic surgery.

Surgical services offered in the Aesthetic Center include laser-assisted upper and lower eyelid blepharoplasty, endoscopic forehead lifting, liposuction, lifting of the neck and face, and dermal filler and other cosmetic injections to smooth facial lines. Center physicians have pioneered surgical techniques to improve the normal function and appearance of the eyes and face, and often receive referrals for correction of complications from previous plastic surgery.

A major goal of the Center is to educate patients on what they might achieve with aesthetic surgery. In conjunction with in-depth consultation, videotapes and digital photography are used to facilitate discussion. A comfortable, private suite provides a confidential setting for pre- and post-operative care, and procedures are performed in dedicated surgical facilities. A range of post-surgical nursing options are available, from home care to the Institute’s ophthalmic inpatient unit.

Aesthetic Center faculty conduct clinical research that focuses on improving understanding of skin processes, such as aging and healing, and on developing new techniques and substances for aesthetic surgery.

UCLA Center for Eye Epidemiology

The UCLA Center for Eye Epidemiology, under the direction of **Dr. Anne L. Coleman**, was established in 1998 to promote interdisciplinary investigations into blinding diseases of public health importance and is supported by private donations including an endowment established by The Ahmanson Foundation. Colleagues with expertise in epidemiology, biostatistics, health policy, public health, and international health collaborate with ophthalmologists around the world to advance knowledge related to the causes and prevention of specific eye diseases. It is a coordinating body for expanding and sharing information about vision health. The Center maintains and improves vision health through public health research and intervention.

The pursuits and goals of CEE further its mission:

- Study the eye and its function and health in the broader context of the individual, the community, and society
- Incorporate the prevention, treatment, and rehabilitation of blinding eye diseases into its programs
- Promote vibrant communication among scientists, professionals, research groups, students, and advocates for vision health
- Develop and support experts from several disciplines
- Develop a vision healthcare message for the public
- Disseminate findings to researchers, educators, and the broader community
- Increase general awareness of vision health issues by individuals and populations

Center to Prevent Childhood Blindness

The Center to Prevent Childhood Blindness, under the direction of **Dr. Sherwin J. Isenberg**, is committed to reducing pediatric blindness. Currently 1.5 million children worldwide are blind, primarily due to premature births, genetic disorders, and infections. UCLA physicians and basic scientists, including **Drs. Leonard Apt, Gary N. Holland, Steven Nusinowitz, and Irwin Weiss**, have joined forces to conduct collaborative research, education, and patient care programs designed to increase awareness and help treat pediatric blindness. A significant emphasis of the Center is on a noninvasive method of measuring blood gases from the surface of the eye, which may be critical in preventing retinopathy of prematurity, a leading cause of blindness in premature newborns. Another emphasis is to develop inexpensive ocular antibiotics for underdeveloped areas to treat corneal infections that now blind more than 400,000 children worldwide.

The Center has completed a study showing that a very inexpensive antiseptic solution can treat corneal ulcers in children. For a few pennies a day, the number one preventable cause of childhood blindness can be treated. This will hopefully prevent thousands of children from going blind, especially in underdeveloped areas. Additional private support will enable center physicians and basic scientists to develop new medical and surgical treatment options for boys and girls worldwide.

Clinical Research Center

The Jules Stein Eye Institute's Clinical Research Center functions under the direction of **Dr. Gary N. Holland**, with Co-Directors **Drs. Joseph Caprioli, Steven D. Schwartz, and Ralph D. Levinson**. Established in 1998, the Center provides core support to faculty members conducting patient-based research studies. This support involves vital, behind-the-scenes activities that facilitate the clinical research process. Center staff liaise with grant agencies and government regulatory bodies, assist with the preparation of grant applications, participate in the design and management of clinical studies, and perform data collection and analysis functions.

Institute faculty are currently conducting more than 30 clinical research studies (listed in the Appendices). Patients can volunteer to participate in studies that contribute to a better understanding of ocular disorders or that evaluate new, potentially better treatments for various diseases of the eye.

Contact Lens Center

The Contact Lens Center, under the direction of **Dr. Barry A. Weissman**, was created through a reorganization of the contact lens service in 2002 to provide patients with an expanded treatment program and facilities. The Center serves patients with all ophthalmic diagnoses that can be treated with contact lenses, including nearsightedness and farsightedness, regular and irregular astigmatism, and presbyopia. The Center also treats patients who have had eye diseases that are only optically or therapeutically approached with contact lenses (e.g., aphakia, keratoconus, post-corneal transplants, corneal trauma, and infection).

The Center is one of several across the nation that participated in the landmark CLEK (Collaborative Longitudinal Evaluation of Keratoconus) Study, sponsored by the National Eye Institute. Other research conducted by faculty at the Center includes contact lens wear complications, such as neovascularization, abrasion and corneal infection; and systems of oxygen supply to the corneas of contact lens wearers.



Genetic counselor Ariadna Martinez discusses the option of genetic testing with a patient and her daughter.

Diabetic Eye Disease and Retinal Vascular Center

Under the direction of **Dr. Steven D. Schwartz**, the Diabetic Eye Disease and Retinal Vascular Center provides diabetic patients with medical consultation and treatment services ranging from basic vision screening to the management of severe eye disease. Established almost a decade ago, the Center has since contributed significantly to the understanding, treatment, and prevention of diabetic eye disease. Currently, the focus is on innovation in technologies and techniques that will expand the standard of treatment, such as

- new lasers and unique strategies for employing existing lasers,
- refinement of microsurgical techniques specific to diabetic eye diseases, and
- non-traditional treatment approaches.

The Center's treatment philosophy is based upon the systemic nature of diabetes and stresses viewing the patient as a whole. Ophthalmologists take into consideration complications and requirements of diabetes that lie outside the field of ophthalmology, and a diabetes patient coordinator provides education and psychosocial support to reinforce disease prevention, treatment applications, and lifestyle changes. Treatment interventions include laser and ophthalmic surgery. Recognizing the special care needed for diabetics in any ophthalmic surgical situation, Center physicians perform all eye surgeries for diabetics, including those specific to the disease, as well as vitrectomy, cataract surgery, and retinal reattachment.

Eye Trauma and Emergency Center

The Eye Trauma and Emergency Center, under the direction of **Dr. Robert Alan Goldberg**, provides immediate response to ophthalmic emergencies through an eye trauma team available 24 hours a day for consultative, medical, and surgical care involving both primary and secondary ocular repairs. Ophthalmic emergency care has been provided by the UCLA Department of Ophthalmology since its inception. In 1980, the Eye Trauma and Emergency Center was formally established to encompass all levels of ocular trauma within the UCLA hospital system, including support to affiliated institutions. The Center offers complete evaluation and treatment of the traumatically injured eye, including vitreoretinal and/or orbital and ophthalmic plastic surgery, anterior segment surgery, and medical followup.

Patients are commonly referred to the Center for such ocular traumas as

- ruptured globe,
- intraocular foreign bodies,
- acute orbital hypertension,
- retinal detachment,
- chemical burns of the cornea and conjunctiva, and
- acute vitreous hemorrhage.

Primary surgical repairs are performed immediately for new trauma while secondary repairs are usually scheduled. Less than half of patients experiencing ocular trauma require immediate surgery and, in many cases, treatment involves medical follow-up alone.

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease

Established with a generous pledge from Gail and Gerald H. Oppenheimer, the Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease is committed to the discovery of agents and methods to prevent ophthalmic diseases. Areas of study include genetic and environmental factors that may cause eye disease, and pharmacologic and natural agents to prevent eye disease. The latter includes lifestyle modification, nutrition, vitamins, herbs, acupuncture, and massage. The following projects were funded by the Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease in 2007–2008:

Novel Locus for Retinitis Pigmentosa Associated with the Recently Identified 7R Protein

Novrouz Akhmedov, PhD

Assistant Research Ophthalmologist

Debora B. Farber, PhD, DPhhc

Karl Kirchgessner Professor of Ophthalmology

RNA Interference Targeting of the TGFBI Gene Transcript in Human Corneal Epithelial Cells as a Method to Inhibit Pathologic TGFBI Protein Deposition in the Corneal Dystrophies

Anthony J. Aldave, MD

Associate Professor of Ophthalmology

The Influence of Posterior Parietal Cortex on Visual Processing

James W. Bisley, PhD

Assistant Professor of Neurobiology

Characterization of an Avirulent Mutant of Toxoplasma Gondii, the Causative Agent of Ocular Toxoplasmosis

Peter J. Bradley, PhD

Assistant Professor of Microbiology, Immunology, and Molecular Genetics

Dietary Vitamin Intake and Open Angle Glaucoma: A Case-Control Study

Lucy Shen, MD

Fourth-year Resident of Ophthalmology

Anne L. Coleman, MD, PhD

Frances and Ray Stark Professor of Ophthalmology
Professor of Epidemiology



Dr. Tara Young, Director of the Institute's Ophthalmic Oncology Center, prepares for surgery.

Screen for Small Molecules that slow Dominant Optic Atrophy

Alexander M. van der Blik, PhD

Associate Professor of Biological Chemistry

In addition to these projects, the Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease also directed funding to support the Institute's Indigent Children and Families Ophthalmic Care Program, which provides much-needed ophthalmic medical care to economically disadvantaged children and adults.

Laser Refractive Center

The Laser Refractive Center is under the direction of **Dr. David Rex Hamilton**. Founded in 1991, the Center utilizes the skills of faculty specializing in refractive corneal surgery, including clinical and research applications of new laser technology. The Center is one of a few in the United States to pioneer investigations into laser eye surgery.

The Laser Refractive Center provides patients with all standard refractive procedures and offers emerging therapies as they become available. The most common forms of refractive vision correction are:

- Custom LASIK (laser in situ keratomileusis)
- Custom LASEK (laser epithelial keratomileusis)
- Presbyopia-correcting intraocular lens implant
- Custom PRK (photorefractive keratectomy)
- AK (astigmatic keratotomy)
- CK (conductive keratoplasty)
- Phakic intraocular lenses
- Intracorneal ring implant

Patients referred to the Laser Refractive Center undergo a complete ocular examination, including advanced corneal topographic maps to analyze corneal shape and identify conditions that may interfere with surgical correction. Candidates for laser surgery receive intensive education so that they understand the benefits, risks, and alternatives to surgery. Clinical trials for new refractive devices and techniques are open to patients on an ongoing basis. These include studies for the treatment of nearsightedness, farsightedness, and presbyopia that are not available in community-based laser refractive centers.

Macular Disease Center

The Macular Disease Center, under the direction of **Drs. Steven D. Schwartz** and **Christine R. Gonzales**, was created in 1994 in response to the growing, national incidence of macular degeneration.

The thrust of the Center is threefold:

- provide high-quality patient care, utilizing standard and developing treatments;
- offer associated rehabilitation services, such as low-vision aids and counseling, in order to enhance quality of life for patients; and
- promote collaborative research between clinicians and basic science researchers into the cause of macular disease.

Patients with the atrophic or dry form of macular disease are evaluated and their cases followed at the Macular Disease

Center in conjunction with services offered by the Vision Rehabilitation Center. Patients with the exudative or wet form of macular disease receive an immediate angiogram to identify lesions. Treatment options for wet macular disease include participation in emerging therapies and clinical studies that are matched to the patient's disease status. A patient coordinator is available to answer questions and provide information on an ongoing basis.

Ocular Inflammatory Disease Center

The Ocular Inflammatory Disease Center, under the direction of **Dr. Gary N. Holland**, was established in 1985 to provide patients with a broad spectrum of coordinated care that bridges specialties both within the Institute and outside the field of ophthalmology. The Center has a long history of participating in clinical studies and drug therapy investigations that have furthered the understanding and treatment of inflammatory eye diseases.

Center faculty were the first to describe cytomegalovirus (CMV) retinitis as an ophthalmic manifestation of AIDS. Their ongoing investigations have made the Ocular Inflammatory Disease Center a premier site of expertise for AIDS-related ophthalmic disease in the country. Additionally, the Center has world-renowned scientists and clinicians working on the research and treatment of uveitis. Other common inflammatory eye diseases treated in the Center are corneal ulcers, endophthalmitis, and autoimmune diseases of the cornea and ocular surface.

Comprehensive Cataract Center specialist, Dr. Kevin Miller, holds an educational forum about new treatments for cataracts.



Due to the frequency with which ocular inflammatory diseases are associated with systemic diseases, the Ocular Inflammatory Disease Center physicians routinely collaborate with non-ophthalmologists. During each evaluation, a determination is made regarding additional services or specialties that may be necessary as part of a patient's care. The Center offers a Corneal Ulcer Service and an HIV Ocular Disease Service staffed by clinical coordinators to facilitate the integration of care with other medical specialties. If indicated, diagnostic testing ranging from cultures to biopsies to special ultrasound biomicroscopic examinations; complex medical treatments including immunosuppression and investigational drugs; and surgical intervention such as corneal, glaucoma, and retinovitreal procedures are also available.

Ophthalmic Oncology Center

The Ophthalmic Oncology Center, under the direction of **Dr. Tara A. Young**, is renowned for its expertise in teaching, research, and clinical management of adult posterior segment tumors. Established in the early 1980s by the founding director of the Jules Stein Eye Institute, **Dr. Bradley R. Straatsma**, the Center is internationally recognized as one of the leading centers for the diagnosis and management of ocular melanoma. The Center serves as a hub for national, long-term studies investigating the progression and outcome of ocular melanoma and its treatment. It played an important role in the Collaborative Ocular Melanoma Study (COMS), a multicenter, randomized study sponsored by the National Eye Institute, to evaluate the effectiveness of standard treatment options for this cancer.

Basic science research leading to molecular discoveries in cancer metastasis is the central goal of the Jules Stein Eye Institute Ocular Melanoma Laboratory. Patients may participate directly in this research by contributing tumor material obtained via needle biopsy at the time of their cancer surgery. Imaging research to detect melanoma metastasis, cancer immunotherapy studies for melanoma metastasis with partners at the UCLA Jonsson Comprehensive Cancer Center, and health psychology studies are among the clinical research studies in which patients may participate.

Patients diagnosed with ocular melanoma may be offered a highly sophisticated treatment plan coordinated by UCLA radiation physicists and radiation oncologists. With several decades of experience in radioactive plaque therapy for ocular melanoma, successful treatment of the primary eye tumor is the central clinical goal.

Optic Neuropathy Center

Under the direction of **Dr. Anthony C. Arnold**, the Optic Neuropathy Center provides multidisciplinary consultation, diagnosis, and treatment for patients with complex diseases involving the optic nerve. Established in 1991, the Center incorporates specialized facilities and equipment for diagnostic testing and offers consultation from neuro-ophthalmologists, orbital surgeons, neurologists, neuroradiologists, and neurosurgeons. The professional and technical expertise available to patients, many of whom are referred for definitive diagnosis, is unparalleled.

Patients referred to the Optic Neuropathy Center receive advanced diagnostic testing of the orbit and optic nerve to assist in evaluation. Extensive analysis of diagnostic data, together with information from the patient's medical history and comprehensive physical examination, enables Center physicians to determine the nature of the disease and devise a treatment plan. Treatment may be medical or surgical depending on the nature of the referral and the patient's disease status. As part of the Center's clinical research effort, physicians are refining disease classifications along with diagnostic and treatment approaches to further the field of optic neuropathy and improve options for patients with these complex disorders.

Orbital Disease Center

The Orbital Disease Center, under the direction of **Dr. Robert Alan Goldberg**, brings multidisciplinary expertise to the treatment and study of orbital diseases arising from trauma, cancer, inflammation, and infection. The Center was founded in 1991, building upon an established, international reputation in the treatment of orbital diseases. Care is organized around a team of experts in ophthalmology, neuroradiology, neurosurgery, head and neck surgery, radiation oncology, and craniofacial surgery, who bring to the treatment of orbital diseases a depth of knowledge and experience not available elsewhere in Southern California.

