

Jules Stein Eye Institute



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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 bachelor of philosophy degree from the University of Chicago at age 18 followed by an 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

Bartly J. Mondino, MD

Director
Jules Stein Eye Institute
1994–present



Nelson C. Rising, Esq.

President and
Chief Executive Officer
Maguire Properties
2004–present



Ronald L. Olson, Esq.

Partner
Munger, Tolles, and Olson
1995–present



Katrina Vanden Heuvel

Publisher and Editor
The Nation Magazine
1984–present



Gerald H. Oppenheimer

President
Gerald Oppenheimer
Family Foundation
President
Systems Design Associates
1992–present



Casey Wasserman

President and
Chief Executive Officer
The Wasserman Foundation
1998–present



Andrea L. Rich, PhD

Retired President,
Chief Executive Officer and Director
Los Angeles County Museum of Art
Executive Vice Chancellor Emerita
UCLA
2007–present



Executive Committee

Director, Jules Stein Eye Institute
Chairman, UCLA Department of Ophthalmology

Bartly J. Mondino, MD

Associate Directors, Jules Stein Eye Institute

Wayne L. Hubbell, PhD

Gabriel H. Travis, MD

Vice-Chairs, UCLA Department of Ophthalmology

Sherwin J. Isenberg, MD

Anne L. Coleman, MD, PhD

Chief Administrative Officer, Jules Stein Eye Institute

Jonathan D. Smith



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



The Jules Stein Eye Institute at UCLA is dedicated to the preservation of vision and the prevention of blindness through its comprehensive programs for research in the vision sciences, education in the field of ophthalmology, and care of patients with eye diseases.

Highlights





Dear Friends,

I am pleased to share with you highlights of the 2011–2012 academic year. Our physical growth as an Institute is highlighted on the cover of this year's Annual Report: the imposing outer edifice of the **Edie and Lew Wasserman Building**, awarded an architectural prize for design and significance, is close to completion.

The Jules Stein Eye Institute's vision-science campus has been built upon a foundation of excellent patient care and groundbreaking research. This year, **Steven D. Schwartz, MD**, chief of the Retina Division, began a safety study that involved injecting human embryonic stem cells for the first time into the eyes of legally blind patients.

As in past years, Jules Stein Eye Institute faculty were recognized for their many achievements. **Lynn K. Gordon, MD, PhD**, was named the Vernon O. Underwood Family Chair in Ophthalmology, and **Xian-Jie Yang, PhD**, was named the Ernest G. Herman Endowed Chair in Ophthalmology. Prestigious honors were bestowed upon other faculty members by the American Academy of Ophthalmology, the International Society of Magnetic Resonance in Medicine, and additional professional groups. Vital research grants providing needed funding were awarded and renewed by the National Eye Institute, the Foundation Fighting Blindness, and other key organizations.

Among many exceptional philanthropic gifts to the Jules Stein Eye Institute was a \$750,000 pledge from the Skirball Foundation to establish the Audrey and Jack Skirball Ocular Inflammatory Disease Fellowship. Contributions from **David and Randi Fett** and **Theo and Wendy Kolokotronis** will enable improvements in the Institute's website. Significant bequests were also received, including from the estates of **Ms. Helen V. Chaplin** and **Ms. Esther Shandler**.

As we anticipate the exciting changes ahead for the Jules Stein Eye Institute, we have not forgotten the exceptional donors and friends who have contributed to our achievements, including the late **Dame Elizabeth Taylor** who made a major gift through The Elizabeth Taylor AIDS Foundation to benefit the Herb Ritts, Jr. Memorial Vision Fund, providing necessary monies for AIDS-related vision care, research, and education at UCLA.

It is our privilege to honor Miss Taylor's legacy, and that of our countless donors, who have given so generously to ensure the Jules Stein Eye Institute maintains its standing as one of the world's preeminent eye research centers leading the charge to preserve and restore vision.

Sincerely,

A handwritten signature in black ink that reads "Bartly J. Mondino". The signature is fluid and cursive, with the first name "Bartly" being the most prominent.

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

Events

The 2011–2012 academic year brought exciting advances to the Jules Stein Eye Institute. Of special significance, Institute researchers are conducting safety studies investigating the use of embryonic stem cells on patients with Stargardt macular dystrophy and dry age-related macular degeneration. Advancing research is just one of the many ways the Jules Stein Eye Institute strives to preserve and restore vision.

Legally Blind Patients Receive Stem Cell Transplants

On July 12, 2011, surgeons at the Jules Stein Eye Institute began a safety study that involved injecting human embryonic stem cells for the first time into the eyes of legally blind patients.

Both patients, one with Stargardt macular dystrophy and the other with dry age-related macular degeneration, underwent outpatient transplantation surgeries and recovered uneventfully, according to the lead surgeon, **Steven D. Schwartz, MD**, Ahmanson Professor of Ophthalmology and chief of the Retina Division. Dr. Schwartz is the principal investigator on two clinical trials, one for each eye disease. Each trial will include 12 patients who are legally blind and will determine the safety of stem cell therapy. The patients' ability to tolerate the surgical procedure itself went well.

Human embryonic stem cells can differentiate into any cell type. The stem cell-derived retinal pigment epithelial (RPE) cells that were transplanted during surgery were differentiated in Advanced Cell Technology, Inc. (ACT) labs. ACT is a leader in the field of regenerative medicine and has been working for the last decade on developing a stem cell therapy to treat eye diseases. Each patient received a relatively low dose of the transplanted RPE cells (50,000) into the subretinal space of the treated eye.

The dosing of the first patients in these trials, which are being closely watched by scientists and stem cell therapy advocates around the world, was hailed by ACT company officials as an important milestone in the therapeutic use of stem cells and may pave the way for a new therapeutic approach to treating eye diseases.

Currently, both eye diseases are untreatable. The dry form of macular degeneration, the most common form of the disease, is the leading cause of blindness in the developed world, especially among people over the age of 55. As many as 30 million people in the United States and Europe currently suffer from this disease, and the number of people affected is expected to double over the next 20 years as the population ages. Stargardt disease causes progressive vision loss, usually starting when patients are between 10 to 20 years of age.

In both conditions, the layer of RPE cells located beneath the retina deteriorates and atrophies. These cells support, protect, and provide nutrition for light-sensitive photoreceptors in the eye. Over time, the death of the RPE cells and eventual loss of the photoreceptors can lead to blindness as central vision is gradually destroyed. Doctors are hoping the transplanted RPE cells will implant and begin functioning.

Noted **Robert Lanza, MD**, chief scientific officer of ACT, "The great promise of human embryonic stem cells is finally being put to the test with the initiation of these two clinical trials. It's time to start moving these exciting new stem cell therapies out of the laboratory and into the clinic."



Dr. Steven Schwartz peers into a microscope during surgery to transplant highly specialized cells derived from human embryonic stem cells into the eyes of the first patients enrolled in two clinical trials that are testing the promise of stem cell therapy.

Institute Brings a Pediatric-Friendly Experience to the Surgical Area

On May 16, 2012, Institute Director **Bartly J. Mondino, MD**, introduced the Jules Stein Play Room, a dedicated children's space located on the surgical floor of the Institute, and noted, "Today we celebrate the expansion of a pediatric-friendly experience from our clinics to our surgical suites."

Knowing a visit to the doctor can be an intimidating process for a child, the Institute, in cooperation with committed partners, has taken steps to ease the process for pediatric patients undergoing ophthalmic surgery by introducing a new children's play area as well as trained specialists to guide families through the operative procedure.

Bright and lively, the Play Room is filled with books, toys, puzzles, educational flash cards, and blocks to entertain youngsters during consultation and prior to surgery. Through the generosity of Wyndham Worldwide and the Starlight Children's Foundation, the Jules Stein Play Room also includes a Fun Center™ mobile entertainment unit that offers a gaming system, DVD player, and television.



A young visitor enjoys the new Jules Stein Play Room located on the surgical floor of the Institute.

The Jules Stein Eye Institute is also incorporating the Chase Child Life Program for pediatric patients and their families, which offers Child Life Specialists, personnel who are trained personnel to help children and their parents better cope with the surgical experience.

Child Life Specialists lead tours of the surgical area and accompany patients into surgery. They support the family by answering questions and providing educational information and resources so that parents and children alike can know what to expect. It's especially reassuring for pediatric patients to have the

familiar face of their Child Life Specialist with them as they go into surgery, and it reduces the parents' anxiety to know their child is feeling more secure at that vulnerable time. The Chase Child Life Program, a no-cost offering, will be available once a week with the goal of expanding the service into a daily program.



Through the generous support of caring partners, JSEI's pediatric patients will enjoy a more comforting surgical experience. Left to right: Alison Sadock, corporate accounts manager, Starlight Children's Foundation; Amy Bullock, director, Chase Child Life Program, Mattel Children's Hospital, UCLA; Dr. Bartly Mondino, director, JSEI; Marti Winer, vice president of event services, Wyndham Worldwide; Mary Falvey, executive vice president, chief human resources officer, Wyndham Worldwide; Shannon O'Kelley, chief operating officer, UCLA Hospital System; Christine Archuleta, child life specialist, UCLA Operating Room Services; Paul Falcone, chief human resources officer, Starlight Children's Foundation; Jacqueline Hart-Ibrahim, global chief executive officer, Starlight Children's Foundation.

The Edie and Lew Wasserman Building Wins Architectural Award

The **Edie and Lew Wasserman Building**, currently under construction in Stein Plaza, won a Community Impact Award at the 2011 Los Angeles Business Council's Los Angeles Architectural Awards ceremony. This prestigious award recognized the project's breadth of investment, the anticipated achievements resulting from its completion, and its architectural excellence and significance. The Wasserman facility, which will house the Edie and Lew Wasserman Eye Research Center, is scheduled to be completed in March 2014. The facility was designed by Richard Meier & Partners Architects, the same architectural firm that created the Getty Center. **Casey Wasserman**, president and chief executive officer of the Wasserman Foundation, spearheaded the project, which honors his grandparents.



Honors

Each year, as part of their ongoing academic pursuits, faculty members achieve notable recognition for their accomplishments and contributions. They give prestigious lectures around the world, participate in influential professional and community organizations, and serve as writers and editors for a wide range of scientific journals. In some cases, special honors are bestowed.

Jules Stein Eye Institute glaucoma specialists, Drs. Simon K. Law and Anne L. Coleman, were honored along with other Institute faculty members for their achievements in science.

American Academy of Ophthalmology Awards

UCLA ophthalmology faculty were honored by the American Academy of Ophthalmology for their outstanding contributions to the Academy, its scientific and educational programs, and to the field of ophthalmology. The awards were announced at the Academy's annual meeting in Orlando, Florida in October 2011.

Life Achievement Award:

Joseph Caprioli, MD

Senior Achievement Award:

Bartly J. Mondino, MD

Achievement Award:

Simon K. Law, MD

Secretariat Awards:

Anne L. Coleman, MD, Fran and Ray Stark Professor of Ophthalmology, received a nomination by the secretary for Communications and an additional nomination by the secretary for Member Services.

Bartly J. Mondino, MD, Bradley R. Straatsma Professor of Ophthalmology, received a nomination by the secretaries for State Affairs and Federal Affairs and the senior secretary for Advocacy.



Honors and Awards

Anthony J. Aldave, MD, Associate Professor of Ophthalmology, was awarded the 2011 Gold Medal from the Indian Intraocular Implant and Refractive Society and the 2012 W. Bruce Jackson Lecture-ship Award.

Lynn K. Gordon, MD, PhD, Associate Professor of Ophthalmology, was named as the Vernon O. Underwood Family Chair in Ophthalmology, effective March 1, 2012.

Wayne L. Hubbell, PhD, Jules Stein Professor of Ophthalmology, was elected as a Fellow of the International Society of Magnetic Resonance in Medicine.

David Sarraf, MD, Associate Clinical Professor of Ophthalmology, was invited to become a member of the Gass Club at the 2011 American Academy of Ophthalmology Annual Meeting. The invitation-only association is comprised of a small group (less than 30) of elite retinologists who meet annually to discuss interesting retinal cases.

Steven D. Schwartz, MD, Ahmanson Professor of Ophthalmology, was a keynote lecturer at the UCLA IMED Seminar Series with Dr. Robert Lanza.

Barry A. Weissman, OD, PhD, Professor of Ophthalmology, was the recipient of the 2012 Legend Award, Cornea and Contact Lens Section, American Optometric Association.

Xian-Jie Yang, PhD, Professor of Ophthalmology, was named as the Ernest G. Herman Endowed Chair in Ophthalmology, effective March 1, 2012.

Jules Stein Eye Institute Rated Best in the West

The Jules Stein Eye Institute continues in its position as one of the top five American eye care centers—and the best in the Western United States for the 22nd consecutive year—according to U.S. News & World Report's 2011–2012 Best Hospitals rankings. Additionally, Ronald Reagan UCLA Medical Center is the only hospital in Los Angeles and the Southern California region that appears on the magazine's "Honor Roll," a place reserved for medical centers with high levels of expertise in multiple specialties. The Ronald Reagan UCLA Medical Center was ranked the number one hospital in California.



Research

Research is a key component of the Institute's mission and a high priority for faculty who often devote their life's work to furthering our knowledge of specific vision processes and eye diseases. Major research grants are routinely awarded each year to support this effort. In 2011–2012, faculty members received important awards from both public and private organizations. New grants and grant renewals will enable faculty to further ongoing vision-science investigations that have shown promise and to undertake clinical trials that have direct application to some of the country's most common ophthalmic problems.

Glaucoma Imaging Study

Kouros Nouri-Mahdavi, MD, assistant professor of ophthalmology, is conducting research projects to investigate utility of different imaging techniques for improving detection of glaucoma or its progression. These studies aim to determine the performance of various testing modalities available on the newer spectral-domain optical coherence tomography (SD-OCT) for discrimination of glaucomatous eyes from normal eyes.