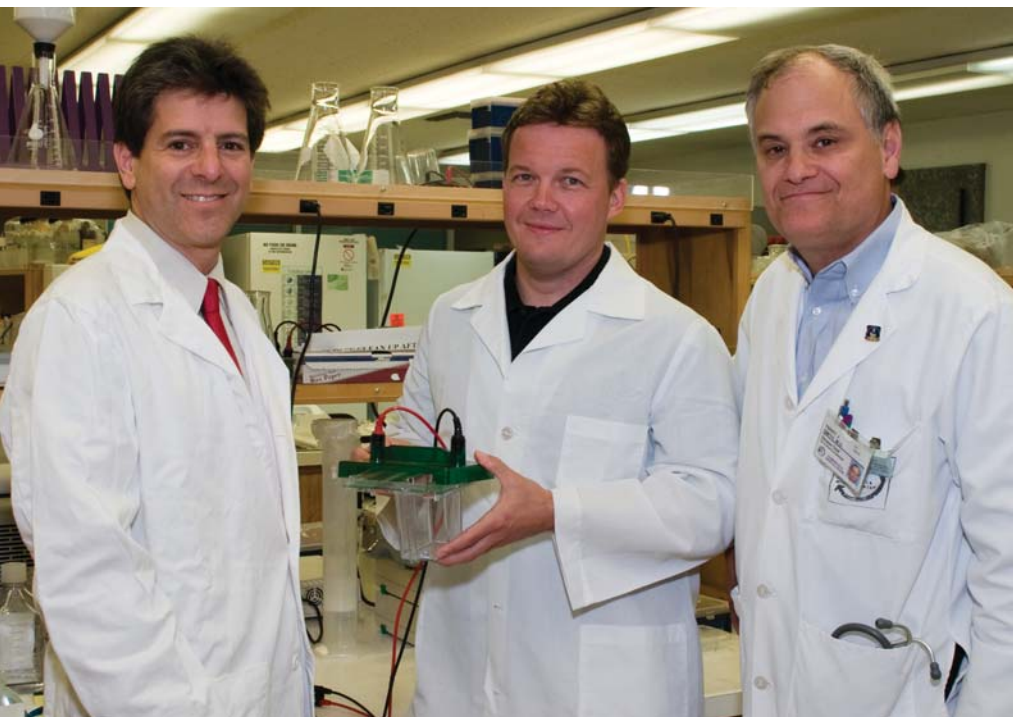
Both medical and surgical management are employed in the Center; however, surgery is the primary treatment approach. Modern ophthalmic operating rooms within the Institute provide advanced instrumentation for ophthalmic surgery, oculoplastic surgery, orbital bony reconstruction, and orbital microsurgery. The treatment team performs procedures that are not usually available in the community, including orbital decompression microsurgery for orbital apical tumors, optic canal decompression, and bony reconstruction to address traumatic or congenital defects.

The Orbital Disease Center has an active program on Graves disease. New surgical techniques are evaluated for patients with Graves disease and basic science research is carried out to further understand the disease.

Vision Rehabilitation Center

The Vision Rehabilitation Center is under the direction of **Dr. Melissa W. Chun**, with **Dr. Steven D. Schwartz** as Medical Advisor. The Center was established to provide rehabilitation for patients with low vision and maximize their visual function and quality of life. Low vision is defined as best corrected vision of 20/70 or worse in the better eye. Though less restrictive than legal blindness (20/200 or worse) or total blindness, low vision can nevertheless limit daily life. Patients with low vision have a wide range of eye diseases, including age-related macular degeneration, diabetic retinopathy, glaucoma, corneal disease, and retinitis pigmentosa.

The Vision Rehabilitation Center provides assistance in the form of patient education and training, including reading and computer training, as well as consultation on a wide array of technologically advanced devices that can help patients adapt to their visual restrictions. Center services are customized for each patient's individual needs, and may include instruction on simple techniques that optimize lighting and contrast, such as pouring coffee into a white mug, to instruction on sophisticated devices like a computer system that scans written materials and reads it back in a synthesized voice. One unique feature is a special "lending library" of low vision devices that enables patients to try them at home or in the office prior to purchase.



From left, Drs. Robert Goldberg, Raymond Douglas and Terry Smith conduct research on Graves disease.

CLINICAL LABORATORIES

The Ophthalmology Clinical Laboratories provide precise measurements, photographs, and quantitative studies of the eye and the visual system. Quantitative information of this type enhances patient care by increasing the accuracy of diagnosis and enlarging the parameters employed to assess the clinical course and effectiveness of treatment. Additionally, the clinical laboratories expand the scope of treatment alternatives, promote clinical research, and generally augment the effectiveness of ophthalmic disease management. The laboratories are available to all ophthalmologists in the community.

Glaucoma Photography Laboratory

The Glaucoma Photography Laboratory, under the direction of **Dr. Joseph Caprioli**, takes a series of specialized photographs for new and follow-up glaucoma patients to assist the ophthalmologist in the management of patients with this disease. All of the photographic modalities capture varying aspects of the optic nerve fiber layer, a critical component in predicting, diagnosing, and monitoring glaucoma. Additional abnormalities associated with glaucoma and other eye diseases can also be measured and visually represented.

The GDX Nerve Fiber Analyzer utilizes polarized light in place of dilation to measure the thickness of the nerve fiber layer. This test is particularly useful in diagnosing new glaucoma. Heidelberg retinal tomography (HRT), using confocal laser light, measures additional parameters of the optic nerve and provides more information on the nerve fiber layer. Optical coherence tomography (OCT) utilizes reflected light to measure the nerve fiber layer as well as to measure macular holes as a staging procedure for surgical repair. An ophthalmic fundus camera photographs the optic nerve in stereo. The Laboratory is conducting clinical studies to evaluate the effectiveness of each photographic modality in terms of predictive accuracy and early detection of glaucoma.

Ocular Motility Clinical and Basic Science Laboratory

The Ocular Motility Clinical and Basic Science Laboratory, under the direction of **Dr. Joseph L. Demer**, records and quantitatively analyzes eye movement abnormalities resulting from ocular and neurological disorders, such as ocular myasthenia gravis. Four types of tests are performed. Electro-oculography (placing electrodes around the eye) evaluates

nerve muscle palsies and lost or slipped eye muscles. The Hess test utilizes specialized eye charts and lenses to assist in the diagnosis of a number of problems, including double vision. Magnetic scleral search coil techniques are utilized in clinical research studies to detect fine movements not evident through normal visual examination. Another test involves the visual recording of eye movement using a video camera.

Basic science research is an integral component of the Laboratory. Using donor tissue, investigators further their understanding of eye movement as well as diseases of the eye, brain, and muscles, and related tissues of the inner ear. The research goals are twofold: To advance etiological theories of disease; and to develop new tests and new applications of existing tests that will aid in the diagnosis of eye diseases.

Ophthalmic Photography Clinical Laboratory

The Ophthalmic Photography Clinical Laboratory, under the direction of **Dr. Tara A. Young**, provides a wide array of photographic techniques important in patient care, research, and teaching. The primary purpose of ophthalmic photography in patient care is to record the present state of the eye, and in cases of abnormality, to establish a baseline and monitor the patient's condition over time. Patient care services include photographic documentation of anterior segment diseases involving corneal problems like growths, infection, and trauma; photographs of ocular motility to record abnormalities in eye movement; fundus photography, which captures pictures of the retina; and diagnostic testing using fluorescein and indocyanine green angiography, which records the dynamics of blood flow in the eye. The Laboratory also supports the research and teaching activities of the Jules Stein Eye Institute by preparing and duplicating graphic materials for presentation and publication.

Ophthalmic Ultrasonography Clinical Laboratory

The Ophthalmic Ultrasonography Clinical Laboratory, directed by **Drs. Anurag Gupta** and **Ralph D. Levinson**, performs clinical examinations that are useful in diagnosing both ocular and orbital eye diseases. Patients are referred for ocular ultrasonic examination when internal structures of the eye cannot be seen directly or to differentiate known or suspected ocular pathology.



Dr. Steven Nusinowitz (standing), assisted by Staff Research Assistant Ms. Lisa Blasco, prepares a patient for testing in the Institute's Visual Physiology Laboratory.

Diagnostic examinations include standardized A-scan, B-scan, and biomicroscopy. Standardized A-scan is useful in tissue differentiation and is commonly employed to diagnose ocular and orbital tumors, including choroidal melanoma. B-scan provides location and contour information and is particularly useful in differentiating vitreous membranes from retinal detachment. Ultrasound biomicroscopy provides exquisitely detailed, high-resolution views of the anterior segment of the eye and is a critical tool for the evaluation of ocular pathology, especially in opaque corneas. Biometry and lens calculation examinations are also performed in the Laboratory. Biometry measures the axial eye length, anterior chamber depth, and lens thickness; lens calculations are performed to determine the power of the lens implant for cataract patients.

Ophthalmology Diagnostic Laboratory

The Ophthalmology Diagnostic Laboratory, under the direction of **Dr. Joseph Caprioli**, offers four quantitative tests, including measurement of vision acuity and field of vision. The potential acuity meter (PAM) and the laser interferometer measure potential vision acuity, usually preparatory to cataract surgery for patients with complicating eye diseases such as macular degeneration. Patients with little potential visual acuity are often not candidates for surgery. The Goldmann perimeter utilizes manual perimetry to measure the field of vision (including peripheral vision). Patients with retinal degenerations are commonly referred for this type of test. Lastly, the endothelial cell count uses a high-powered microscope and video camera to photograph the inner layer of the cornea and corneal thickness. Patients with a low cell count do not have a healthy cornea and consequently may not be good candidates for surgery due to difficulty in healing.

Perimetry Laboratory

The Perimetry Laboratory, under the direction of **Dr. Joseph Caprioli**, performs visual field examinations that determine the sensitivity of central and peripheral vision. Examinations are conducted with advanced Humphrey automated perimetry equipment. Testing detects visual field deficits associated with certain kinds of eye diseases such as glaucoma, retinal disorders, and neuro-ophthalmic conditions. Utilizing pinpoint points of light around a perimetry bowl, the test evaluates different areas of the field of vision. Test results are computerized and compared to a range of normal values by age group. Patterns of diminished fields of vision are related to specific eye diseases. Perimetry testing is employed for diagnostic purposes and to monitor visual field sensitivity over time, especially for glaucoma patients. Both standard and shortwave automated techniques are available, in addition to frequency-doubling perimetry and motion-detection perimetry.

Visual Physiology Clinical Laboratory

The Visual Physiology Clinical Laboratory, under the direction of **Drs. Michael B. Gorin** and **Steven Nusinowitz**, quantitatively evaluates the function of the retina and visual pathways. Patients are referred for functional testing to confirm a specific diagnosis or, in cases where the etiology is unknown, to rule out alternative possibilities. Electrophysiological tests, including the electroretinogram (ERG), electro-oculogram (EOG), and visually evoked potential test (VEP), record electrical signals from different layers of the visual system, much like an electrocardiogram (ECG) records electrical signals of the heart. Psychophysical tests, such as reading an eye chart, require the participation of the patient in specific tasks to evaluate visual functions like color blindness and contrast sensitivity. In many cases, both electrophysical and psychophysical tests are performed together in order to obtain the optimum amount of information for diagnosis.

TRAINING PROGRAMS

The Jules Stein Eye Institute and the UCLA Department of Ophthalmology jointly provide comprehensive training in ophthalmology and vision science to medical students, residents, and clinical and research fellows. Integrated, multi-faceted programming offers a stimulating environment for learning and for meeting degree and certificate requirements. A strong commitment to teaching by Institute faculty assures that ophthalmic education is maintained as a priority amidst the imperatives of patient care and research.

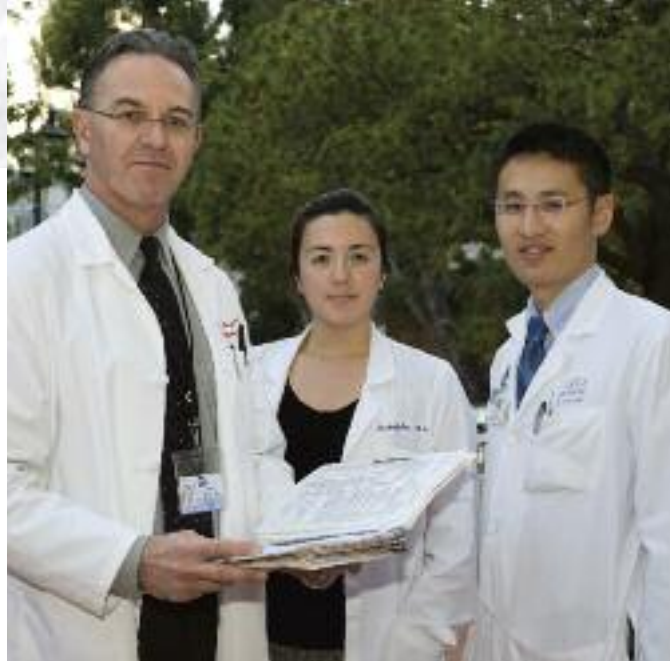
The training programs at the Institute encompass the gamut of ophthalmic and vision science education, representing every level of training and incorporating a full range of subjects in the study of the eye. The residency program is rated one of the top in the country. A large patient population with diverse vision problems, including many that require surgical intervention, offers innumerable training opportunities for both residents and clinical fellows. The availability of more than 15 research laboratories ensures a wide choice of vision science projects for all trainees. Pre- and post-doctoral research fellows particularly benefit from the wealth of new and unfolding research generated by vision scientists at the Institute.

UCLA Medical Student Program

Each academic year, the Department of Ophthalmology and the Institute extend instruction to UCLA medical students in their second, third, and fourth years of enrollment. Through lectures, demonstrations, discussions, and clinical practice, the students are afforded numerous training opportunities from which to gain knowledge and experience in ophthalmology.

All second-year medical students participate in a four-day program that encompasses the ophthalmology portion of Fundamentals of Clinical Medicine. The program consists of lectures, demonstrations, instructions on ophthalmic history-taking, and techniques for examination of the eye and related structures of the visual system. Students in small groups are assigned to clinical instructors for practical and personalized training in examination procedures and in the use of ophthalmic instruments. In this way, each student is exposed to major ophthalmic diseases, significant ophthalmic findings, and actual examination experience.

Third-year medical students complete a one-week rotation in ophthalmology. Instruction includes lectures, reading, computer-assisted learning, discussion, demonstrations, and patient examinations. The basic schedule for this rotation provides instruction in clinical ophthalmology and participation



Director of the UCLA Ophthalmology Residency Program, Dr. Anthony Arnold (left), with third-year residents, Drs. Barbara Yates and Allen Hu.

in departmental seminars and conferences. Students observe and participate in patient care and experience a concentrated period of basic instruction in ophthalmology.

The fourth-year medical student program is made up of various elective programs, including the Advanced Clinical Clerkship in Ophthalmology. Elective courses provide intensive exposure to clinical ophthalmology and basic visual sciences.

UCLA Ophthalmology Residency Program

The Department of Ophthalmology conducts an accredited three-year residency program for 21 residents; seven residents begin training each July. The full breadth of ophthalmology training is offered, including experience in general ophthalmology and in the following ophthalmic subspecialties: cornea-external ocular disease, glaucoma, neuro-ophthalmology, ophthalmic anesthesiology, orbital and ophthalmic plastic surgery, pediatric ophthalmology and strabismus, retinal disease, ophthalmic genetics, ocular inflammatory disease, ophthalmic oncology, and vision science.

Training incorporates the resources of several major medical centers in Los Angeles: UCLA Jules Stein Eye Institute; Harbor-UCLA Medical Center; Olive View-UCLA Medical Center; and the Veterans Affairs Greater Los Angeles Healthcare System at West Los Angeles and Sepulveda. Every resident has exposure to each medical center during the course of training, thereby ensuring clinical experience with a wide range of problems and patient populations. Certification by the American Board of Ophthalmology is a natural objective of the program.

Clinical Rotations

Clinical rotations at the Jules Stein Eye Institute include both general ophthalmology and subspecialties. In general, ophthalmology residents work as a team, handling clinics, emergencies (including overnight in-house call), and walk-in patients. They also serve as an ophthalmology consult service for inpatients in the Ronald Reagan UCLA Medical Center. Residents assigned to subspecialty service rotations are provided with intensive exposure to the various divisions within the Department, working closely with faculty members in a private practice environment. At the UCLA-affiliated medical centers, residents work in teams that provide both general and subspecialty patient care.