Because of the higher resolution and the larger amount of data obtained by SD-OCTs, their use is expected to lead to better clinical performance and a higher rate of detection of early glaucoma or its progression. If the newer imaging devices are proven to have a better performance, they can potentially be useful for screening purposes and be especially valuable for evaluating cases that are suspected to show early glaucomatous damage where the visual field is frequently noncon-tributory. On the other end of the glaucoma spectrum, macular imaging is emerging as a promising modality for detection of progression in advanced glaucoma, since the retinal nerve fiber layer and optic nerve head in patients with advanced glaucoma are already too damaged to demonstrate any evidence of progression.

Drs. Kouros Nouri-Mahdavi and JoAnn Giaconi, along with other members of the Glaucoma Division, are leading the way in the study of sophisticated imaging tools that can be used to detect early signs of glaucoma-related damage.



Effect of Corneal Preservation Time on Long-Term Graft Success

Anthony J. Aldave, MD, associate professor of ophthalmology, and **Sophie X. Deng, MD, PhD**, assistant professor of ophthalmology, are conducting the Cornea Preservation Time Study (CPTS). This multicenter, nationwide study is evaluating whether the donor cornea preservation time affects the success of a corneal transplant surgery. Donor corneas are placed into a preservation solution and stored until surgery. Currently, the Food and Drug Administration regulations allow corneas to be stored up to 14 days before surgery. Although it is common practice to use corneas stored more than 7 days in other countries, it is not routinely done in the United States.

This study aims to demonstrate that transplant surgery with corneas preserved from 8–17 days is not inferior to corneas preserved from 1–7 days. To accomplish this, participants will be randomized to one of two groups. The surgery will be identical to surgery performed on patients not included in the study. The study will examine the number of complications and graft failures for both groups. There is no research to suggest there is any greater risk for transplant failure. As the United States population lives longer and there is an increase in persons needing transplants, the cornea donor supply is uncertain. This study hopes to provide scientific evidence that may help increase the cornea supply available for transplants in the United States. This study is funded by the National Eye Institute and coordinated through Case Western Reserve University.

Longitudinal Studies of the Ocular Complications of AIDS

Gary N. Holland, MD, Jack H. Skirball Professor of Ocular Inflammatory Diseases, has been an investigator on the Longitudinal Studies of Ocular Complications of AIDS (LSOCA) since its commencement in September 1998. This multicenter, prospective, observational cohort study is designed to collect data on ophthalmic conditions associated with AIDS that have been seen since the introduction of highly active antiretroviral therapies. Historically, the focus of LSOCA was to evaluate cytomegalovirus (CMV) retinitis in the population, including risk factors and outcomes for patients. Left untreated, CMV retinitis is a disorder that can lead to retinal destruction and blindness.

In recent years, Dr. Holland has initiated research evaluating neuroretinal disorders within the cohort. He has investigated the relationship of HIV-related visual abnormalities, such as decreased contrast sensitivity and diminished color vision in patients without opportunist infections, like CMV. He demonstrated that there is an association between retinal nerve fiber layer thickness and abnormalities of vision in people infected with HIV. The findings suggest abnormalities of contrast sensitivity and of color vision appear to be more common among HIV-infected individuals than in the general population and are not correlated with immune function. It has been hypothesized that these abnormalities are related to the retinal microvasculopathy of HIV disease. Continued research on this subject may lead to better methods for monitoring the health of HIV-infected individuals.

Safety and Effectiveness of the Calhoun Vision Light Adjustable Lens for Treating Postoperative Sphere and Cylinder

Kevin M. Miller, MD, Kolokotronis Professor of Clinical Ophthalmology, has recently started a study to evaluate the use of a light adjustable intraocular lens (IOL) for reducing astigmatism and improving uncorrected visual acuity after IOL implantation. This randomized, prospective multicenter clinical trial is designed to evaluate the safety and effectiveness of a light adjustable lens (LAL).

Currently, accurate calculation of IOL power is difficult and the position of the IOL in the eye is inherently inaccurate. Despite measurements of the eye prior to cataract surgery, several factors including preexisting astigmatism and unpredictable healing can result in suboptimal patient vision after the lens implantation. Standard monofocal IOLs allow some patients to have good distance vision, but the majority of patients are left dependent on glasses. The LAL may eliminate the patient's dependence on glasses because this IOL allows the doctor to adjust the power after it is implanted in the eye.

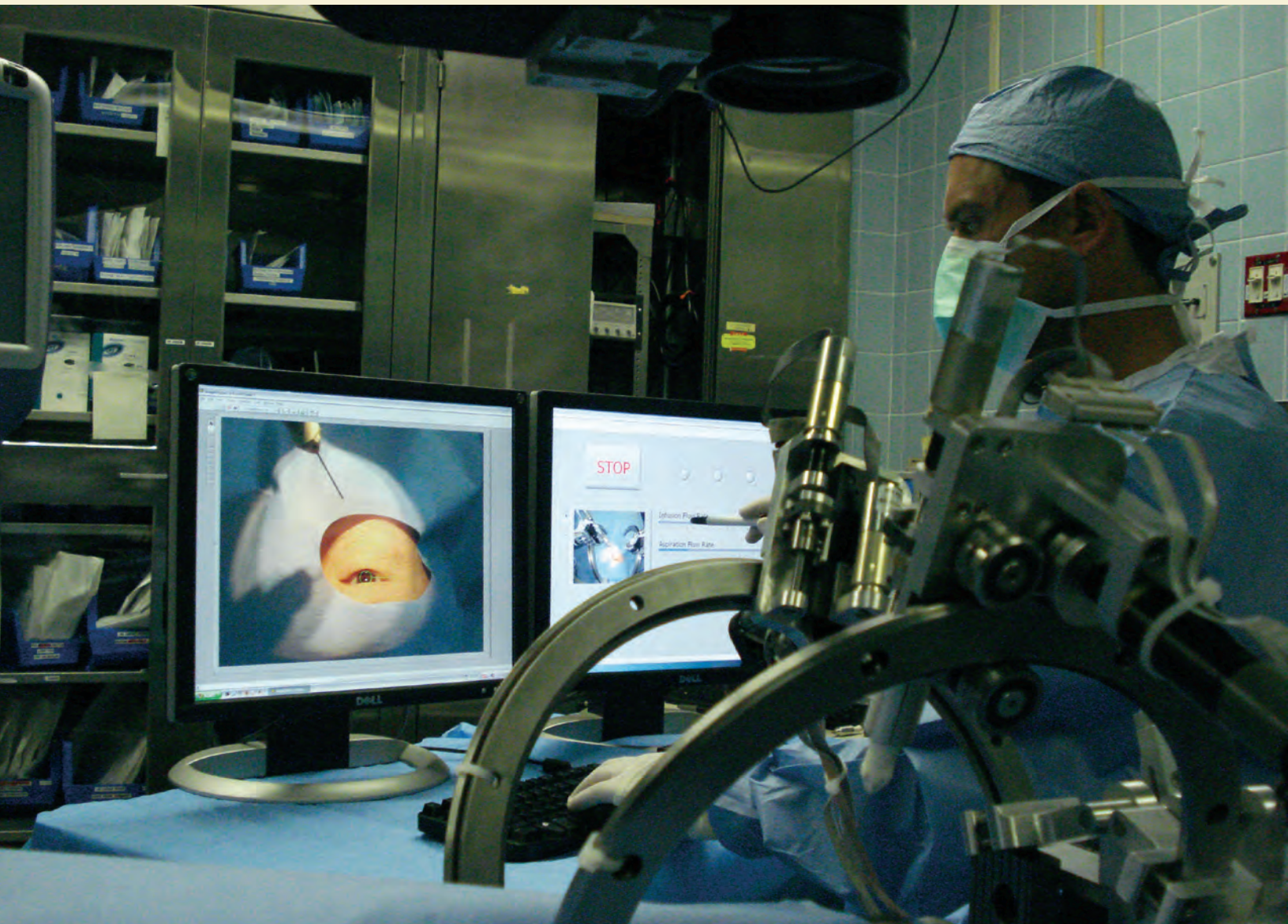
The LAL contains photosensitive material called macromers. These materials are sensitive to ultraviolet light; resulting in a change to the shape of the LAL and, in turn, the power of the lens. The LAL can be implanted in the eye using standard surgical procedures. After the eye has healed following surgery, the residual refractive error can be measured and the lens shape can be corrected using ultraviolet light. The study will consist of up to 600 eyes across the country and is being funded by Calhoun Vision.