During the first year of training, residents are given a firm clinical foundation with an emphasis on general ophthalmology. They develop skills in refraction, diagnostic evaluations, and the medical management of ophthalmic problems. They also begin their surgery training and take an intensive rotation in ophthalmic pathology under the direction of a full-time ophthalmic pathologist. In the second year, residents begin in-depth training in all of the ophthalmic subspecialties. During the third year, they assume greater responsibilities for medical and surgical patient care and participate in supervision and teaching of medical students and first- and second-year ophthalmology residents. They also engage in administrative duties at the various medical centers.

Didactic Education

Residents receive didactic education in the classroom on an ongoing basis. Once each week, all residents attend a

mandatory half-day program that includes faculty lectures that, over the course of the three-year program, cover each of the required subjects in the American Academy of Ophthalmology and Clinical Sciences Course. These lectures are followed by Grand Rounds, consisting of presentation and discussion of specific patient cases, and faculty lectures on clinical topics related to ophthalmic subspecialties.

Throughout the week, clinical conferences in ophthalmic subspecialties are held, where problems are presented and discussed. These conferences sometimes consist of visiting faculty lectures. Residents attend according to their rotations and interests. First-year residents also meet weekly with faculty members in a course designed specifically for their needs as new trainees. There are additional opportunities for residents to participate in any of the extensive continuing education programs conducted by the department and the Institute. All residents attend at least one annual meeting of the American Academy of Ophthalmology in their second or third year of the program.

Surgery Training

Residents begin to perform surgery in their first year of training and continue to operate throughout their residencies. Surgical cases are assigned commensurate with level of training and experience. First-year residents begin in the Institute's Microsurgery Laboratory, learning basic techniques. The Laboratory is available to residents throughout their training. Residents first assist on selected surgical cases; by the end of their residencies, they are performing procedures independently.



First-year residents are (from left) Drs. Gina Yoo, Vicki Chan, Alex Yuan, Seongmu Lee, Monica Ralli, Le Yu, and Heather Chang.

Research

An understanding of and an appreciation for research are major prerequisites for assimilating future developments in ophthalmology. Accordingly, ophthalmic research is an integral component of residency training. Residents are expected to undertake independent investigation or to participate in an ongoing clinical or basic science research project in ophthalmology. They present the results of their work at the Jules Stein Eye Institute Clinical and Research Seminar during their second and third years of residency. They are also encouraged to report their studies at regional and national meetings and publish their results in scientific journals. Residents with special clinical or research interests have an opportunity to use elective time to increase their exposure to a particular area of ophthalmology. This time can be spent with full-time or volunteer faculty at UCLA or at other institutions.

EyeSTAR Program

The EyeSTAR (Specialty Training and Advanced Research) Program offers vision science training combined with an ophthalmology residency. Appointees complete a residency program leading to certification in ophthalmology, as well as laboratory research experience leading to a doctorate or postdoctoral training in the event that the trainee has a doctorate. EyeSTAR trainees work under the guidance of a faculty advisory panel representing the trainee's clinical and research interests.

This unique program is especially geared to physicians committed to academic careers in ophthalmology, combining basic science with clinical practice in a six-year curriculum. Trainees select their faculty mentors and laboratories or research groups from a wide range of participants throughout the David Geffen School of Medicine at UCLA, College of Letters and Sciences, School of Public Health, Clinical Scholars Program, and RAND Graduate School.

Second-year residents are (standing from left) Drs. Allen Chiang, Barbara Yates, Ahmad Mansury, Allen Hu, (seated from left), Pradeep Prasad, Tanvi Shah, Tania Tai, and Sumit Shah.

The curriculum is a blend of graduate courses, laboratory research, and clinical training. The trainee is expected to commit three years to the residency program in ophthalmology and conduct vision science research for three years. Each trainee's educational course is individualized depending on his or her background, interests, and needs. The goal is to generate leaders in ophthalmology who are investigators as well as practitioners—physicians who are as comfortable at the laboratory bench as in the examining or operating rooms.

UCLA Ophthalmology and Vision Science Fellowship Programs

The Jules Stein Eye Institute offers stipends to enable particularly well-qualified persons to receive and contribute to training and research at the predoctoral and postdoctoral levels. Fellows usually concentrate on specific areas of clinical ophthalmology or vision science.

Clinical fellowship training combines outpatient, inpatient, and surgical experience in an ophthalmic subspecialty. The fellow assumes increasing responsibility for patient care, under the supervision of faculty members responsible for the program. In addition to receiving instruction from faculty, the fellow instructs medical students and residents. Research is considered an important aspect of specialty training and a major prerequisite for assimilating future developments in ophthalmology. Clinical fellows are expected to undertake independent investigation or to participate in one of the



Third-year residents are (standing from left) Drs. Lucy Shen, Jacob Khoubian, Karen Shih, Stacy Pineles (seated from left) Lauren Eckstein, Yvonne Ou, and Marc Shomer.



ongoing research projects in a basic or clinical field related to their specialty. Time is allotted appropriately for this experience, and its value is enhanced by careful supervision, availability of laboratory facilities, and access to technical assistance.

Vision science fellowship training is laboratory based and offers both predoctoral and postdoctoral opportunities to trainees in specific areas of vision science, or over a wide range of topics. Trainees work under the supervision of Institute faculty members who are engaged in basic science research and have active laboratories. They may work on individual projects or contribute to faculty projects. The scope and nature of each vision science fellowship is developed by the trainee and his/her faculty mentor.

Clinical and vision science fellowships offered by the Institute are described below.

Fellowship in Comprehensive Ophthalmology

The Comprehensive Ophthalmology Division offers a one-year fellowship under the direction of **Dr. Kevin M. Miller**. The fellowship prepares the graduates of residency training programs for careers in academic comprehensive ophthalmology, emphasizing the latest techniques in cataract surgery and combined cataract-refractive surgery. The learning experience is augmented by participation in the Annual Clinical and Research Seminar and Grand Rounds, and through interaction with members of the volunteer clinical faculty.

Clinical experience is gained by working under the program director in the comprehensive ophthalmology consultation suite and University Ophthalmology Associates. Surgical experience is gained by assisting the faculty preceptor, performing independent and supervised surgery, and supervising residents. Although cataract surgery accounts for the majority of surgery performed by the service, the fellow gains experience in many areas, including anterior segment surgery, laser refractive surgery, strabismus surgery, glaucoma filtration surgery, oculoplastics, and some retinal laser procedures.

Teaching is an integral part of the fellowship experience. The fellow is expected to be an instructor in an annual anterior segment surgery course, the lens and cataract basic science course, journal club, and other courses offered by the Comprehensive Ophthalmology Division. The fellow also is expected to instruct medical students and speak at community hospitals in the southern California area through arrangements with the Ronald Reagan UCLA Medical Center Visiting Speakers Program. The fellow presents cases at Grand Rounds and participates as an instructor or lecturer at courses offered during the annual American Society of Cataract and Refractive Surgery and American Academy of Ophthalmology meetings.

The fellow is expected to undertake several clinical research projects during the year. A microsurgery laboratory is available for surgical experiments. Collaboration with members of the vision science faculty can be arranged for projects of mutual interest. Research findings are submitted for presentation at national meetings and significant findings are submitted for publication. The fellow is required to present the results of one study at the Jules Stein Eye Institute's Clinical and Research Day and Post-ARVO Seminar.

Fellowship in Contact Lens Practice

The one-year fellowship in contact lens, under the direction of **Drs. Barry A. Weissman** and **Melissa W. Chun**, offers optometrists and ophthalmologists advanced study in accordance with the program's mission to

- provide state-of-the-art clinical training in contact lens care,
- foster scientific investigation of related topics in the study of contact lenses and corneal physiology,
- prepare individuals to deliver excellence in clinical care,
- encourage individuals in careers in academic or industrial settings, and
- promote professional relations between optometry and ophthalmology.

The contact lens fellow participates in patient care in the Jules Stein Eye Institute Contact Lens Center. Working with optometrists, ophthalmology residents, and ophthalmology fellows of various subspecialties provides excellent training opportunities for routine and specialized contact lens and comprehensive ophthalmology services in a multidisciplinary setting. Specialized services include complicated contact lens fittings for all types of astigmatism, aphakia (both adult and pediatric), presbyopia, post surgical corneas (including corneal grafts and keratorefractive surgery), irregular corneas secondary to trauma, and diseased corneas (including keratoconus and healed herpetic keratitis).

The fellow is encouraged to participate in ongoing research in contact lens care and to initiate personal research activities related to patient care and/or laboratory study. In this way, the fellow becomes versed in current scientific thought related to a variety of contact lens topics, such as immunology and microbiology of contact lens wear, contact lens optics, and oxygen delivery through contact lens materials. More than one day per week is allocated to research activities.

Fellowship in Cornea-External Ocular Diseases and Refractive Surgery

Under the direction of faculty members **Drs. Anthony J. Aldave, Bartly J. Mondino, Gary N. Holland, Sophie X. Deng, Barry A. Weissman**, and **David Rex Hamilton**, in the Cornea and Uveitis Division, one-year fellowships are offered in the study of diseases of the cornea, external eye, anterior segment, and refractive surgery. Each faculty member has an area of specialization, creating a broad clinical and laboratory training experience for applicants who are preparing for an academic career in ophthalmology. Clinical experience consists of participation in the cornea faculty practices, including surgery, and assisting and/or directing the care

of emergency cornea cases at the Jules Stein Eye Institute. Fellows work in the microsurgical laboratory at the Institute, developing their microsurgical skills, and assist in teaching these skills to ophthalmology residents. Under the direction of faculty, they also perform primary surgical procedures in the UCLA Laser Refractive Center. In addition to in-depth training at the Jules Stein Eye Institute, fellows supervise patient care in the cornea clinics at the West Los Angeles Veterans Affairs Healthcare Center and at Harbor-UCLA Medical Center. Experience and knowledge concerning contact lens fitting, contact lens management and related aspects of corneal physiology are also obtained.

Research may be clinically oriented or geared to basic science. Faculty are actively engaged in research at the Institute and collaborate with fellows on worthwhile projects of mutual interest. Fellows typically complete an original clinical or laboratory research project, and frequently co-author a book chapter or review during their training.

Fellowship in Glaucoma

Under the direction of **Drs. Joseph Caprioli, Anne L. Coleman, JoAnn A. Giaconi**, and **Simon K. Law**, the one- or two-year glaucoma fellowship provides clinical and laboratory experience in glaucoma diagnosis and management for physicians who are preparing for an academic career in ophthalmology. Clinical experience is gained by working with the faculty advisor in the consultation suite examining patients and participating in clinical and surgical management. Fellows assist in glaucoma surgical cases and perform surgery under the guidance of the program director. They work in the glaucoma microsurgical laboratory, participate in microsurgery courses for resident and practicing physicians, assist in the glaucoma clinic, and develop expertise in the various diagnostic techniques used in glaucoma treatment through preceptor-type relationships with faculty.

Fellows participate in glaucoma teaching performed at the Jules Stein Eye Institute and affiliated institutions, present cases at teaching rounds, and prepare presentations for regularly scheduled glaucoma conferences. They participate in teaching of staff, students, and residents through practical and didactic presentations, and improve their techniques of examination and interpretation of ancillary tests.

Fellows undertake at least one research project that can be accomplished during the fellowship period. This project, which may be a clinical study or an applied research project in the laboratory, is performed in cooperation with the faculty advisor.

Use of the excellent facilities in eye pathology is encouraged. Vision scientists, including biochemists, physiologists, pathologists, anatomists, and clinical ophthalmologists, are amenable to collaborating on worthwhile projects.

Fellowship in Neuro-Ophthalmology

The one-year fellowship in neuro-ophthalmology, under the direction of **Dr. Anthony C. Arnold**, involves a close preceptor-preceptee relationship, participation in teaching rounds, and work in the private consultation suite. The fellow is encouraged to develop rapport with members of the neurology and neurosurgery services at UCLA, and to become aware of neuro-ophthalmologic problems elsewhere in the hospital. The David Geffen School of Medicine at UCLA maintains major clinical and research programs in neurology, neurosurgery, and neuroradiology.

The fellow attends the weekly Neurology and Neurosurgery Grand Rounds, takes an active part in seeing relevant inpatient consultations throughout the medical center, and assists in selected surgical procedures of interest to neuro-ophthalmologists. Attendance at the weekly neuroradiology teaching conferences is encouraged. Participation in clinical research, such as studies of eye movement disorders and disturbances of visual pathways, is expected. Time is allotted for scientific reading and for research activities.

Fellowship in Orbital and Ophthalmic Plastic Surgery

Fellowships in orbital and ophthalmic plastic surgery, under the overall supervision of **Drs. Henry I. Baylis, Raymond S. Douglas, Robert Alan Goldberg, Jonathan Hoening, and Norman Shorr**, provide special training for physicians who have completed ophthalmology residency training and are

interested in specializing in orbital and adnexal disorders, and in aesthetic and reconstructive orbitofacial surgery. The Orbital and Ophthalmic Plastic Surgery Service conjoins efforts of the neuro-ophthalmology, neuroradiology, neurosurgery, and ocular pathology units in diagnosis and treatment of disorders affecting the optic nerve, orbit, and adjacent tissues (paranasal sinuses and intracranial tissues) that affect vision and ocular motility. The fellowship program is approved by the American Society of Ophthalmic Plastic and Reconstructive Surgery and the American Academy of Cosmetic Surgery.

The fellowship program includes ophthalmic plastic surgery outpatient consultation, inpatient activities, and surgical procedures at the Jules Stein Eye Institute and affiliated hospitals. Fellows participate extensively in the research activities of the Orbital and Ophthalmic Plastic Surgery Division. In addition to publishing results of original research in peer-reviewed scientific journals, fellows complete a formal thesis that partially satisfies the membership requirements of the American Society of Ophthalmic Plastic and Reconstructive Surgery.

As part of the Institute's orbital and ophthalmic plastic surgery continuing education program, several surgical and dissection workshops, including a seminar on eyelid and orbit surgery, are held each year. The highlight of these workshops is the one-on-one teaching between faculty members and participants. Fellows are an integral part of these courses.

Fellowship in Pediatric Ophthalmology and Strabismus

Fellowships in pediatric ophthalmology and strabismus provide in-depth clinical and laboratory experience for individuals preparing for academic careers in ophthalmology. The division offers one-year fellowships, under the direction of **Drs. Arthur L. Rosenbaum, Sherwin J. Isenberg, and Joseph L. Demer** for U.S. licensed physicians as well as ophthalmologists from abroad.

Clinical experience for each fellowship consists of supervised participation in the ophthalmic care of pediatric patients seen at the Jules Stein Eye Institute, Harbor-UCLA Medical Center, and Olive View-UCLA Medical Center. Specific activities

Ophthalmology fellows are (standing from left) Drs. Ryan Taban, Eric Lee, Scott Oliver, Ronald Mancini, Peter Kappel (seated from left) My Hanh Nguyen, Adrienne Ruth, Noa Ela-Dalman, Atiporn Thuangtong, and Tina Rutar.



include participation in University Ophthalmology Associates, the nursery and neonatal intensive care units, ophthalmic plastic and reconstructive surgery, and the pediatric retinal service. Other activities in pediatric ophthalmology include experience in the private consultation suites and participation in pediatric cases that are handled through other services.

Fellows may collaborate with vision scientists, including biochemists, physiologists, pathologists, and anatomists, on research projects of mutual interest.

Fellowship in Vitreoretinal Diseases and Surgery

The fellowship in vitreoretinal diseases and surgery is designed to provide an opportunity for appropriate clinical training and for clinical or vision science research related to retinal disease, over a two-year period. Special training includes the prevention, diagnosis, and treatment of retinal, choroidal, vitreous, and related ocular diseases. Under the direction of **Drs. Steven D. Schwartz, Christine R. Gonzales, Michael B. Gorin, Allan E. Kreiger, Anurag Gupta, Jean-Pierre Hubschman, David Sarraf, Tara A. Young, and Bradley R. Straatsma**, the fellowship consists of the following major components:

- diabetic retinopathy,
- diseases of the macula and retina,
- fluorescein angiography and retinal photography,
- hereditary retinal degenerations,
- ocular trauma,
- ophthalmic oncology,
- rhegmatogenous retinal disease and vitreoretinal surgery, and
- ultrasonography.