Adaptive Robotics for Ocular Surgery

Jean-Pierre Hubschman, MD, assistant professor of ophthalmology, is collaborating with UCLA engineers to design the platform for an intraocular robotic surgical device. The long-term goal is to enable automation for ocular surgery. Current surgical procedures have significant potential for inadvertent tissue manipulation possibly resulting in intraocular trauma. They have developed a dual arm, intraocular robotic surgical system designed for performing intraocular surgeries with a primary focus on cataract surgery. Preliminary results have shown an optimization of vibration reduction, a controlled remote center of motion for both robotic arms, the ability to mount multiple surgical instruments to either arm with automated surgical instrument replacement, and a vision-based object tracking system to monitor anatomical positions and instrument positions during surgery.

It is believed that this more refined tracking system will decrease the incidence of trauma to ocular tissues by increasing the surgeon's ability to visualize the environment and by creating restrictions on the proximity of surgical tools to vulnerable ocular tissues. After development, a comparison between manual cataract extraction and robotic cataract extraction will be conducted. The research aims to decrease negative outcomes in the most frequently performed surgical procedure, totaling more than 3 million operations every year in the United States.

Dr. Jean-Pierre Hubschman with a prototype of the intraocular robotic surgical platform.



Education

Education at the Jules Stein Eye Institute is multi-faceted, 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 honored faculty at the Annual Clinical and Research Seminar and hosted a course to educate both new and seasoned physicians on clinical research methods.

Annual Clinical and Research Seminar

The Institute's most prestigious academic event of each year, the Clinical and Research Seminar, was held on June 8, 2012. 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 43rd Jules Stein Lecture, the 10th Bradley R. Straatsma Lecture, and the 10th Thomas H. Pettit Lecture.

A number of volunteer and clinical faculty received awards of distinction. The S. Rodman Irvine Prize, which recognizes excellence among Department of Ophthalmology faculty, was awarded to **Norman Shorr, MD**. The Faculty Teaching Award to honor contributions to residency education was presented to **Uday Devgan, MD**, chief of ophthalmology at Olive View-UCLA Medical Center.



43RD JULES STEIN LECTURER

Mark S. Blumenkranz, MD
Chairman, Department of Ophthalmology
Inaugural Director, Byers Eye Institute
Stanford University



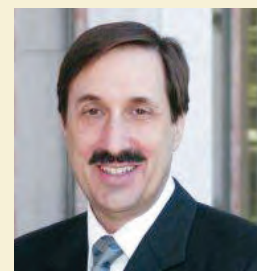
10TH BRADLEY R. STRAATSMAL LECTURER

Cesar T. Chavez, MD
Private Practice
North San Diego County/
Imperial Valley



10TH THOMAS H. PETTIT LECTURE

George M. Rajacich, MD
Medical Director and Chief Executive Officer
Valley Eye Center,
Darin Eye Center,
Mazzocco Ambulatory Surgery Center



17th Annual Vision Science Conference

The 17th annual Vision Science Conference, co-sponsored by the National Institutes of Health/ National Eye Institute Vision Science Training Grant and the Jules Stein Eye Institute, was held October 28–30, 2011. More than 80 basic scientists and clinical researchers gathered at UCLA's Lake Arrowhead Conference Center to participate in scientific discussions and memorable networking events. Guest speakers presented a variety of fascinating topics. Scientific Keynote Speaker **Andrew Huberman, PhD**, from the Department of Neurosciences and Neurobiology at the University of California at San Diego, gave an informative lecture entitled, "Genetic Approaches: Understanding How the Visual System Wires up, Works, and Can be Repaired"; **Valentyna Abramenko, PhD**, from the Big Bear Solar Observatory, presented a fascinating talk about what we know about our closest star; and **Laurie Shaker-Irwin, PhD, MS**, stimulated discussion with her topic, "Responsible Conduct of Research—Ethics and Oversight."

Aesthetic Eyelid and Facial Rejuvenation Course

The Orbital and Oculoplastic Surgery Division held its "Aesthetic Eyelid and Facial Rejuvenation" course June 15–16, 2012, at the Jules Stein Eye Institute. The event attracted ophthalmologists, dermatologists, and cosmetic surgeons from around the world. The two-day event combined surgical demonstrations, a cadaver dissection, and didactic lectures that informed participants of the latest advances in the field of aesthetic and reconstructive surgery for the eyelids and face.

Don Kikkawa, MD, Shiley Eye Center, professor of Clinical Ophthalmology, division chief of Ophthalmic Plastic and Reconstructive Surgery, gave this year's Robert Axelrod, MD, Memorial Lecture, "Perfecting Your Skills with the Aesthetic Patient." Dr. Kikkawa conducted his residency at the Jules Stein Eye Institute.

Fall Medical Forum Discusses Pediatric Blindness

On September 20, 2011, **Sherwin J. Isenberg, MD**, Laraine and David Gerber Professor of Ophthalmology, discussed issues affecting childhood eye health in a medical forum held at the Jules Stein Eye Institute. In his lecture, "Fighting Blindness in Children," Dr. Isenberg explained that for the 1.4 million children who are blind throughout the world, at least 40% of the cases are preventable. Two of the main causes of pediatric vision loss—corneal scarring and retinopathy of prematurity—are avoidable with proper treatment. Dr. Isenberg spoke about the development of an effective, inexpensive, and available eyedrop that can prevent and treat many of the infections that cause corneal scarring and how he and his team are establishing protocols in Ethiopia to deliver this medicine to children with trachoma, the number-one cause of infectious blindness.



Faculty, fellows, and graduate students at the 17th Annual Vision Science Conference at UCLA's Lake Arrowhead Conference Center.

Philanthropy

“Do everything as in the eye of another.”

–Lucius Annaeus Seneca

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

This fiscal year, hundreds of donors supported sight-saving endeavors at the Institute. Additionally the Institute received several bequests including gifts from the estates of Ms. Helen V. Chaplin and Ms. Esther Shandler.

Audrey and Jack Skirball Ocular Inflammatory Disease Fellowship

The Skirball Foundation made a \$750,000 pledge to establish the **Audrey and Jack Skirball Ocular Inflammatory Disease Fellowship** at UCLA's Jules Stein Eye Institute.

Bartly J. Mondino, MD, Institute director remarked, “The Skirball Foundation’s gift will have a significant impact on fellows specializing in ocular inflammatory disease and greatly benefit their careers in ophthalmology. Such generosity will ultimately help patients suffering from debilitating eye conditions. This is truly a wonderful way to honor Audrey and Jack Skirball's memory.”

The creation of the Skirball Fellowship will underwrite the training of fellows specializing in ocular inflammatory disease, and the Jules Stein Eye Institute is poised to be a leading training center in this arena. More specialists are urgently needed to address increasingly complex diagnostic techniques and therapies. Since clinical fellows are required to participate in research projects, the fund also will spur new and promising areas of investigation. This fellowship is the first in ocular inflammatory disease at UCLA.

The Skirball Foundation has been supporting the Institute for more than 40 years, due in part to Mr. Skirball's enduring friendship with **Jules Stein** and



From left to right, Mr. Jack Skirball, Mrs. Audrey Skirball, Rabbi Uri D. Herscher (1983).

Lew Wasserman. Since 1969, the Skirball Foundation has continued to underwrite vision-science programs, particularly those in the UCLA Ocular Inflammatory Disease Center (OIDC). The Skirball Foundation Fund was established in 1990 to support research, education, and patient care programs within the OIDC and, as an endowment, serves as a significant ongoing resource for them. In 2001, the Skirball Foundation created a current-expenditure fund to further expand studies within the OIDC, and in 2007, it established the Jack H. Skirball Endowed Chair in Ocular Inflammatory Diseases, a distinguished position to which **Gary N. Holland, MD**, chief of the Cornea and Uveitis Division, was appointed in 2009.

Born in 1896 in Homestead, Pennsylvania, Mr. Skirball was ordained a rabbi in 1921. After serving congregations in the Midwest, he took leave of the rabbinate in 1933 to manage Educational Films Corporation, a pioneer in audiovisual education. Mr. Skirball then went on to feature-film production as president of Skirball Productions, which was responsible for movies 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. Lew Wasserman.

(continued on next page)

Audrey and Jack Skirball continued

Mrs. Skirball was born in Alabama in 1915 and during World War II moved to California to join the Signal Corps, the branch of the United States Military responsible for communications. She married Mr. Skirball in 1952, and during their 33-year marriage they were actively involved in charitable endeavors, most notably building the Skirball Cultural Center, the largest Jewish cultural institution in the world today. **Rabbi Uri D. Herscher**, founding president and chief executive officer of the Skirball Cultural Center and a trustee of the Foundation, noted, "I first met Jack and Audrey Skirball in 1964. Throughout the years, they made me aware of their devotion to help cure eyesight-related diseases, and they had the confidence that the Jules Stein Eye Institute would develop the expertise to do so." The creation of the Audrey and Jack Skirball Ocular Inflammatory Disease Fellowship will serve as a testament to Mr. and Mrs. Skirball's lifetime of philanthropy and dedication to fighting blindness.

Donors Support Modernization of Institute Website

Wendy and Theo Kolokotronis and **Randi and David Fett** have pledged generous gifts to support an update of the Jules Stein Eye Institute's website. Institute Director **Bartly J. Mondino, MD**, noted that their contributions would strengthen the goals to modernize the site and expand user functionalities for both online visitors and Institute staff and faculty. "I am grateful for the dedication of Wendy and Theo Kolokotronis and Randi and David Fett to advance our online capabilities. A state-of-the-art website will reflect the Institute's position as one of the world's preeminent eye research centers."

Proposed changes include an overhaul of multiple databases, improved site navigation, decentralized page editing, enhanced video streaming, integration of social media, text enlargement for the visually impaired, non-English versions of the website, an Institute-wide calendar, an interactive portal for Institute alumni, and a robust Intranet for staff and faculty use. Also under consideration is the development of smart-phone applications that communicate with the website.

The Kolokotronis family has been a loyal supporter of the Institute since 1994. In 2004, they established a chair to benefit a cataract surgeon and scientist. Chair holder **Kevin M. Miller, MD**, Kolokotronis Professor of Clinical Ophthalmology and chief of the Comprehensive Ophthalmology Division, oversees the website development team. "Wendy and Theo Kolokotronis have supported my work for years and have been generous to the Institute in many ways," said Dr. Miller, who has been the faculty director of the website since its first design more than 15 years ago.

Dr. David Fett is an Institute alumnus and clinical faculty member. His wife Randi graduated from UCLA in 1984 with a degree in chemistry, and Dr. Fett has a long history with UCLA, since his grandfather graduated from the University in 1932. Most recently, the Fetts established a fellowship in the Orbital and Ophthalmic Plastic Surgery Division under the auspices of **Robert Alan Goldberg, MD**.

According to Dr. Miller, the groundwork for the website is currently being laid, and the first order of business will be to rebuild the database—a fundamental element for all aspects of the project.



Dr. Kevin M. Miller, Kolokotronis Professor of Clinical Ophthalmology, has been the faculty director of the Institute's website since its first design more than 15 years ago.

Dame Elizabeth Taylor Pioneering Voice for HIV/AIDS Awareness

The UCLA community mourned the loss of legendary film star **Dame Elizabeth Taylor** who passed away in March 2011. Miss Taylor was a pioneering voice for HIV/AIDS awareness. In 1994, she began supporting the HIV-related eye investigations of **Gary N. Holland, MD**, Jack H. Skirball Professor of Ocular Inflammatory Diseases and Chief of the Cornea and Uveitis Division at UCLA's Jules Stein Eye Institute. Dr. Holland and his colleagues were the first to describe the ocular manifestations of AIDS, and he has continued to be involved in related research. Miss Taylor recognized that many people with AIDS suffer from eye complications during their illness. Diseases such as cytomegalovirus (CMV) retinitis, an infection of the retina, can result in permanent vision loss in patients whose immune systems are compromised.

In 2006, Miss Taylor made a major gift through The Elizabeth Taylor AIDS Foundation to benefit the **Herb Ritts, Jr. Memorial Vision Fund**, providing necessary monies for AIDS-related vision care, research, and education at UCLA. Miss Taylor and Mr. Ritts had been close friends.

The Herb Ritts, Jr. Memorial Vision Fund was established by family and friends of the beloved and celebrated American photographer. In the late 1990s, Mr. Ritts collaborated with Dr. Holland to raise awareness of AIDS-related eye disease. At the time of the gift, Miss Taylor said, "It is my hope that my donation will inspire others to give to this important cause, which honors our dear friend Herb Ritts and continues Herb's long-standing support of HIV/AIDS research."