Fellowships in Vision Science

Predoctoral and postdoctoral fellowships in vision science are offered to individuals who have an interest in specific research areas being pursued by Institute faculty in highly specialized laboratory environments. These fellowships are supported either by individual funds available to Institute professors or as part of a special program offered under the auspices of a National Eye Institute Vision Science Training Grant. Predoctoral fellows are required to take a defined program of core courses and become rapidly acquainted with the fundamentals of vision research. They carry out their eye-

related research and obtain their doctorates in about six years, receiving training in the methods of neurobiology, neurosciences, pharmacology, chemistry, biochemistry, molecular biology, molecular genetics, cell biology, biomechanics, or visual physiology, according to their individual needs and interests. Fellows are required to present their research at informal and formal seminars, and are encouraged to participate in national and international meetings and to write and publish scientific papers. They gain a broad background in the vision sciences by interacting with members of adjacent laboratories and collaborating with faculty members other than their own preceptors.

Postdoctoral research fellowships are offered for one to three years. Each one is unique with research programs established according to mutual agreement between trainees and mentors. Research areas for postdoctoral fellows include molecular biology, genetics, biophysics, biomechanics, cell biology, eye development, and biochemistry. Upon completion of their fellowships, trainees usually pursue careers in academia or industry.

International Fellowship and Exchange Program

To promote and encourage research and education interaction with ophthalmology institutions throughout the world, the Jules Stein Eye Institute offers an International Ophthalmology Fellowship and Exchange Program consisting of one- to two-year fellowships under the supervision of specific Institute faculty. Candidates for these international fellowships are nominated by prestigious institutions outside the United States and often hold academic positions within their own countries. Fellows participate in the clinical and research activities of ophthalmic-subspecialties according to their training needs.

Annual Report 2007–2008
Jules Stein Eye Institute

Appendices



VOLUNTEER AND CONSULTING FACULTY

VOLUNTEER FACULTY IN OPHTHALMOLOGY

Clinical Professor of Ophthalmology

Henry I. Baylis, MD
Founding Chief of the
Orbital and Ophthalmic Plastic
Surgery Division

Bruce B. Becker, MD
Michael S. Berlin, MD
Norman E. Byer, MD
William P. Chen, MD
Glenn O. Dayton, MD
Paul D. Deiter, MD
Donald E. Dickerson, MD
Richard Elander, MD
Leland M. Garrison, MD
John D. Hofbauer, MD
Kenneth J. Hoffer, MD
C. Richard Hulquist, MD
Barry M. Kerman, MD
Roger A. Kohn, MD
Howard R. Krauss, MD
Benjamin C. Kwan, MD
Jeremy E. Levenson, MD
Ezra Maguen, MD
Samuel Masket, MD
Albert T. Milauskas, MD
Irvin S. Pilger, MD
George B. Primbs, MD
Yaron S. Rabinowitz, MD
Teresa O. Rosales, MD
Robert J. Schechter, MD
Stephen S. Seiff, MD
Alan L. Shabo, MD
Norman Shorr, MD
Robert M. Sinsky, MD
Sherwin H. Sloan, MD
Roger W. Sorenson, MD
Howard H. Stone, MD

Associate Clinical Professor of Ophthalmology

Charles R. Barnes, MD
Gerald J. Barron, MD
Arnold L. Barton, MD
Louis Bernstein, MD
W. Benton Boone, MD
Andrew E. Choy, MD
Melissa W. Chun, OD
Peter J. Cornell, MD
Bernard S. Davidorf, MD
Uday Devgan, MD
Paul B. Donzis, MD
Robert E. Engstrom, Jr., MD
Donald S. Fong, MD, MPH

Donald I. Goldstein, MD
Michael J. Groth, MD
Thomas A. Hanscom, MD
Andrew Henrick, MD
Edwin P. Hill, MD
Eugene F. Hoffman, Jr., MD
David F. Kamin, MD
Stanley M. Kopelow, MD
Joseph N. Lambert, MD
Jonathan I. Macy, MD
Robert K. Maloney, MD
M. Gene Matzkin, MD
Joan E. McFarland, MD
James W. McKinzie, MD
Alan L. Norton, MD
Leon G. Partamian, MD
John F. Paschal, MD
Gene J. Pawlowski, MD
Sidney W. Penn, MD
Michael Reynard, MD
David S. Robbin, MD
David E. Savar, MD
Timothy V. Scott, MD
James F. Sharp, MD
Albert Sheffer, MD
James D. Shuler, MD
Yossi Sidikaro, MD, PhD
Matthew Sloan, MD
Ronald J. Smith, MD
Alfred Solish, MD, MS
William C. Stivelman, MD
Hector L. Sulit, MD
Kamal A. Zakka, MD

Assistant Clinical Professor of Ophthalmology

David H. Aizuss, MD
Malvin B. Anders, MD
Richard K. Apt, MD
Reginald G. Ariyasu, MD, PhD
Arthur A. Astorino, MD
Mark A. Baskin, MD
Arthur Benjamin, MD
Katherine L. Bergwerk, MD
Betsy E. Blechman, MD
Cynthia A. Boxrud, MD
Amarpreet S. Brar, MD
Harvey A. Brown, MD
Almira W. Cann, MD, PhD
Arnett Carraby, MD
Andrew M. Chang, MD
Thomas B-H. Choi, MD
Milton W. Chu, MD
Robert A. Clark, MD
Charles A. Cooper, MD
Yadavinder P. Dang, MD
Jonathan M. Davidorf, MD

John L. Davidson, MD
Sanford S. Davidson, MD
Louise Cooley Davis, MD
Farid Eghbali, OD
Troy R. Elander, MD
Naomi L. Ellenhorn, MD
Calvin T. Eng, MD
Joseph M. Faust, MD
Doreen T. Fazio, MD
Sanford G. Feldman, MD
David R. Fett, MD
Laura E. Fox, MD
Ron P. Gallemore, MD
George H. Garcia, MD
Kathryn M. Gardner, MD
Leslie C. Garland, MD
W. James Gealy, Jr., MD
Lawrence H. Green, MD
Man M. Singh Hayreh, MD
Matthew L. Hecht, MD
Jonathan A. Hoenig, MD
Jeffrey Hong, MD
Morton P. Israel, MD
Steven J. Jacobson, MD
Véronique H. Jotterand, MD
J. David Karlin, MD
David S. Katzin, MD
James F. Kleckner, MD
Jerome R. Klein, MD
Craig H. Kliger, MD
Howard E. Lazerson, MD
Brian L. Lee, MD
Steven Leibowitz, MD
Robert T. Lin, MD
Joanne E. Low, MD
Bryant J. Lum, MD
Michael C. Lynch, MD
M. Polly McKinstry, MD
Ashish M. Mehta, MD
George L. Miller, MD
Kenneth J. Miller, MD
David R. Milstein, MD
Ronald L. Morton, MD
Lee T. Nordan, MD
Roger L. Novack, MD, PhD
James H. Peace, MD
Gilbert S. Perlman, MD
Cheryl J. Powell, MD
John R. Privett, MD
Firas Rahhal, MD
George M. Rajacich, MD
Jay J. Richlin, MD
Laurence N. Roer, MD
Gerald S. Sanders, MD
Barry S. Seibel, MD
Meryl Shapiro-Tuchin, MD
David M. Shultz, MD



Volunteer clinical faculty members (from left) Drs. Andrew Henrick, Morton Israel, and Jonathan Macy received the 2008 Senior Honor Award for providing more than 25 years of outstanding service to the UCLA Department of Ophthalmology.

Eliot B. Siegel, MD
 Lance M. Siegel, MD
 John D. Slaney, MD
 Robert J. Smyth-Medina, MD
 Kenneth O. Sparks, MD
 Kenneth D. Steinsapir, MD
 Sadiqa Stelzner, MD
 Robert C. Tarter, MD
 Debra G. Tennen, MD
 Teddy Y. Tong, MD
 Sterling M. Trenberth, MD
 Robert C. Tudor, MD
 Henry E. Ullman, MD
 Nancy S. Wang, MD
 Tay J. Weinman, MD
 Irwin S. Weiss, MD
 Sidney J. Weiss, MD
 Scott Whitcup, MD
 David L. Williams, MD
 Jeffrey V. Winston, MD
 David L. Wirta, MD
 Barry J. Wolstan, MD
 Wilson C. Wu, MD, PhD
 Michael C. Yang, MD
 Richard H. Yook, MD
 Peter D. Zeegen, MD

**Clinical Instructor
 in Ophthalmology**

John D. Bartlett, MD
 J. Kevin Belville, MD
 Eduardo Besser, MD
 Maria Braun, MD
 Neil D. Brouman, MD
 Stephen S. Bylsma, MD
 Joseph H. Chang, MD
 John J. Darin, MD
 Paul J. Dougherty, MD
 Daniel Ebroon, MD
 Brad S. Elkins, MD

Satvinder Gujral, MD
 Lawrence M. Hopp, MD, MS
 John A. Hovanesian, MD
 Aarchan Joshi, MD
 Anisha J. Judge, MD
 Rajesh Khanna, MD
 Julie A. King, MD
 Mark H. Kramar, MD
 Daniel Krivoy, MD
 Laurie C. McCall, MD
 David Paikal, MD
 Alpa A.S. Patel, MD
 Jayantkumar Patel, MD
 Susan Ransome, MD
 Steven H. Rauchman, MD
 Robert A. Schwarcz, MD
 Kayar Shah, MD
 Mark Silverberg, MD
 Sharon N. Spooner-Dailey, MD
 Dana P. Tannenbaum, MD
 William L. Trotter, MD
 Mathew Wang, MD
 Peter H. Win, MD
 Patrick Yeh, MD

**CONSULTING MEMBERS OF THE
 JULES STEIN EYE INSTITUTE**

Robert W. Baloh, MD
 Professor of Neurology and
 Surgery (Head and Neck)
 Ferdinand V. Coroniti, PhD
 Professor, Department of Physics
 and Astronomy
 David Eisenberg, DPhil
 Investigator, Howard
 Hughes Medical Institute;
 Director, UCLA-DOE Institute
 for Genomics and Proteomics;

Professor, Departments of
 Chemistry & Biochemistry and
 Biological Chemistry Molecular
 Biology Institute
 Alan M. Fogelman, MD
 Castera Professor and Executive
 Chair, Department of Medicine
 Alan D. Grinnell, PhD
 Professor of Physiology and
 Physiological Science;
 Director, Jerry Lewis
 Neuromuscular Research Center;
 Director, Ahmanson Laboratory
 of Neurobiology
 Vicente Honrubia, MD, DMSc
 Professor Emeritus of Surgery,
 Division of Head and Neck
 Surgery; Director, Victor
 Goodhill Ear Center
 Sherman M. Mellinkoff, MD
 Professor Emeritus of Medicine;
 Former Dean, UCLA School
 of Medicine
 C. Kumar Patel, PhD
 Professor, Department of Physics
 and Astronomy
 Leonard H. Rome, PhD
 Senior Associate Dean for
 Research; Professor of
 Biological Chemistry
 Peter C. Whybrow, MD
 Judson Braun Professor and
 Executive Chair, Department of
 Psychiatry and Biobehavioral
 Sciences; Director,
 Neuropsychiatric Institute;
 Physician in Chief,
 Neuropsychiatric Hospital

RESIDENTS AND FELLOWS

RESIDENTS

Third-Year Residents, 2005–2008

Lauren A. Eckstein, MD, PhD
 F. Jacob Khoubian, MD
 Yvonne Ou, MD
 Stacy L. Pineles, MD
 Lucy Q. Shen, MD
 Karen Shih, MD
 Marc H. Shomer, MD, PhD

Second-Year Residents, 2006–2009

Allen Chiang, MD
 Allen Hu, MD
 Ahmad M. Mansury, MD
 Pradeep S. Prasad, MD
 Sumit P. Shah, MD
 Tanvi M. Shah, MD
 Tania Tai, MD
 Barbara S. Yates, MD

First-Year Residents, 2007–2010

Vicki K. Chan, MD
 Heather S. Chang, MD
 Seongmu Lee, MD
 Monica Ralli, MD
 Gina L. Yoo, MD
 Le Yu, MD

EYESTAR TRAINEES

Alex Yuan, MD, PhD
 Shaheen P. Karim, MD
 Helen Lee, MD

CLINICAL FELLOWS

Corneal and External Ocular Diseases and Refractive Surgery

My Hanh T. Nguyen, MD
 Jared R. Younger, MD, MPH

Glaucoma

Priya V. Desai, MD
 Ryan Taban, MD

Orbital and Ophthalmic Plastic Surgery

Ronald Mancini, MD
 Mehryar (Ray) Taban, MD

Pediatric Ophthalmology and Strabismus

Tina Rutar, MD
 Adrienne Ruth, MD

Uveitis and Inflammatory Eye Disease

Peter J. Kappel, MD

Vitreoretinal Diseases and Surgery

Robert Coffee, MD
 Eric S. Lee, MD
 Scott C. Oliver, MD
 Shantanu Reddy, MD

Specialized Clinical Fellow

Marisa Chung, OD (Contact Lens)



Dr. Lynn Gordon (left) presented third-year resident Dr. Karen Shih with the Ophthalmic Surgery Award for demonstrating outstanding surgical skills during the residency training program.



Retina ophthalmology fellow Dr. Scott Oliver (center) received the Fellow Teaching Award from third-year residents (from left) Drs. Stacy Pineles, Yvonne Ou, Karen Shih, Jacob Khoubian, Lucy Shen, and Marc Shomer.

INTERNATIONAL FELLOWS

Comprehensive Ophthalmology

Qiong-yan Tang, MD
Daye, China

Cornea–External Ocular Disease

Kamal Khairidzan, MD
Kuala Lumpur, Malaysia

Glaucoma

Jaehong Ahn, MD
Seoul, South Korea
Yasunari Munemasa, MD, PhD
Kawasaki, Japan

Orbital and Ophthalmic Plastic Surgery

Benjamin Burt, MD
Melbourne, Australia

Pediatric Ophthalmology

Noa Ela-Dalman, MD
Tel-Aviv, Israel
Atiporn Thuangtong, MD
Bangkok, Thailand

Vitreoretinal Diseases

J.P. Hubschman, MD
Marseille, France

POSTDOCTORAL RESEARCH FELLOWS

Tanya Diemer, PhD
Zhen Hua Ding, PhD
Oluwatoyin Fafowara, MD
Mark Fleissner, PhD
Rajendra Kumar Gangalum, PhD
Louise Hughes, PhD
Catherine Hwang, MD
Zhe Jing, PhD
Riki Kawaguchi, PhD
Joanna Kaylor, PhD
Miyeon Kim, PhD
Srinvas Koduru, PhD
Vanda Lopes, PhD
Shawn Morales, PhD
Kun Do Rhee, PhD
Kiyoo Sakagami, PhD
Veena Theendakara, PhD
Amy Tien, PhD
Deepti Trivedi, PhD
Ned Van Eps, PhD
Jiamei Yu, PhD
Quan Yuan, PhD

PREDOCTORAL RESEARCH FELLOWS

Tammy Beran
Michael Bridges
Ling Chen, MD
Robert Kent Fanter
Yi-Wen (Evan) Hsieh
Gergana Kodjebacheva
Carlos Lopez
Sheryll Mangahas
John McCoy
Shawn Morales
Anita Narasimhan
Caroline Sham
Dora Toledo Warshaviak
Jang (Lawrence) Yoo
Alejandra Young

International pediatrics fellow Dr. Noa Ela-Dalman (center) won the 2008 American Association for Pediatric Ophthalmology and Strabismus Research Award. The award-winning project was co-authored by Drs. Arthur Rosenbaum (left), Joseph Demer (right), and Federico Velez (not shown).