More recently, Miss Taylor helped to support a conference at UCLA. It was attended by HIV specialists and ophthalmologists from around the world who met to formulate strategies for treating the growing problem of AIDS-related CMV retinitis in resource-poor areas, such as Southeast Asia and Africa.

Dr. Holland remembers Miss Taylor as a passionate advocate of these endeavors. "It was a privilege to know and collaborate with Dame Elizabeth for many years. I appreciated her interest in our work and the confidence she had in our research and clinical activities. Elizabeth's support has truly helped to advance the understanding of AIDS-related blindness—both in the United States and in the developing world. Her enthusiasm was inspiring, and she will be missed greatly."

To make a donation to the Herb Ritts, Jr. Memorial Vision Fund, please contact the Institute's Development Office at (310) 206-6035.



Dame Elizabeth Taylor



Dr. Gary Holland, Jack H. Skirball Professor of Ocular Inflammatory Diseases

The Ahmanson Foundation Awards Grant to UCLA Mobile Eye Clinic

The Ahmanson Foundation awarded the UCLA Mobile Eye Clinic (MEC) at UCLA's Jules Stein Eye Institute a generous grant for advanced diagnostic equipment to expand services.

The MEC is a 40-foot-long coach staffed by ophthalmologists, technicians, and volunteers that travels four days a week to underserved areas in Los Angeles—schools, health clinics, community centers, homeless shelters—providing high-quality eye care at no cost. The new diagnostic equipment provides significant enhancements to the MEC, specifically allowing ophthalmologists to more effectively screen for diabetic retinopathy and glaucoma. In addition, portable instruments that can be used outside the vehicle were purchased in order to screen patients with disabilities and provide additional support at larger events such as health fairs. **Anne L. Coleman, MD, PhD**, director of the MEC, noted, “The equipment the grant enabled us to obtain is essential for the advancement of clinical care and, ultimately, the benefit of patients. We are so grateful for The Ahmanson's Foundation's wonderful support of the MEC.”

The MEC was established in 1975 by an anonymous donor who was a friend and associate of **Dr. Jules Stein**. The individual had an urgent eye problem that brought him to the Jules Stein Eye Institute. He was so impressed with his care that he created the MEC with the advice of his ophthalmologist, **Robert Christensen, MD**, to meet the tremendous unmet need for eye care in the community.

The MEC's mission has been consistent from its inception, and this high quality, reliable resource has grown over the years, becoming well known throughout the region. This year alone, the MEC staff and ophthalmic personnel saw approximately 5,000 patients. Private philanthropy is critical to sustaining the MEC and allowing those in need to benefit from its important services. **Bartly J. Mondino, MD**, director of the Institute, commented, “The Ahmanson Foundation has been a loyal friend for many years, and its recent grant demonstrates a steadfast commitment to helping those in need. We are lucky to count the Foundation as a partner in our goal of ensuring a lifetime of good vision for all.”

The Ahmanson Foundation, incorporated as a private foundation in 1952, was established by financier **Howard F. Ahmanson** and his wife **Dorothy Ahmanson**. Its corpus was augmented in later years by his two nephews **Robert H. Ahmanson** and **William H. Ahmanson**. The Foundation serves Los Angeles County by funding cultural projects in the arts and humanities, education at all levels, health care, programs related to homelessness and underserved populations, as well as a wide range of human services. In 1997, the Foundation established the UCLA Center for Eye Epidemiology to support research and clinical studies to further knowledge of the development, treatment, and prevention of eye disease. In 2005, it established the Ahmanson Chair in Ophthalmology, a distinguished position to which **Steven D. Schwartz, MD**, chief of the Retina Division, was appointed in 2007.



The UCLA Mobile Eye Clinic travels four days a week to underserved areas in Los Angeles—schools, health clinics, community centers, homeless shelters—providing high-quality eye care at no cost.



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

American Geriatrics Society, Inc.
Arthritis Foundation, Pacific Region
Bruce Ford and Anne Smith Bundy Foundation
Helen V. Chaplin Family Trust
The Carl & Roberta Deutsch Foundation
Andrea and Terry Donahue
Dr. and Mrs. David Fett
The Foundation Fighting Blindness
Friends of the Congressional Glaucoma Caucus Foundation, Inc.
Laraine Gerber
Carol and Timothy W. Hannemann
Mary Ann and Thomas C. Hays
William & Margaret Fern Holmes Family Foundation
Jules and Doris Stein UCLA Support Group
The Karl Kirchgessner Foundation
Wendy and Theo Kolokotronis
Knights Templar Eye Foundation, Inc.
Walter Lantz Foundation
California Community Foundation
Cynthia and Edward Lasker Fund
Bert Levy
MacDonald Family Foundation
Macula Vision Research Foundation
Richard Malm
The Mann Center for Education and Family Development
Susan and Morris Mark
Merz Pharmaceuticals, LLC
Ruth and George E. Moss
Gerald Oppenheimer Family Foundation
William R. Payden
Research to Prevent Blindness, Inc.
Mark Schulman & Esther Schulman Foundation, a Support Foundation of the Jewish Community Foundation of Greater Los Angeles
Esther Shandler Trust

The Skirball Foundation
Jerome and Joan Snyder
The Fran and Ray Stark Foundation
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...

Barry Roy Binder, Esq.
Jeffrey L. Eginton
Devin Freeman
Robert A. Goldberg, MD
Michael B. Gorin, MD, PhD
Kevin M. Miller, MD
Ernest L. Neu
Beverly Scarano
Barry A. Weissman, OD, PhD

In Memory of...

Simon Abdallah
Marvin Altshuler
Lenore Fenster
Marvin Fischer
Peggy L. Giambrocco
Ione J. Kanne
Michael William Lenvin
Betty L. Lewis
Kenneth Jay Marcus, Esq.
Ernest L. Neu
Joan Penders
Anne Rae Rosenberg
Richard W. Sallop
Esther Shandler
Oscar Z. Simmons
Nancy S. Wang, MD

Endowed Professorships and Fellowships

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 Endowed Chair in Pediatric Ophthalmology

Established in 2003 by Dr. Leonard Apt, Professor Emeritus of Ophthalmology and Founding Chief 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 by Dr. and Mrs. Dabby as a term chair to support the activities of a distinguished faculty member in the area of orbital disease.

Robert A. Goldberg, MD
2008–Present

Charles Kenneth Feldman Chair in Ophthalmology

Established in 1982 by various donors 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 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 by Mr. and Mrs. Gottlieb as an administrative chair for the Division of Pediatric Ophthalmology and Strabismus, in honor of the late Dr. Arthur L. Rosenbaum.

Arthur L. Rosenbaum, MD
2008–June 2010

**Dolly Green Chair
of Ophthalmology**

Established in 1980 by Ms. 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.

Xian-Jie Yang, PhD
2012–Present

**Karl Kirchgessner Foundation
Chair in Vision Science**

Established in 2001 as a term chair by a colleague of Dr. Jules Stein's to promote basic-science research initiatives.