ENDOWED PROFESSORSHIPS, FELLOWSHIPS, AND OTHER FUNDS

ENDOWED PROFESSORSHIPS

Ahmanson Chair in Ophthalmology

Established in 2005 by The Ahmanson Foundation, as an administrative chair for the Retina Division Chief to further research, education, and clinical care programs

Steven D. Schwartz, MD
2007–Present

Leonard Apt Chair in Pediatric Ophthalmology

Established in 2004 by Dr. Leonard Apt, Professor Emeritus of Ophthalmology and Founding Director of the Division of Pediatric Ophthalmology and Strabismus, with a gift from the trust of Frederic G. Rappaport, Dr. Apt's nephew

Joseph L. Demer, MD, PhD
2005–Present

Karen and Frank Dabby Endowed Chair in Ophthalmology

Established in 2007 as a term chair to support the activities of a distinguished faculty member in the area of orbital disease

Robert Alan Goldberg, MD
2008–Present

Charles Kenneth Feldman Chair in Ophthalmology

Established in 1982 in memory of Charles Kenneth Feldman, an entertainment industry executive

Robert D. Yee, MD
Professor 1984–1987

Hillel Lewis, MD
Scholar 1989–1993

Gabriel H. Travis, MD
2001–Present

Laraine and David Gerber Chair in Ophthalmology

Established in 1998 as a term chair by Mr. and Mrs. Gerber and converted to a permanent appointment chair in 2007 with an additional pledge

Joseph L. Demer, MD, PhD
2000–2004

Sherwin J. Isenberg, MD
2004–Present

Brindell and Milton Gottlieb Chair in Pediatric Ophthalmology

Established in 2005 as an administrative chair for the Division of Pediatric Ophthalmology and Strabismus, in honor of Dr. Arthur L. Rosenbaum, and will change to the Arthur L. Rosenbaum, MD, Chair in Pediatric Ophthalmology, upon his retirement from UCLA

Arthur L. Rosenbaum, MD
2008–Present

Dolly Green Chair in Ophthalmology

Established in 1980 by Dorothy (Dolly) Green

Dean Bok, PhD
1984–Present

Ernest G. Herman Endowed Chair in Ophthalmology

Initiated in 2007 by Mr. Ernest G. Herman to support a vision-scientist or a clinician-investigator

Karl Kirchgessner Foundation Chair in Vision Science

Established in 2002 as a term chair by a colleague of Dr. Jules Stein to promote basic science research initiatives of the Department of Ophthalmology

Debora B. Farber, PhD, DPhhc
2002–Present

Kolokotronis Chair in Ophthalmology

Established in 2004 by Wendy and Theo Kolokotronis to support the teaching and research of a cataract surgeon and scientist

Kevin M. Miller, MD
2005–Present

Grace and Walter Lantz Endowed Chair in Ophthalmology

Established in 1991 as a term chair by Mr. and Mrs. Lantz

J. Bronwyn Bateman, MD
Grace and Walter Lantz Scholar
1993–1995

Sherwin J. Isenberg, MD
Professor, 1996–2004

Joseph L. Demer, MD, PhD
Professor, 2004–2005

David May II Chair in Ophthalmology

Established in 1998 as a term chair by the family of David May II, a founding member of the Institute's Board of Trustees, to perpetuate, in memoriam, Mr. May's association with the Jules Stein Eye Institute, and converted to a permanent chair with an additional pledge from the Wilbur May Foundation

Gary N. Holland, MD
1999–2004

Joseph Caprioli, MD
2004–Present

Oppenheimer Brothers Chair in Ophthalmology

Established in 2002 as a term chair by the Oppenheimer Brothers Foundation

Joseph Horwitz, PhD
2003–Present

Harold and Pauline Price Chair in Ophthalmology

Established in 2000 by the Louis and Harold Price Foundation and converted to a permanent appointment chair in 2006 with an additional pledge

Michael B. Gorin, MD, PhD
2006–Present

Jerome and Joan Snyder Chair in Ophthalmology

Established in 2007 to support the activities of a distinguished faculty member who directs the Ophthalmology Residency Program, ensuring that UCLA's accredited program continues to offer rigorous and comprehensive instruction for individuals of the highest caliber

Frances and Ray Stark Chair in Ophthalmology

Established in 1992 as a term chair by the Fran and Ray Stark Foundation and converted to a permanent appointment position in 2007 with an additional commitment

Joseph Caprioli, MD
1997–2004

Anne L. Coleman, MD, PhD
2004–Present

Jules Stein Chair in Ophthalmology

Established in 1982 as a memorial tribute to Dr. Jules Stein by his many friends, with the leadership of Samuel Goldwyn, Jr.

Wayne L. Hubbell, PhD
1983–Present

Jack H. Skirball Endowed Chair in Ocular Inflammatory Disease

Initiated in 2007 by the Skirball Foundation in honor of Jack H. Skirball's longstanding friendship with Dr Jules Stein and Lew Wasserman

Bradley R. Straatsma, MD, Chair in Ophthalmology

Established in 1994 to honor Bradley R. Straatsma, MD, Founding Director of the Jules Stein Eye Institute

Bartly J. Mondino, MD
2000–Present

Vernon O. Underwood Family Chair in Ophthalmology

Established in 1995 as a term chair by Adrienne Underwood in memory of her late husband, Vernon O. Underwood

Gary N. Holland, MD
2004–Present

Edith and Lew Wasserman Chair in Ophthalmology

Established in 1977 by Edie and Lew Wasserman to honor Dr. Jules Stein

Manfred Spitznas, MD
1979–1981

Bartly J. Mondino, MD
Scholar 1984–1988;
Professor 1988–2000

Ben J. Glasgow, MD
2003–Present

ENDOWED FELLOWSHIPS

Rosalind W. Alcott Fellowship

Established in 1978 for the training of outstanding postdoctoral fellows

Leonard Apt Fellowship

Established in 2002 by Leonard Apt, MD, Founding Chief of the Pediatric Ophthalmology and Strabismus Division, to support outstanding clinical fellows in the field of pediatric ophthalmology and strabismus

Tina Rutar, MD
2007–2008

The Thelma and William Brand Director's Fund

Established in 2004 with a trust from William F. Brand to benefit worthy students at the Jules Stein Eye Institute

Shantan Reddy, MD
2007–2008

Steven and Nancy Cooperman Fellowship Fund

To support eye research and education, with emphasis on clinical ophthalmology

Jared Younger, MD
2007–2008

Klara Spinks Fleming Fellowship Fund

Established in 1985 for the support of cataract research

Frances Howard Goldwyn Fellowship

Established in 1977 by Samuel Goldwyn, Jr., with gifts from Mrs. Goldwyn's estate and Dr. and Mrs. Jules Stein

Mehryar Taban, MD
2007–2008

Elsa and Louis Kelton Fellowship

Endowed in 1982 to support postdoctoral research and training

Tina Rutar, MD
2007–2008

Bert Levy Research Fellowship Fund

Established in 1995 to enhance the educational opportunities of vision science scholars and advance research in neuro-ophthalmology

David May II Fellowship Fund

To support advanced study and research in ophthalmology and vision science

Ronald Mancini, MD
2006–2008

Abe Meyer Memorial Fellowship Fund

Established in 1969 to support clinical fellows at the Institute

Eric S. Lee, MD
2006–2008

Scott C. Oliver, MD
2006–2008

Shantan Reddy, MD
2007–2008

Adelaide Stein Miller Research Fellowship

Established in 1977 as a tribute to Dr. Jules Stein's sister

My Hanh Nguyen, MD
2007–2008

Harold and Pauline Price Fellowship

To support research and education in ophthalmology and vision care

Frederic G. Rappaport Fellowship in Retina/Oncology

Established in 2004 by Mrs. Jeanne A. Rappaport, as a memorial to her son, Frederic

Scott C. Oliver, MD
2007–2008

Ann C. Rosenfield Fund

Established in 2000 to support the Division of Orbital and Ophthalmic Surgery's International Fellowship Program

Dr. Jack Rubin Memorial Fellowship

To support postdoctoral fellows

Sanford and Erna Schulhofer Fellowship Fund

To support postdoctoral research and training in vision science

Lee and Mae Sherman Fellowship Fund

Established in 1971 to support postdoctoral fellows

Priya Desai, MD
2007–2008

Jules Stein Research Fellowship

Established in 1982 to honor the memory of Charles Kenneth Feldman

Robert Coffee, MD
2007–2008

Adrienne Ruth, MD
2007–2008

Vernon O. Underwood Family Fellowship Fund

Established in 1993 to support clinical fellows

Ryan Taban, MD
2007–2008

ENDOWMENTS FOR RESEARCH, EDUCATION, AND PATIENT CARE

The Annenberg Foundation Fund

Established in 2003 for follow-up treatment of patients who have benefited from The Annenberg Foundation's direct-service programs for children and adults

J. Richard Armstrong and Ardis Armstrong Fund

Established in 2007 from a generous gift from the J. Richard Armstrong and Ardis Armstrong Revocable Living Trust to support degenerative eye diseases

Elsie B. Ballantyne Regents Fund

For educational and patient care projects within the Glaucoma Division

Elsie B. Ballantyne UCLA Foundation Fund

Established in 1971 for research related to glaucoma

Virginia Burns Oppenheimer Endowment Fund

Established in 1998 with memorial gifts as a tribute to Virginia Burns Oppenheimer for interior maintenance projects

Card Family Research Fund

Established in 1998 for vision research with an emphasis on corneal disease

Edward and Hannah Carter Fund

Established in 1990 for continuing medical education

Anthony Eannelli Fund

Established in 1998 with a bequest from the estate of Anthony Eannelli for research into the treatment and cure of macular degeneration

Katherine L. Gardner Research Fund

Established in 1984 for vision research

Emma B. Gillespie Fund

Established in 1968 for the development and enrichment of teaching, research, and patient care programs

Audrey Hayden-Gradle Trust

Established in 1994 with an unrestricted trust

Marie and Jerry Hornstein Family Endowed Macular Degeneration Research Fund

Established in 2007 by Mr. and Mrs. Hornstein to support age-related macular degeneration under the direction of Steven D. Schwartz, MD

Michael Huffington Ophthalmology Scholarship Fund

Established in 1994 for educational activities within the Retina Division

Stella F. Joseph Fund

Established in 1982 for the cataract research of Bradley R. Straatsma, MD

JSEI Maintenance Fund

For special maintenance of the exterior marble and other unique characteristics of the Jules Stein Eye Institute buildings

Herman King Fund

Established in 1993 with a bequest from Herman King to support age-related cataract research under the direction of Joseph Horwitz, PhD

The Karl Kirchgessner Foundation Ophthalmology Endowment Fund

Established in 1984 for promising areas of vision science research

Sara Kolb Memorial Fund

Established in 1984 for research in pediatric ophthalmology

John and Theiline McCone Macular Disease Research Fund

Established in 1989 for macular disease research

Memorial Library Funds

In honor of General and Mrs. H.L. Oppenheimer, Jerome T. Pearlman, and Susan Stein Shiva

Chesley Jack Mills Trust

Established in 1990 for vision research with special emphasis on glaucoma associated with corneal disease and/or uveitis

Patricia Pearl Morrison Research Fund

Established in 1982 for the investigation of retinal structure and disease

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease Endowment Fund

Mr. and Mrs. Oppenheimer established this endowment in 2007 to support the Center's mission to discover agents and methods to prevent ophthalmic diseases and disorders

Emily G. Plumb Estate and Trust

Established in 2003 to support research for the prevention and cure of blindness

Harold and Pauline Price Retina Research Fund

Established in 2000 by the Louis and Harold Price Foundation for retina research under the direction of Steven D. Schwartz, MD

Herb Ritts, Jr. Memorial Vision Fund

Established in 2004 by Herb's family and friends to provide monies to support AIDS-related vision care, research, and education

Albert Sarnoff Endowed Cataract Fund

Established in 2008 to support cataract research and education programs under the direction of Kevin M. Miller, MD

Richard B. Shapiro Vision Fund

Established by Mr. Shapiro's friends and family, and endowed in 2006, will underwrite investigations in uveitis and its complications, such as glaucoma

The Skirball Foundation Fund

Established in 1990 for research, education, and patient care in the Ocular Inflammatory Disease Center

Arthur Spitzer Fund

Established with a gift annuity in 1995 by Arthur Spitzer for unrestricted support

Raymond and Ruth Stotter Vision Science Research Fund

Established in 1990 for vision science research

Bradley R. Straatsma Research Fund

Established in 1988 for research related to ophthalmology under the direction of Bradley R. Straatsma, MD

Barbara P. Taylor Fund

For the vision science program

UCLA Center for Eye Epidemiology

Established in 1997 by The Ahmanson Foundation to support research and clinical studies to further knowledge of the development, treatment, and prevention of eye disease

Paul J. Vicari Endowed Cataract Research Fund

Established in 2006 by the Resnick Family Foundation to honor Paul J. Vicari, will support cataract research and educational activities currently under the direction of Kevin M. Miller, MD, Professor of Clinical Ophthalmology at UCLA

Uncle Claude Fund

Established in 1972 for vision care services of needy children and adults through the UCLA Mobile Eye Clinic

Anne H. West Estate Fund

Established in 1987 for medical research in eye diseases and disorders and for related equipment and supplies

Daniel B. Whipple Fund

Established in 1982 for the study of the transplantation of eye tissue

EDUCATIONAL OFFERINGS

OPHTHALMOLOGY AND VISION SCIENCE TRAINING PROGRAMS

Thirteenth Annual Vision Science Conference

September 7–9, 2007

Sponsored jointly by the Jules Stein Eye Institute and the National Eye Institute, the Annual Vision Science Conference brings together pre- and postdoctoral research fellows and faculty from the Jules Stein Eye Institute to discuss a wide range of topics in vision science research.

Ophthalmology Basic and Clinical Science Course

Course Chairman

Bartly J. Mondino, MD

This course is a major segment of the education program for ophthalmology residents, as well as a review course for ophthalmologists. Sections are presented each year in a rotation designed to provide complete review of all sections in a three-year period. First-year residents participate in a more intensive curriculum in order to obtain a comprehensive foundation of ophthalmologic knowledge. In 2007–2008, the following course components were offered:

Fundamentals and Principles of Ophthalmology

September 5–October 24, 2007

Joseph L. Demer, MD, PhD

Section Chairman

Optics Refraction and Contact Lenses

October 31–January 2, 2008

Barry A. Weissman, OD, PhD

Section Chairman

Ocular Inflammation and Uveitis

January 9–March 12, 2008

Gary N. Holland, MD

Section Chairman

Neuro-Ophthalmology

March 19–June 11, 2008

Anthony C. Arnold, MD

Section Chairman

Ophthalmology Clinical Conferences

Coordinators

Anthony C. Arnold, MD

Gary N. Holland, MD

The Clinical Conferences are offered in conjunction with the regular weekly Ophthalmology Basic and Clinical Science Course. These conferences are accompanied by lectures in the Ophthalmology Specialty Service Program, in which all faculty members of the Institute participate on a rotating basis, and the Invited Lecture Series, which features guest speakers from other UCLA Departments, from across the United States, and from abroad. The Clinical Conferences review patient care activities of the UCLA Department of Ophthalmology, present general topics in ophthalmic science, and promote discussion of relevant aspects of ophthalmic pathology and pharmacy.

Vision Science Seminar Series

Coordinator

Suraj P. Bhat, PhD

This seminar series, conducted throughout the academic year, allows faculty within the Jules Stein Eye Institute to present their research to other members of the Institute, thereby fostering the exchange of knowledge and cooperation. In addition, the series frequently includes presentations by eminent visitors to the UCLA campus.

Phacoemulsification Course

September 9, 2007

Course Director

Kevin M. Miller, MD

This course is a key component of the residency training program, as well as a resource for practicing ophthalmologists. Both classroom and laboratory instruction are offered, covering in detail the procedural and anatomical components of modern sutureless phacoemulsification.

Study Groups

Focusing on specific topics in clinical ophthalmology, study groups meet regularly under the leadership of faculty members who are acknowledged specialists in their respective fields. The study groups are an integral part of the residency and clinical fellowship training programs and serve as an informal resource for practicing ophthalmologists in the community.

HIV-Related Eye Disease

Study Group

At monthly conferences, Gary N. Holland, MD, and Susan S. Ransome, MD, meet with infectious disease specialists from the UCLA Center for AIDS Research and Education (CARE) to discuss new developments in the management of cytomegalovirus (CMV) retinitis and other issues related to the ophthalmic manifestations of AIDS. Interested clinical and research professionals are invited to the meetings.