Debora B. Farber, PhD, DPhhc
2001–Present

**Kolokotronos Chair
in Ophthalmology**

Established in 2004 by Wendy and Theo Kolokotronos 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 and converted to a permanent chair in 2010 with an additional pledge.

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

Sherwin J. Isenberg, MD
Grace and Walter Lantz Scholar
1993–1995
Professor 1996–2004

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

**David May II Endowed Chair
in Ophthalmology**

Established in 1998 as a term chair by the family of Mr. 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 chair in 2006 with an additional pledge.

Michael B. Gorin, MD, PhD
2006–Present

**Jack H. Skirball Endowed
Chair in Ocular
Inflammatory Diseases**

Initiated in 2007 by The Skirball Foundation in honor of Jack H. Skirball's long-standing friendship with Dr. Jules Stein and Lew Wasserman.

Gary N. Holland, MD
2009–Present

**Jerome and Joan Snyder
Chair in Ophthalmology**

Established in 2007 by Mr. and Mrs. Snyder 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.

Anthony C. Arnold, MD
2008–Present

**The Fran and Ray Stark
Foundation Chair
in Ophthalmology**

Established in 1992 as a term chair by the Fran and Ray Stark Foundation and converted to a permanent chair 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 Mr. Samuel Goldwyn, Jr.

Wayne L. Hubbell, PhD
1983–Present

Bradley R. Straatsma, MD, Endowed Chair in Ophthalmology

Established in 1994 to honor Bradley R. Straatsma, MD, JD, 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 Mrs. Adrienne Underwood Pingree in memory of her late husband, Mr. Vernon O. Underwood.

John R. Heckenlively, MD
1997–2004

Gary N. Holland, MD
2004–2009

Lynn K. Gordon, MD, PhD
2012–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 by the Rosalind W. Alcott Charitable Remainder Trust for the training of outstanding postdoctoral fellows.

Christopher Gee, MD
2011–2012

Leonard Apt Endowed Fellowship in Pediatric Ophthalmology

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

Jason Peragallo, MD
2011–2012

Thelma and William Brand Director's Fund

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

Steven and Nancy Cooperman Fellowship Fund

Established in 1988 by the Coopermans to support eye research and education, with emphasis on clinical ophthalmology.

Jennifer Huang, MD
2011–2012

Klara Spinks Fleming Fellowship Fund

Established in 1985 by Klara Spinks Fleming to support cataract research.

Michael Kapamajian, MD
2011–2012

Frances Howard Goldwyn Fellowship

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

Jennifer Huang, MD
Amelia Sheh, MD
2011–2012

Elsa and Louis Kelton Fellowship

Endowed by the Keltons in 1982 to support postdoctoral research and training.

Kirsta Schoeff, DO
2011–2012

Bert Levy Research Fellowship Fund

Established in 1995 by Mr. Bert Levy to enhance the educational opportunities of vision-science scholars and advance research in neuro-ophthalmology.

David May II Fellowship Fund

Established in 1992 by the family of Mr. David May II to support advanced study and research in ophthalmology and vision science.

Sara Akbari, MD
R. Duncan Johnson, MD
2011–2012

John and Theiline McCone Fellowship

Established in 1989 by the McCones to support and enhance education programs and fellowship training in macular disease.

Carolyn Pan, MD
Adriana Ramirez, MD
Vinod Voleti, MD
2011–2012

Abe Meyer Memorial Fellowship Fund

Established in 1969 by various donors to support clinical fellows at the Jules Stein Eye Institute.

Joseph Lin, MD
2011–2012

**Adelaide Stein Miller
Research Fellowship**

Established in 1977 by Mr. Charles Miller as a tribute to Dr. Jules Stein's sister.

Jason Peragallo, MD
2011–2012

**Harold and Pauline Price
Fellowship**

Established in 1986 by the Louis and Harold Price Foundation to support research and education in ophthalmology and vision care.

Vinod Voleti, MD
2011–2012

**Frederic G. Rappaport
Fellowship in Retina/Oncology**

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

Christopher Gee, MD
2011–2012

**Dr. Jack Rubin Memorial
Fellowship**

Established by the family of Dr. Jack Rubin to support post-doctoral fellows.

Kirsta Schoeff, DO
2011–2012

**Sanford and Erna Schulhofer
Fellowship Fund**

Established in 1986 by Mr. Sanford Schulhofer to support postdoctoral research and training in vision science.

David Isaacs, MD
2011–2012

**Lee and Mae Sherman
Fellowship Fund**

Established in 1981 by the Sherman family to support post-doctoral fellows.

Michael Kapamajian, MD
2011–2012

**Audrey and Jack Skirball
Ocular Inflammatory
Disease Fellowship**

Established in 2011 by The Skirball Foundation to support the training of fellows specializing in ocular inflammatory disease.

Jules Stein Research Fellowship

Established in 1982 by various donors to honor the memory of Charles Kenneth Feldman.

Alla Kukuyev, MD
2011–2012

**Endowments for Research,
Education, and Patient Care**

The Annenberg Foundation Fund

J. Richard Armstrong and Ardis Armstrong Fund

Elsie B. Ballantyne Regents Fund

Elsie B. Ballantyne UCLA Foundation Fund

Virginia Burns Oppenheimer Endowment Fund

Card Family Research Fund

Edward and Hannah Carter Fund

Anthony Eannelli Fund

Katherine L. Gardner Research Fund

Emma B. Gillespie Fund

Audrey Hayden-Gradle Trust

Marie and Jerry Hornstein Family Endowed Macular Degeneration Research Fund

Michael Huffington Ophthalmology Scholarship Fund

Stella F. Joseph Fund

JSEI Maintenance Fund

Herman King Fund

The Karl Kirchgessner Foundation Ophthalmology Endowment Fund

Sara Kolb Memorial Fund

John and Theiline McCone Macular Disease Research Fund

William, Richard, and Roger Meyer Fund

Chesley Jack Mills Trust

Patricia Pearl Morrison Research Fund

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

Emily G. Plumb Estate and Trust

Herb Ritts, Jr. Memorial Vision Fund

Arna Saphier Macular Degeneration Fund

Albert Sarnoff Endowed Cataract Fund

Richard B. Shapiro Vision Fund

The Skirball Foundation Fund

Arthur Spitzer Fund

Dr. William F. Stein and Esther Elizabeth Stein Memorial Fund

Raymond and Ruth Stotter Vision Science Research Fund

Bradley R. Straatsma Research Fund

Barbara P. Taylor Fund

UCLA Center for Eye Epidemiology

Paul J. Vicari Endowed Cataract Research Fund

Uncle Claude Fund

Anne H. West Estate Fund

Daniel B. Whipple Fund

Pat and Joe Yzurdiaga Endowed Cataract Fund



Community Outreach

Much of the Jules Stein Eye Institute's reputation springs from its innovative vision research, which translates into first-class patient care, including care of those in underserved communities. Members of the Institute's family—Jules Stein Eye Institute Affiliates volunteers, donors, staff, 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.