Fluorescein Angiography Conference

Arranged by the clinical fellows in vitreoretinal studies, this conference convenes periodically to review current angiograms representing disease entities, unusual abnormalities, and controversial interpretations of angiographic findings. Steven D. Schwartz, MD, and other members of the Retina Division supervise the conference.

Glaucoma Weekly Conference

This conference is designed to teach residents and fellows a basic understanding of the pathophysiology and clinical care of glaucoma. Faculty, fellows and residents all participate in case and subject presentations and discussions. The conferences are coordinated by Joseph Caprioli, MD.

Oculoplastics Conference

This conference meets bimonthly and includes full-time and volunteer clinical faculty and visitors from the community who meet to discuss oculoplastics and orbital cases presented by fellows and residents. The coordinator for the year was Robert Alan Goldberg, MD.

Ophthalmic Pathology Conference

Faculty and residents meet daily to review pathological findings from current ophthalmology cases. The coordinator for the year was Ben J. Glasgow, MD.

Pediatric Ophthalmology and Strabismus Conference

At monthly meetings rotating among Harbor-UCLA Medical Center, Olive View-UCLA Medical Center, and the Jules Stein Eye Institute, difficult pediatric ophthalmology and strabismus cases are presented and discussed. These conferences were coordinated for the year by Sherwin J. Isenberg, MD, at Harbor-UCLA Medical Center; Federico Velez, MD, at Olive View-UCLA Medical Center; and Joseph L. Demer, MD, PhD, and Arthur L. Rosenbaum, MD, at the Jules Stein Eye Institute.

Neuro-Ophthalmology Conference

This conference meets bimonthly and includes full-time and volunteer clinical faculty and visitors from the community who meet to discuss neuro-ophthalmology cases presented by clinical fellows and residents. The coordinator for the year was Anthony C. Arnold, MD.

CONTINUING EDUCATION PROGRAMS**Aesthetic Eyelid and Orbitofacial Surgery Course**

July 6-7, 2007

Robert Axelrod Memorial Lecturer
Jeffrey Green, MD
New York, New York

Special Featured Lecturer
Val Lambros, MD
Newport Beach, California

The Aesthetic Eyelid and Orbitofacial Surgery course combines live surgical demonstrations, cadaver dissection and didactic lectures. It draws ophthalmologists from around the world to learn about the latest advances in aesthetic and reconstructive surgery of the eyelids and face, many of which have been pioneered at the Jules Stein Eye Institute.

Comprehensive Ophthalmology Review Course

February 28-March 2, 2008

Course Director

David Sarraf, MD

The Jules Stein Eye Institute and the Doheny Eye Institute teamed up this year to present the Third Annual Comprehensive Ophthalmology Review Course. The collaborative effort was developed to serve ophthalmology training programs in Southern California. The program concentrated on the epidemiology, clinical presentation, diagnosis and management of ophthalmological disease.

Clinical Eye Care Update

May 4, 2008

Course Directors

Steven Bae, OD

Jule Lamm, OD

Barry A. Weissman, OD, PhD

The Jules Stein Eye Institute, the Los Angeles County Optometric Society and the Garrick Optometric Welfare Clinic organized an accredited program that served the dual purpose of honoring Lesley L. Walls, OD, MD, DOS, President and Professor of the Southern California College of Optometry, and increasing awareness of the Optometric Clinician-Scientist Endowed Chair Campaign. This endowment will provide significant resources in perpetuity to enable the optometric and ophthalmic professions to collaborate on promising and pioneering investigations to uncover new treatment options that will greatly benefit patients.

JSEI Clinical and Research Seminar

May 30, 2008

Coordinators

Anthony C. Arnold, MD
Robert Alan Goldberg, MD
Gary N. Holland, MD
Bartly J. Mondino, MD
Xian-Jie Yang, PhD

The JSEI Clinical and Research Seminar is geared to physicians and basic scientists. It is an intensive course in which UCLA and guest faculty present current concepts and recent advances in ophthalmology. The curriculum emphasizes practical scientific material and incorporates a detailed syllabus. The Jules Stein Lecture series was initiated in 1970 to be held in conjunction with the Institute's annual seminar. In 2002, the Bradley R. Straatsma and Thomas H. Pettit Lecture series were initiated. The invited lectures commemorate the contributions of Drs. Jules Stein, Bradley Straatsma and Thomas Pettit to ophthalmic science at UCLA and throughout the United States. The lectures are the academic highlights of the year.

39th Jules Stein Lecturer

Neil R Miller, MD
Frank B. Walsh Professor of Neuro-Ophthalmology
Johns Hopkins Medical Institutions

6th Bradley R. Straatsma Lecturer

Catherine Bowes Rickman, PhD
Associate Professor of Ophthalmology and Cell Biology
Duke University Medical Center

6th Thomas H. Pettit Lecturer

Stuart R. Seiff, MD
Professor of Ophthalmology
Director, Ophthalmic Plastic and Reconstructive Surgery
Chief of Ophthalmology, San Francisco General Hospital

LASERS in Ophthalmology: A Review and Update

June 14, 2008

Course Director

David Sarraf, MD

This half-day seminar reviews indications for laser applications in the various subspecialties of ophthalmology. Landmark studies and trials validating indications are discussed. Course faculty provide an update on new laser systems as well as new applications of old systems. Discussion includes the mechanics or optics of the laser system.

Over 60 basic scientists and clinical researchers attended the Thirteenth Annual Vision Science Conference in Lake Arrowhead, California, on September 7-9, 2007.



RESEARCH CONTRACTS AND GRANTS

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Vision Science Grants		
Anthony J. Aldave, MD Identification of Differentially Expressed Genes in Keratoconus National Keratoconus Foundation Duration: 9/1/06–8/31/07	– ¹	\$10,000
Anthony J. Aldave, MD Cloning the Gene for Posterior Polymorphous Corneal Dystrophy National Eye Institute Duration: 9/30/05–8/31/10	\$166,239	\$831,195
Anthony J. Aldave, MD Identification of the Genetic Basis of Keratoconus Using a Candidate Gene Approach Incorporating Gene Expression and Linkage Analysis Data Stein Oppenheimer Endowment Award Duration: 2/13/07–2/12/08	– ¹	\$30,000
Anthony J. Aldave, MD RNA Interference Targeting of the TGFBI Gene Transcript in Human Corneal Epithelial Cells Oppenheimer Family Foundation Center Duration: 2/15/08–2/14/09	\$30,000	\$30,000
Suraj P. Bhat, PhD Gene Expressions in Normal and Cataractous Lens National Eye Institute Duration: 6/1/06–5/31/11	\$300,006	\$1,629,995
Dean Bok, PhD Identification and Cellular Localization of Gene Products that Affect Photoreceptor Survival in Inherited Retinal Degeneration Macula Vision Research Foundation Duration: 4/1/08–3/31/09	\$50,000	\$50,000
Dean Bok, PhD Paul Kayser International Award in Retina Research Retina Research Foundation Duration: 12/1/06–11/30/07	– ¹	\$45,000
Dean Bok, PhD Pathobiology of Inherited Retinal Degenerations National Eye Institute Duration: 12/1/01–11/30/07	\$316,175 ²	\$1,929,977

¹Total amount of grant awarded in previous year(s)

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Dean Bok, PhD w/ Debora B. Farber, PhD, DPhhc, Michael B. Gorin, MD, PhD, Allan Kreiger, MD, Steven Nusinowitz, PhD, Gabriel H. Travis, MD, Xian-Jie Yang, PhD Foundation Fighting Blindness Center Grant Foundation Fighting Blindness Duration: 7/1/05–6/30/10	\$375,949	\$1,105,878
Dean Bok, PhD w/ other investigators Development of Complement Modulating Therapeutics for AMD National Eye Institute Duration: 8/1/06–7/31/11	\$125,000 ²	\$675,000
Dean Bok, PhD w/ other investigators RDS Mutations; Gene Therapy for ADRP, Macular Degeneration and Pattern Dystrophy National Eye Institute Duration: 9/1/07–8/31/11	\$70,581 ²	\$282,324
Anne L. Coleman, MD, PhD Single Nucleotide Polymorphisms and AMD in Older Women American Health Assistance Foundation Duration: 4/1/07–3/31/09	\$100,000	\$100,000
Anne L. Coleman, MD, PhD Student Sight Savers Program Friends of the Congressional Glaucoma Caucus Foundation Duration: 12/21/04–11/30/10	\$4,500	\$21,849
Anne L. Coleman, MD, PhD Ocular Hypertension Treatment Study (OHTS) NEI/Charles R. Drew University Duration: 1/1/00–12/31/08	\$120,966	\$575,941
Anne L. Coleman, MD, PhD Incidence of Late Macular Degeneration in Older Women National Eye Institute Duration: 8/15/02–7/31/08	– ¹	\$2,122,754
Anne L. Coleman, MD, PhD Alcon Funding Alcon Laboratories Duration: 12/1/07–11/31/09	– ¹	\$67,054

¹Total amount of grant awarded in previous year(s)²Grant administered outside of the Jules Stein Eye Institute

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Joseph L. Demer, MD, PhD Biomechanical Analysis in Strabismus Surgery National Eye Institute Duration: 5/1/06–4/30/11	\$336,543	\$1,716,985
Joseph L. Demer, MD, PhD New Tests of Vestibular Function National Institute on Deafness and Communicative Diseases Duration: 8/1/02–7/31/07	\$270,449	\$1,934,345
Joseph L. Demer, MD, PhD Walt and Lilly Disney Award for Amblyopia Research Award Research to Prevent Blindness Duration: 7/1/04–6/30/09	– ¹	\$75,000
Joseph L. Demer, MD, PhD Genetic and Anatomic Basis of the Fibrosis Syndrome NEI/Boston Children's Hospital Duration: 4/1/07–11/31/09	\$25,753	\$49,980
Raymond S. Douglas, MD, PhD Immune Activation of Fibroblasts National Eye Institute Duration: 10/1/04–9/1/09	\$232,491	\$985,588
Raymond S. Douglas, MD, PhD RPB Career Development Award Research to Prevent Blindness Duration: 7/1/07–6/30/11	\$50,000	\$200,000
Raymond S. Douglas, MD, PhD Immune Activation of Fibroblasts Los Angeles BioMedical Research Institute/NIH Duration: 9/1/06–8/31/07	– ¹	\$31,570
Raymond S. Douglas, MD, PhD ITEDS: Development of Clinical Response Index in TAO American Society of Ophthalmic Plastic and Reconstructive Surgery Duration: 7/1/07–6/30/09	\$25,000	\$25,000
Noa Ela-Dalman, MD Optic Nerve Blood Flow and Retinal Nerve Fiber Layer Thickness in Patients with Unilateral Amblyopia Blind Children's Center Duration: 7/1/06–12/31/07	\$7,500	\$15,000
Gordon L. Fain, PhD Physiology of Photoreceptors National Eye Institute Duration: 6/1/05–5/31/09	\$281,264	\$843,792

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Debora B. Farber, PhD, DPhhc Molecular Mechanisms in Retinal Degenerations National Eye Institute Duration: 7/1/06–6/30/11	\$242,750	\$1,221,000
Debora B. Farber, PhD, DPhhc Studies in Ocular Albinism Vision of Children Duration: 7/1/05–6/30/08	\$50,000	\$50,000
Debora B. Farber, PhD, DPhhc Studies in Microvesicles to Activate Quiescent Ciliary Margin Stem Cells and Enhance Their Proliferation Hope for Vision Duration: 9/1/07–8/31/08	– ¹	\$35,000
Debora B. Farber, PhD, DPhhc Constitutively Active Gai3 Protein Rescue the Oa1 ^{-/-} -phenotype Vision of Children Duration: 4/1/08–3/31/09	\$12,500	\$50,000
Debora B. Farber, PhD, DPhhc Stem Cell Microvesicles: Potential Tools for Retinal Regeneration National Eye Institute Duration: 12/1/07–11/30/09	\$152,000	\$277,000
JoAnn A. Giaconi, MD Nutritional Associations w/Glaucoma/African American Women American Glaucoma Society Duration: 2/1/06–12/31/07	– ¹	\$40,000
Ben J. Glasgow, MD Proteins in Molecular Mechanisms of Tear Film Formation National Eye Institute Duration: 6/30/06–7/1/11	\$250,000	\$1,250,000
Lynn K. Gordon, MD, PhD James S. Adams Scholar Award Research to Prevent Blindness Duration: 7/1/02–11/01/07	– ¹	\$50,000
Lynn K. Gordon, MD, PhD EMP2, a Molecular Switch for Function of RPE2 VA Merit Grant Duration: 3/5/05–9/30/09	\$150,000	\$600,000

¹Total amount of grant awarded in previous year(s)

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Michael B. Gorin, MD, PhD Genetics in Age-Related Maculopathy National Eye Institute Duration: 4/1/07–3/31/12	\$878,663	\$4,691,120
Michael B. Gorin, MD, PhD Linkage and Association Studies for Macular Degeneration American Health Assistance Foundation Duration: 4/1/06–3/31/09	\$131,250	\$150,000
Michael B. Gorin, MD, PhD Diabetic Retinopathy Diagnosis Device Neuro Kinetics/NIH-NEI Duration: 9/1/07–8/31/08	\$34,500	\$34,500
Gary N. Holland, MD Physician-Scientist Award Research to Prevent Blindness Duration: 1/1/03–12/31/07	– ¹	\$55,000
Gary N. Holland, MD Studies of Ocular Complications of AIDS (SOCA) National Eye Institute Duration: 8/1/05–7/31/08	\$229,450	\$575,634
Gary N. Holland, MD Studies of Ocular Complications of AIDS (LSOCA) National Eye Institute Duration: 8/1/03–6/30/08	\$62,460	\$361,022
Gary N. Holland, MD Multicenter Uveitis Steroid Treatment (MUST) Trial National Eye Institute Duration: 5/1/06–4/30/09	\$78,585	\$391,060
Gary N. Holland, MD Factors Related to the Severity of Ocular Toxoplasmosis Centers for Disease Control and Prevention Duration: 6/1/06–12/31/07	\$10,000	\$29,000
Joseph Horwitz, PhD Alpha-Crystallin and Cataractogenesis National Eye Institute Duration: 8/1/04–7/31/09	\$329,065	\$1,645,325
Wayne L. Hubbell, PhD Molecular Basis of Membrane Excitation National Eye Institute Duration: 5/1/05–4/30/10	\$354,025	\$1,692,149

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Wayne L. Hubbell, PhD Core Grant for Vision Research National Eye Institute Duration: 3/1/04–2/28/09	\$321,308	\$1,212,780
Sherwin J. Isenberg, MD RPB Physician-Scientist Award Research To Prevent Blindness Duration: 1/1/06–12/31/07	– ¹	\$55,000
Sherwin J. Isenberg, MD A Clinical Trial of Povidone-Iodine for the Treatment of Fungal Corneal Ulcers Thrasher Research Foundation Duration: 3/10/08–8/31/09	\$72,784 ²	\$254,219
Sherwin J. Isenberg, MD Conjunctival Tissue Gas Monitoring in the Animal Model Intelligent Optical Systems/NEI Duration: 2/25/08–7/31/08	\$10,096 ²	\$139,995
Ralph D. Levinson, MD Studies in Immunogenetics of Ocular Inflammatory Disease MacDonald Family Foundation Duration: 5/1/02–6/30/09	\$25,000	\$350,000
Bartly J. Mondino, MD Departmental Grant Award Research to Prevent Blindness Duration: 1/1/07–12/31/08	\$110,000	\$110,000
Steven Nusinowitz, PhD Kirchgessner Foundation Research Award Kirchgessner Foundation Duration: 12/1/04–6/30/08	– ¹	\$50,000
Steven Nusinowitz, PhD Photoreceptor and Retinal Pigment Epithelium (RPE) The Vision of Children Duration: 4/3/06–6/30/08	\$25,500	\$51,542
Steven Nusinowitz, PhD w/Dean Bok, PhD, Michael B. Gorin, MD, PhD Clinical Studies of Stargardt Disease and Development of a New Mouse Model of Stargardt Disease Drs. Daljit S. and Elaine Sarkaria Fund Duration: 7/1/07–6/30/11	\$212,000	\$1,025,000

¹Total amount of grant awarded in previous year(s)²Grant administered outside of the Jules Stein Eye Institute

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Steven Nusinowitz, PhD Stein Oppenheimer Award Duration: 4/29/06–4/30/08	– ¹	\$16,449
Roxanna A. Radu, PhD Analysis of A2E Degradation and Complement Activation American Health Assistance Foundation Duration: 4/1/08–3/31/10	\$50,000	\$100,000
Arthur L. Rosenbaum, MD Physician-Scientist Award Research to Prevent Blindness Duration: 1/1/07–12/31/08	– ¹	\$55,000
Arthur L. Rosenbaum, MD Lateral Rectus Reanimation Following Sixth Nerve Palsy National Eye Institute Duration: 9/1/04–8/31/08	– ¹	\$300,000
Steven D. Schwartz, MD Mrs. Merrill Park Award Research to Prevent Blindness Duration: 6/15/07–6/30/08	– ¹	\$10,000
Hui Sun, PhD Research Award Karl Kirchgessner Foundation Duration: 3/1/07–2/28/08	\$50,000	\$50,000
Hui Sun, PhD Molecular Mechanism of Vitamin A Uptake for Vision National Eye Institute Duration: 9/30/07–8/31/12	\$225,000	\$1,125,000
Hui Sun, PhD New Scholar Award Ellison Medical Foundation Duration: 9/1/06–8/31/10	\$46,000	\$184,000
Hui Sun, PhD Research Grant Foundation Fighting Blindness Duration: 5/1/07–4/30/10	\$87,785	\$263,355
Hui Sun, PhD E. Matilda Ziegler Foundation Duration: 12/1/04–11/30/07	– ¹	\$210,000

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Gabriel H. Travis, MD Stein Professorship Award Research to Prevent Blindness Duration: 7/1/01–6/30/08	\$100,000	\$575,000
Gabriel H. Travis, MD The Role of Muller Cells in Visual Pigment Regeneration National Eye Institute Duration: 3/1/08–2/28/13	\$250,000	\$1,250,000
Gabriel H. Travis, MD Vision Science Training Grant National Eye Institute Duration: 9/30/05–9/29/10	\$305,275	\$1,526,453
Gabriel H. Travis, MD Bruce Ford and Anne Smith Bundy Foundation Grant Bruce Ford and Anne Smith Bundy Foundation Duration: 7/1/03–8/15/08	\$100,000	\$500,000
Gabriel H. Travis, MD Biochemical and Genetic Analysis of the Visual Cycle National Eye Institute Duration: 9/9/05–7/31/10	\$242,758	\$1,222,399
Gabriel H. Travis, MD A2E Accumulation in the Macular Degenerations: Pathogenic Significance and Implications for Treatment Macula Vision Research Foundation Duration: 7/31/07–6/30/10	\$80,000	\$240,000
David S. Williams, PhD Doris and Jules Stein Research to Prevent Blindness Professorship Research to Prevent Blindness Duration: 1/1/08–12/31/12	\$100,000	\$500,000
David S. Williams, PhD Retinal Cell Biology of Usher 1 Proteins National Eye Institute Duration: 12/1/07–11/30/08	\$237,903	\$237,903
David S. Williams, PhD Development of Lentivirus-Based Usher 1B Gene Therapy National Neurovision Research Institute Foundation Fighting Blindness Duration: 10/1/07–6/30/08	\$200,200	\$200,200

¹Total amount of grant awarded in previous year(s)

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Xian-Jie Yang, PhD Cytokine Signal Transduction in Retinal Development National Eye Institute Duration: 9/30/05–7/31/09	\$242,758	\$979,641
Xian-Jie Yang, PhD Dolly Green Scholar Award Research to Prevent Blindness Duration: 7/1/03–6/30/08	– ¹	\$70,000
Xian-Jie Yang, PhD Development of Lentivirus-Based Usher 1B Gene Therapy Foundation Fighting Blindness/UC San Diego Duration: 7/1/06–4/29/08	\$31,308	\$93,923
Tara A. Young, MD, PhD Faculty Research Grant Council on Research Duration: 7/1/07–6/30/08	– ¹	\$10,000
Tara A. Young, MD, PhD AACR-FNAB Career Development Award for Translational Cancer Research American Association for Cancer Research Duration: 7/1/08–6/30/10	\$50,000	\$100,000

Postdoctoral Fellow Grants

Novrouz Akhmedov, PhD Debora B. Farber, PhD, DPhhc (Mentor) Studies on the 7R Protein that is Associated with a Novel Lucus for Retinitis Pigmentosa Hope for Vision Duration: 4/1/08–3/31/09	– ¹	\$50,000
Alex Yuan, MD, PhD Debora B. Farber, PhD, DPhhc (Mentor) Embryonic Stem Cell Microvesicles: A New Approach to RNA Transfer The Vision of Children Duration: 6/1/07–5/31/09	\$100,144	\$200,144
Alex Yuan, MD, PhD Oppenheimer Family Foundation Prevent Eye Disease Duration: 2/1/07–1/31/09	– ¹	\$30,000

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Clinical Trials		
Anthony J. Aldave, MD To Evaluate the Safety and Effectiveness of the Phakic 6 H2 Refractive Anterior Chamber Lens Ophthalmic Innovations Int. Duration: 7/3/03–7/2/07	– ¹	\$82,212
Anthony J. Aldave, MD A Multicenter Study to Map Genes for Fuchs Dystrophy Case Western University/NIH Duration: 2/1/06–8/31/08	\$5,469	\$11,288
Joseph Caprioli, MD Retrospective, Long-Term, Longitudinal Analysis of HRT Image Data in Patients with Ocular Hypertension Pfizer, Inc. Duration: 4/7/06–4/7/11	– ¹	\$101,942
Joseph Caprioli, MD A 48-Month, Multicenter, Randomized, Double-Masked, Placebo-Controlled Clinical Study Allergan, Inc. Duration: 8/31/99–7/8/07	\$6,153	\$320,695
Joseph Caprioli, MD Measurement and Prediction of Progression Rates in Early and Moderately Advanced Glaucoma Pfizer, Inc. Duration: 9/19/07–9/30/08	\$293,523	\$293,523
Joseph Caprioli, MD Oral Memantine Study Allergan, Inc. Duration: 8/31/99–7/8/07	– ¹	\$472,836
Robert Alan Goldberg, MD A Phase III, Randomized, Placebo-Controlled, Multicenter, Double-Blind Study of Reloxin Medicis Pharmaceuticals Corp. Duration: 1/22/07–1/22/09	\$7,540	\$74,603
Christine R. Gonzales, MD A Phase III, Randomized DM, Parallel-Assignment Study of Intravitreal Bevasiranib Sodium Opko Health Duration: 3/13/08–3/14/10	– ¹	\$121,425

¹Total amount of grant awarded in previous year(s)

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
<p>Christine R. Gonzales, MD A Phase I, Trial to Establish the Safety, Tolerability, and Pharmacokinetic Profile of Intravitreal Injections Ophthotech Corp. Duration: 2/25/08–2/26/10</p>	\$12,067	\$50,985
<p>Christine R. Gonzales, MD Open Label Macugen for the Treatment of Macular Edema Secondary to Branch Retinal Vein Occlusion Palmetto Retina Center Duration: 11/3/06–10/2/08</p>	\$3,050	\$32,950
<p>Christine R. Gonzales, MD Intravitreal Injections for Patients with Exudative (EOP1004) Age-Related Macular Degeneration EyeTech Pharmaceuticals, Inc. Duration: 10/16/01–4/1/08</p>	\$8,192	\$516,580
<p>Christine R. Gonzales, MD Macugen with Sham Photodynamic Therapy (EOP1012) Eyetech Pharmaceuticals, Inc. Duration: 7/28/05–4/30/08</p>	\$9,174	\$229,129
<p>Christine R. Gonzales, MD A Phase IV, Open Label, Multicenter Trial of Maintenance Intravitreal Injections (EOP1023) Eyetech Pharmaceuticals, Inc. Duration: 9/7/06–8/31/08</p>	\$97,906	\$141,153
<p>Christine R. Gonzales, MD Pegaptanib Sodium (Macugen) for Macular Edema (EOP1013) Eyetech Pharmaceuticals, Inc. Duration: 2/3/06–2/2/10</p>	\$208,461	\$208,461
<p>Christine R. Gonzales, MD Combretastin A4 Phosphate for Subfoveal Choroidal Neovascularization Oxigene, Inc. Duration: 11/1/05–3/31/08</p>	\$1,750	\$4,362
<p>Anurag Gupta, MD Intravitreal Injections in Patients with Exudative AMD Gen Vec, Inc. Duration: 1/31/03–12/31/09</p>	\$76,602	\$242,948

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Anurag Gupta, MD and Steven D. Schwartz, MD Post Juxtasceral Administration of Anecortave Acetate v. Sham Administration in Patients with Exudative AMD Alcon Research, LTD Duration: 6/1/04–5/31/10	\$24,209	\$105,471
Anurag Gupta, MD Standard Care v. Corticosteroid (SCORE) Allergan Pharmaceutical Corp. Duration: 8/20/04–2/19/09	\$16,358	\$82,541
Anurag Gupta, MD and Steven D. Schwartz, MD Subfoveal Choroidal Neovascularization Sirna Therapeutics, Inc. Duration: 4/29/05–4/1/08	\$34,394	\$152,948
Simon K. Law, MD, PharmD An Evaluation of the Incidence of Glaucoma Risk Factors in Patients from a Managed Care Setting Southern California Permanente Medical Group Duration: 10/1/05–7/31/07	– ¹	\$34,304
Simon K. Law, MD, PharmD Optic Nerve Appearance in Age-Related Macular Degeneration The American Geriatrics Society Duration: 7/1/07–6/30/09	\$37,500	\$37,500
Kevin M. Miller, MD Device Study Ophtec, USA Duration: 7/14/04–7/15/09	N/A	N/A
Kevin M. Miller, MD UV Absorbing Acrylic Posterior Hoya Corp. Duration: 11/1/04–06/30/08	– ¹	\$45,977
Steven Nusinowitz, PhD A Phase II Study of the Safety and Efficacy of Fenretinide Sirion Therapeutics, Inc. Duration: 9/1/07–8/31/09	\$20,000	\$21,500
Steven D. Schwartz, MD Dexamethasone Posterior Segment Drug Delivery System Allergan Sales, LLC Duration: 8/16/04–1/31/09	– ¹	\$297,712

¹Total amount of grant awarded in previous year(s)

FISCAL YEAR 2007–2008	AWARD YEAR TOTAL	TOTAL AWARD
Steven D. Schwartz, MD DEX PS DDS Applicator System in the Treatment of Patients with Diabetic Macular Edema Allergan Sales, LLC Duration: 8/25/05–12/31/09	\$45,475	\$171,916
Steven D. Schwartz, MD A Multicenter, Randomized, Placebo-Controlled, Double-Masked, Parallel Group, Dose Ranging Clinical Trial Chiltern Int. Duration: 4/1/07–3/31/09	\$13,162	\$82,337
Steven D. Schwartz, MD Age Related Eye Disease Study II Emmes Corp. Duration: 1/1/06–12/31/08	\$24,961	\$24,961
Steven D. Schwartz, MD Ranibizumab with (CNV) - FVF3689g Genetech, Inc. Duration: 3/1/06–2/28/09	\$17,792	\$181,112
Steven D. Schwartz, MD Ranibizumab Injection - FVF4168g Genetech, Inc. Duration: 10/5/07–8/31/12	\$3,413	\$3,413
Steven D. Schwartz, MD Macular Telangiectasia Lowy Medical Research Institute/NEI Duration: 9/1/05–8/31/10	– ¹	\$175,334
Steven D. Schwartz, MD and Christine R. Gonzales, MD The Diabetic Retinopathy Clinical Research Network NEI/JAEB Center for Health Research Duration: 6/1/03–12/31/09	– ¹	\$23,059
Steven D. Schwartz, MD Coordinating Center Comparison of AMD Treatment Trials University of Pennsylvania Duration: 9/1/07–7/31/08	\$74,300	\$142,200

CLINICAL RESEARCH STUDIES

CORNEA AND EXTERNAL EYE

A Study of the Genetic Basis of Posterior Polymorphous Corneal Dystrophy

The Institute is participating in a study funded by the National Eye Institute to identify the gene(s) responsible for posterior polymorphous dystrophy, an inherited corneal endothelial disorder that may result in irreversible corneal swelling and loss of vision. Investigator: Anthony J. Aldave, MD

Identifying Novel Genes for Fuchs' Endothelial Corneal Dystrophy

The Institute is participating in a multi-center study funded by the National Eye Institute to identify the gene(s) responsible for Fuchs' corneal endothelial dystrophy, an inherited corneal endothelial disorder that may result in irreversible corneal swelling and loss of vision. Investigators: Anthony J. Aldave, MD; Bartly J. Mondino, MD; and Gary N. Holland, MD

EYE INFECTIONS AND INFLAMMATIONS

Multicenter Uveitis Steroid Treatment

The study compares two currently available treatments for uveitis. Systemic treatment utilizing medications (corticosteroids or immunosuppressive drugs) taken orally, by injection, or by intravenous infusion will be compared to treatment with an intraocular implant containing corticosteroid that is placed surgically. Neither is experimental. Both treatment approaches are known to be effective for treating uveitis, but have different potential adverse events. Investigators: Gary N. Holland, MD; Ralph D. Levinson, MD; Susan S. Ransome, MD; and David Sarraf, MD

Longitudinal Studies of the Ocular Complications of AIDS (LSOCA)

"LSOCA" is a multicenter, NIH-supported epidemiological study designed to investigate the nature of HIV-related eye diseases since the introduction of potent anti-retroviral therapies. Nearly 2,000 people are being followed nationwide. Investigators: Gary N. Holland, MD; and Susan S. Ransome, MD

Relation Between KIR Genes & CMV Retinitis

Institute faculty are studying why some people with AIDS develop CMV retinitis, an infection of the retina, while others do not. People are at risk for CMV retinitis when the number of circulating CD4+ T-lymphocytes drops substantially and there are a high number of HIV particles in the blood. This study is designed to determine whether KIR genes, which control natural killer (NK) cell activities and other immune functions, differ between HIV-infected individuals who develop CMV retinitis and those who do not, despite similar risk factors otherwise. Investigators: Gary N. Holland, MD; and Ralph D. Levinson, MD

Factors Related to the Severity of Ocular Toxoplasmosis

Toxoplasmosis is a common parasitic disease that can cause a vision-threatening infection of the retina. Severity varies from asymptomatic lesions to extensive destruction of the retina with blindness. Individuals with and without ocular toxoplasmosis are being evaluated with a blood test to determine whether (1) people can have a genetic predisposition to severe disease when infected with the parasite, or (2) there is a particular strain of parasite that causes more severe disease than others. Investigators: Gary N. Holland, MD; and Ralph D. Levinson, MD

GENERAL OPHTHALMOLOGY

Retinopathy in Adult Patients with Congenital Heart Disease

The purpose of this study is to investigate whether adult patients with congenital heart disease have retinal blood vessel abnormalities. The patients are divided into two groups: (1) patients with coarctation of the aorta, and (2) patients with cyanotic disease. This study is being conducted in cooperation with the Adult Congenital Heart Disease Center at UCLA. Investigators: Steven D. Schwartz, MD; and Eric S. Lee, MD

GLAUCOMA AND OPTIC NERVE

Clinical Measurements of the Optic Nerve in Glaucoma

Accurate assessment of optic nerve and nerve fiber layer is important to the early detection and timely treatment of glaucoma. Studies are underway to develop novel structural measures of the optic nerve and nerve fiber layer, which are sensitive and specific for early and progressive, glaucomatous optic nerve damage. Investigators: Joseph Caprioli, MD; Anne L. Coleman, MD, PhD; and Simon K. Law, MD, PharmD

Optic Nerve Appearance in Age-Related Macular Degeneration

To evaluate the relationship between macular degeneration and optic nerve change, digital imaging technology and photography are used to assess the structural appearance of the optic nerve in patients with age-related macular degeneration. Investigator: Simon K. Law, MD, PharmD

Ahmed Valve Implant vs. Baerveldt Implant in Glaucoma

Tube shunt devices for glaucoma have received little comparison. This study compares the long-term efficacy and safety of the two most commonly used glaucoma tube shunt surgical devices in clinical settings. Investigators: Joseph Caprioli, MD; Anne L. Coleman, MD, PhD; and Simon K. Law, MD, PharmD

LENS AND CATARACT

Ophtec Iris Reconstruction Lens

The Institute is participating in a multicenter clinical investigation designed to evaluate the safety and effectiveness of the Ophtec Model 311 Iris Reconstruction Lens for the treatment of visual disturbances (glare, halos, and photophobia) related to the absence of part or the entire human iris. This study is designed to determine the level of reduction in visual disturbances and improvement in uncorrected and best spectacle corrected visual acuity associated with Model 311 lens implantation. The implant is designed for patients who are aniridic and either aphakic or in need of cataract surgery. Investigators: Kevin M. Miller, MD; and Michael D. Olson, OD, PhD

Morcher Iris Diaphragm

The Institute has obtained a compassionate use Individual Device Exemption from the U.S. Food and Drug Administration to use the Morcher Iris Diaphragm implant in patients with partial or complete aniridia, and to evaluate its preliminary effectiveness. The implant is designed to limit the amount of light coming into the eye, like a natural iris, reducing symptoms of light sensitivity and glare. Investigators: Kevin M. Miller, MD; and Michael D. Olson, OD, PhD

Pentacam for Intraocular Lens Calculation Following Refractive Surgery

Refractive surgery is a procedure that changes the corneal curvature to correct or eliminate a patient's refractive error. This change to the corneal curvature significantly confounds the intraocular lens implant power calculation. A new corneal topography instrument, the Pentacam, has been developed that measures both the front and back of the cornea. This new instrument may have the capability to enable us to more accurately calculate the original corneal curvatures, thus improving the accuracy of the lens implant power calculation. Investigators: Kevin M. Miller, MD; and Qiong-Yan Tang, MD

MACULA, RETINA, AND VITREOUS

Dexamethasone Injections in the Treatment of Diabetic Macular Edema

Retina faculty are participating in a study to assess the safety and efficacy of 70 mg and 350 mg dexamethasone posterior segment drug delivery system in the treatment of patients with diabetic macular edema. The three-year multicenter study compares 350 mg and 70 mg dexamethasone injections (slow release) to placebo injections for diabetic macular edema. Investigators: Steven D. Schwartz, MD; Christine R. Gonzales, MD; Allan E. Kreiger, MD; Tara A. Young, MD, PhD; Eric S. Lee, MD; Scott C. Oliver, MD; Robert E. Coffee, MD; Shantanu Reddy, MD; and Anurag Gupta, MD

Clinical Characterization, Genetic Testing, and Visual Function in Patients with Stargardt Disease

The Institute is doing a comprehensive analysis of visual function in patients diagnosed with

Stargardt disease, an early onset form of macular degeneration caused by a number of mutations in the *abcr* gene. Investigators perform molecular genetic testing to confirm the Stargardt diagnosis and better understand the diversity of the condition, and obtain baseline measures of visual function with a battery of established clinical electrodiagnostic and behavioral tests. Physiological parameters are correlated with specific genetic mutations to establish which diagnostic tests can provide the most reliable measures of retinal dysfunction and retinal cell death (atrophy). Investigators: Michael B. Gorin, MD, PhD; Steven Nusinowitz, PhD; Debora B. Farber, PhD, DPhhc; Maria Carolina Ortube, MD; and Ariadna Martinez, MS CGC

Understanding the Genetics of Inherited Eye Disorders

The Institute is participating in a study to search for the gene(s) that are responsible for inherited disorders that are either specific to the eye or that have eye findings as part of the medical condition. This study provides for the clinical characterization of affected individuals and at-risk family members, in conjunction with molecular genetic testing, to identify the causative genes and mutations. Study investigators also examine variants in modifier genes (genes that modify the expression of a second gene) that may affect the severity or progression of these conditions. Ocular conditions that affect the development and initial function of the eye and visual system, as well as those that lead to later degenerative changes that compromise vision or the health of the eyes are included in these studies. Investigators: Anthony J. Aldave, MD; and Michael B. Gorin, MD, PhD

Evaluating the Use of Microplasmin before Undergoing Vitrectomy Surgery

Retina faculty are evaluating whether the injection of Microplasmin, an experimental drug, will induce a total Posterior Vitreous Detachment (PVD) – loosening the connection between the vitreous (the jelly-like substance in the center of the eye) and the retina (the part of the eye responsible for vision).

Microplasmin injected into animal eyes has been shown to help loosen the connection between the vitreous and the retina, called a detachment. Detachment of the vitreous from the retina may improve certain retinal conditions, such as diabetic retinopathy or diabetic macular edema.

Investigators: Steven D. Schwartz, MD; Christine R. Gonzales, MD; Allan E. Kreiger, MD; Tara A. Young, MD, PhD; Eric S. Lee, MD; Scott C. Oliver, MD; Jean Pierre Hubschman, MD; and Anurag Gupta, MD

Effects of Lucentis® on Autofluorescence Imaging

The purpose of this study is to evaluate the effect of Lucentis® injections on autofluorescence imaging in patients with wet age-related macular degeneration.

Investigators: Jean Pierre Hubschman, MD; Steven D. Schwartz, MD; and Robert E. Coffee, MD

Effects of Lucentis® Injections on the Quality of Binocular Function

Institute investigators are evaluating the effect of Lucentis® injections on the quality of binocular vision (contrast sensitivity and visual depth perception) in patients with wet age-related macular degeneration. Investigators: Jean Pierre Hubschman, MD; Sherwin J. Isenberg, MD; and Steven D. Schwartz, MD

Comparison of 25 and 23 Gauge Vitrectomy Sutureless Techniques using Ultrasound Biomicroscopy

Members of the Retina Division are collecting additional data using ultrasound biomicroscopy to evaluate and compare differences in the healing process of the eye following vitrectomy surgery with different sutureless techniques.

Investigators: Jean Pierre Hubschman, MD; and Steven D. Schwartz, MD

Genetics of Age-related Maculopathy (GARM)

The Institute is participating in a multicenter study with University of Pittsburgh to understand the genetic and environmental risks that contribute to age-related maculopathy (ARM). The study is designed to identify genes that alter susceptibility to ARM and determine the extent to which variants in these genes and other factors affect one's risk of developing the condition. Study candidates include patients with macular degeneration and their children (more than 49 years old), as well as the spouses or partners of these children, and additional family members of ARM patients.

Investigators: Michael B. Gorin, MD, PhD; Maria Carolina Ortube, MD; Robert Ferrell, PhD; Daniel Weeks, PhD; and Yvette Conley, PhD

Rapid, Non-Invasive, Regional Functional Imaging of the Retina

Institute investigators are participating in a study funded by the National Institutes of Health to monitor the responses of the pupil to light as a method for detecting regional losses of function of the retina. The ultimate goal of this research is to develop a simple, noninvasive, rapid method for widespread screening of diabetics in order to identify those who may require medical attention and/or therapy for diabetic retinopathy. The basic device used for monitoring

the eye positions and pupil changes uses invisible levels of light to measure the eye. The instrument was constructed by Neuro Kinetics Inc., a company that has licensed this technology from the University of Pittsburgh, which holds the patent on the design and use of this instrument with Dr. Gorin listed as the primary inventor. (Dr. Gorin has a financial interest in this research.) Investigators: Michael B. Gorin, MD, PhD; Alex Kiderman, PhD; and Maria Carolina Ortube, MD

Comparison of Methods to Detect Early Retinal Changes Associated with Hydroxychloroquine (Plaquenil) Exposure

Hydroxychloroquine (Plaquenil) is an oral medication used in the treatment of several chronic autoimmune diseases including systemic lupus erythematosus, rheumatoid arthritis, and Sjögren syndrome. Because Plaquenil has been found to cause retinal damage in a small number of individuals, screening for Plaquenil-related retinal toxicity is considered by many to be an important part of patient management. Study investigators will review existing data from individuals who had testing done at the Institute's Visual Physiology Laboratory to determine which tests have a higher degree of sensitivity to detect early retinal changes that might reflect a toxic response to Plaquenil therapy.

Investigators: Michael B. Gorin, MD, PhD; Steven Nusinowitz, PhD; Maria Carolina Ortube, MD; and Ariadna Martinez, MS CGC

Vitamin Supplementation as Treatment for Dry Age-Related Macular Degeneration

This study explores the effects of oral supplementation of high doses of lutein and zeaxanthin and/or omega-3 long chain polyunsaturated fatty acids, called DHA and EPA, on the development of age-related macular degeneration (AMD) and vision loss. The goal of the optional sub-study is to evaluate the effects of eliminating beta-carotene and/or reducing zinc from the original Age-Related Eye Disease Study formula on the progression and development of AMD. Investigators: Steven D. Schwartz, MD; Christine R. Gonzales, MD; Allan E. Kreiger, MD; David Sarraf, MD; Tara A. Young, MD, PhD; Eric S. Lee, MD; Scott C. Oliver, MD; Jean Pierre Hubschman, MD; Michael B. Gorin, MD, PhD; Robert E. Coffee, MD; Shantan Reddy, MD; and Anurag Gupta, MD

Effects of Fenretinide on the Treatment of Age-Related Macular Degeneration

The Retina Division is investigating the safety and effectiveness of fenretinide as a treatment for people who suffer from age-related macular degeneration (AMD). AMD progression is caused by the build-up of lipofuscin, a chemical found naturally in the eye. Fenretinide has been shown to reduce the amount of lipofuscin in the eye. Fenretinide is an investigational drug and has not been approved by the U.S. Food and Drug Administration (FDA). Investigators: Steven D. Schwartz, MD; Christine R. Gonzales, MD; Allan E. Kreiger, MD; Eric S. Lee, MD; Scott C. Oliver, MD; Robert E. Coffee, MD; Shantan Reddy, MD; Alejandra Young; and Anurag Gupta, MD

A Natural History Study of Macular Telangiectasia

This is a natural history study of macular telangiectasia. Investigators are collecting data about this rare retinal disease with the hope of developing both a better knowledge of macular telangiectasia as well as a treatment. Investigators: Steven D. Schwartz, MD; Christine R. Gonzales, MD; Allan E. Kreiger, MD; Tara A. Young, MD, PhD; Michael B. Gorin, MD, PhD; David Sarraf, MD; Jean-Pierre Hubschman, MD; Scott C. Oliver, MD; Eric S. Lee, MD; Robert E. Coffee, MD; Shantan Reddy, MD; and Anurag Gupta, MD

Evaluating the Effectiveness and Safety of E10030 Eye Injections for Treatment of Wet Macular Degeneration

This is a 12-week study to test a new experimental drug E10030, alone and in combination with Lucentis, in patients who have wet macular degeneration. One injection of E10030, or E10030 in combination with Lucentis, is administered followed by Lucentis every 4 weeks. There are nine study visits total, each requiring various tests including photographs of the eye, vision tests, blood work and ECGs. Investigators: Christine R. Gonzales, MD; Allan E. Kreiger, MD; David Sarraf, MD; Tara A. Young, MD, PhD; Eric S. Lee, MD; Scott C. Oliver, MD; Jean Pierre Hubschman, MD; Robert E. Coffee, MD; and Shantan Reddy, MD

OCULAR MELANOMA

Molecular and Cytogenetic Studies of Ocular Melanoma

The goal of this research is to study ocular melanoma tumor tissue, and identify key molecular and genetic features that could help predict those patients who may be at high risk for metastasis. A sample of tumor tissue will be removed at the time of radioactive plaque placement surgery or tumor resection and used for molecular and genetic testing. Patients will be informed of the results and, depending on the outcome, will have increased monitoring to detect metastasis at the earliest possible stage and the opportunity to participate in clinical trials of experimental treatments that might not normally be offered to patients with ocular melanoma.

Investigators: Tara A. Young, MD, PhD; Lynn K. Gordon, MD, PhD; and Bradley R. Straatsma, MD, JD

PET/CT Imaging for Early Detection of Ocular Melanoma

Subjects with ocular melanoma undergo a series of combined position emission tomography (PET)/CT scans. Results are studied to evaluate the use of this new imaging procedure compared to CT scanning alone. This information may be useful in detecting metastasis (spread of tumors) at an early stage. The research may ultimately provide new knowledge that will be used to develop better ways of monitoring for tumor spread and allow for early treatment if metastasis is found. Investigators: Tara A. Young, MD, PhD; and Bradley R. Straatsma, MD, JD

Optical Coherence Tomography of Regional Abnormalities Associated with Choroidal Nevus, Choroidal Melanoma and Choroidal Melanoma Treated with Iodine-125 Brachytherapy

Optical coherence therapy (OCT) imaging is performed during regularly scheduled visits on patients with choroidal nevus, choroidal melanoma, and choroidal melanoma treated with iodine-125 brachytherapy. The purpose of this study is threefold: to study the structure and function of the retina overlying the tumor and the macula, to evaluate the effects of radiation on the retina, and to compare OCT imaging to other imaging procedures. Investigators: Melissa W. Chun, OD; Jennie Kageyama, OD; Bradley R. Straatsma, MD, JD; Tara A. Young, MD, PhD; and Scott C. Oliver, MD

ORBITAL AND OPHTHALMIC PLASTIC SURGERY

Hydrogel Lacrimal Stent Study

Faculty in the Orbital and Ophthalmic Plastic Surgery Division are evaluating the use of the Hydrogel Lacrimal Stent in dacryocystorhinostomy (DCR) surgery. DCR surgery creates an ostium or drainage hole between the tear duct and the nose, bypassing obstructed tear ducts. A stent is inserted following surgery to maintain the ostium. The new lacrimal stent made of Hydrogel, a medical plastic that can absorb more than 90% of its weight in water, absorbs fluid from surrounding tissue to expand to a diameter of approximately 1/5 inch in a spherical fashion. This fluid-absorbing property allows the stent to be inserted small and expand

after insertion, thus minimizing scarring within the nasal cavity. Investigators: Robert Alan Goldberg, MD; and Raymond S. Douglas, MD, PhD

Thyroid-Related Orbitopathy

In this research, cells from the orbital tissue of patients with Graves' disease, removed as part of surgery, are harvested and grown in the laboratory. Molecular biologic features of the disease identified in these cells are correlated with clinical parameters of the disease. It is hoped that this research will lead to better therapies and more specific tests to determine the effectiveness of therapies. Investigators: Robert Alan Goldberg, MD; Terry J. Smith, MD; and Raymond S. Douglas, MD, PhD

PEDIATRICS AND STRABISMUS

Biomechanical Analysis in Strabismus Surgery

Now in its second decade of support from the National Eye Institute, this study aims to develop new diagnostic tests and computer models that will lead to improvements in strabismus surgery. Tests of binocular alignment and eye movements, as well as magnetic resonance imaging (MRI) of the extraocular muscles, are performed in the Institute's Clinical and Basic Science Ocular Motility Laboratory before and after strabismus surgery. Selected patients undergo molecular genetic studies of the extraocular muscles and orbital connective tissues. Results are correlated with state-of-the-art anatomic studies done in the laboratory and with comparative anatomic studies in

volunteers who do not have strabismus. Investigator: Joseph L. Demer, MD, PhD

Genetic and Anatomic Basis of the Fibrosis Syndrome

The long-term goal of this National Eye Institute-sponsored project is to determine the cause of congenital fibrosis of the extraocular muscles, a rare, inherited condition resulting in strabismus and drooping eyelids. A collaborative investigation is being conducted with investigators from Children's Hospital in Boston. Nerve versus muscular causes of this syndrome are being studied in individual families around the country and linked through molecular genetics testing of blood samples to the causal genes. Investigator: Joseph L. Demer, MD, PhD

Optic Nerve in Amblyopia

Amblyopia is a major cause of childhood visual loss. With the support of a Research to Prevent Blindness Roy and Lillian Disney Award for Amblyopia Research, Dr. Demer's laboratory uses high resolution, surface-coil magnetic resonance imaging (MRI) to study optic nerve size in amblyopia. This study tests the theory that the optic nerve is smaller than normal in amblyopia and that optic nerve size may be a limiting factor in restoration of vision by amblyopia treatment. Investigator: Joseph L. Demer, MD, PhD

PUBLICATIONS OF THE FULL-TIME FACULTY**Anthony J. Aldave, MD**

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