Jules Stein Eye Institute Volunteers Deliver Eye Care to 2,000 Attendees at CareNow/LA Free Clinic

During a four-day span in October 2011, more than a dozen Jules Stein Eye Institute ophthalmologists volunteered for shifts and worked alongside ophthalmic residents to provide free eye care to needy patients at the CareNow/LA Free Clinic. Out of the approximately 2,000 attendees who sought eye services, the staff of the UCLA Mobile Eye Clinic provided ophthalmic screening to roughly 500 patients at risk for diseases such as cataracts, diabetic retinopathy, macular

degeneration, and glaucoma. Also on hand was an optometrist to assist those who needed eyeglass-related services.

Institute ophthalmologists at the CareNow/LA Free Clinic saw many people whose vision has been blurry for years. For many of these patients, having gone so long without services placed them at risk for serious complications, including blindness. After dilating one young man's eyes, physicians found a choroidal melanoma, an intraocular tumor that offers the best prognosis if detected and treated early. Approximately 150 attendees at the Clinic were referred for further evaluation and/or treatment, and ten patients later received no-cost surgical services.

(To learn more about how Jules Stein Eye Institute ophthalmologists, technicians, and volunteers serve eye-care needs in the community with the UCLA Mobile Eye Clinic, please refer to the article on the Ahmanson Foundation grant to the Mobile Eye Clinic on page 16.)



Some of the approximately 2,000 attendees who sought eye services during the four-day long CareNow/LA Free Clinic.

Jules Stein Eye Institute Affiliates Programs— A Year in Review

The Jules Stein Eye Institute Affiliates is a broad-based volunteer network established in 1990 to “support the Institute’s three-tiered curriculum of research, education, and patient care.” The Affiliates sponsors several different vision education and patient care programs throughout Los Angeles, all of which are supported entirely by volunteer efforts and funded by membership dues.

Patient Services

PRESCHOOL VISION SCREENING

The Affiliates **Preschool Vision Screening** program marked its twelfth anniversary in 2012. This essential program, founded by **Leonard Apt, MD**, founding chief of the Division of Pediatric Ophthalmology and Strabismus and supported by **Mrs. Gloria Kaufman** and the Jules and Doris Stein UCLA Support Group, provides free vision screenings to the Los Angeles community. Under the supervision of five volunteer optometrists, Affiliates volunteers visited 25 local preschools during the 2011–2012 school year to screen 830 children, three-and-a-half to five years of age, for simple refractive errors and eye muscle problems.

SHARED VISION PROGRAM

The Affiliates **Shared Vision** program continues to collect and recycle donated eyeglasses for those in need. Glasses are given to clinic missions conducted by nonprofit groups in Africa, Central America, and other developing nations. Institute faculty and staff involved in international outreach activities also assist with distributing eyeglasses to new patients.



Dr. Louis Rosenberg, volunteer optometrist for the Affiliates' Preschool Vision Screening Program, greets a young student at a local screening.

MAGNIVISION PROGRAM

The Affiliates **MagniVision** program provides financial and volunteer support for the Jules Stein Eye Institute's **Vision Rehabilitation Center (VRC)**. Volunteers work on site at the VRC and train low-vision patients on the use of magnifiers and various vision aids. Financial assistance from the Affiliates enables the VRC to purchase new assistive and magnification devices for its lending library and supports its general needs.

Vision Education

Vision IN-School (VIS) is a vision education program offered free of charge to fourth-to-sixth-grade students throughout Los Angeles. The curriculum is fun and interactive, covering the anatomy of the eye, eye safety, and optical illusions. VIS volunteers visited seven different schools this past year, presenting the curriculum to close to 200 elementary students. The program emphasizes eye safety and injury prevention in hopes of inspiring children to protect their precious gift of sight.

Community Outreach

Affiliates volunteers participated in various campus events to raise awareness and funds for vision-related programs. Two successful sponsorship events were held to attract funding for the **Make Surgery Bearable (MSB)** program. This initiative provides plush Dr. Teddy bears to each pediatric patient undergoing eye surgery at the Jules Stein Eye Institute. The bears are tagged with the name of the donor or donor's designee and go a long way to make children feel secure during what could otherwise be a frightening time.



Dayna and Jordan Ballenberg recently collected more than 200 pairs of eyeglasses to support the JSEI Affiliates' Shared Vision eyeglass recycling program as part of their B'nai Mitzvah service project.

The Affiliates participated in the Foundation Fighting Blindness's fourth annual **2011 VisionWalk** to raise awareness and vital support to advance retinal eye disease research. Affiliates volunteers also participated in the summer **2011 eyeSmart eyeCheck** community health initiative, providing free vision screenings for low-income patients.

The 2011 FFB VisionWalk, held on campus at UCLA's Dickson Court, raised over \$110,000 for retinal eye disease research.



The Make Surgery Bearable program brings joy to pediatric patients (shown: Dr. Sherwin Isenberg).



Faculty

Anthony J. Aldave, MD

Associate Professor of Ophthalmology
Director of the Cornea Service
Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Discovering the Genetic Basis of the Corneal Dystrophies

The Cornea 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.

Public Service

Chair, International Advisory Committee of Tissue Banks International

Vice Chair, American Academy of Ophthalmology Knowledge Base Development Project, Cornea and External Disease Panel

Vice Chair, American Academy of Ophthalmology Ethics Committee

Associate Examiner, American Board of Ophthalmology

Member, Cornea Society Board of Directors

Reviewer for many scientific journals

Honors

2011 Gold Medal, Indian Intraocular Implant and Refractive Society

2012 W. Bruce Jackson Lectureship Award

Research Grants

National Eye Institute: Cloning the Gene for Posterior Polymorphous Corneal Dystrophy (received an ARRA Administrative Supplement), 9/30/05–3/29/12



Anthony C. Arnold, MD

Jerome and Joan Snyder Professor of
Clinical Ophthalmology

Chief of the Neuro-Ophthalmology Division

Director of the UCLA Optic Neuropathy Center

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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 advisor 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 study of differentiation of optic disc drusen from papilledema has recently been completed. A major thesis entitled, The Spectrum of Optic Disc Ischemia, has been submitted to the American Ophthalmological Society.

Public Service

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

Faculty, Lancaster Course in Ophthalmology, Colby College

Board Director, American Board of Ophthalmology

Chair, ACGME Residency Review Committee
for Ophthalmology

Chair, ACGME Milestones Committee for Ophthalmology

Reviewer for many scientific journals



Richard S. Baker, MD

Associate Professor of Ophthalmology

Provost and Dean of the College of Medicine,
Charles R. Drew University of Medicine and Science

Associate Dean of the David Geffen
School of Medicine at UCLA

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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 the quality of care, and eliminating health disparities in diverse and underserved populations.

Public Service

Board Member, California Medical Association

Board Member, Los Angeles County Medical Association

Board Member, Association of
Minority Health Professions Schools

Co-Founder and Board Member, Los Angeles Eye Institute

Chairman, Council for Scientific and Clinical Affairs,
California Medical Association

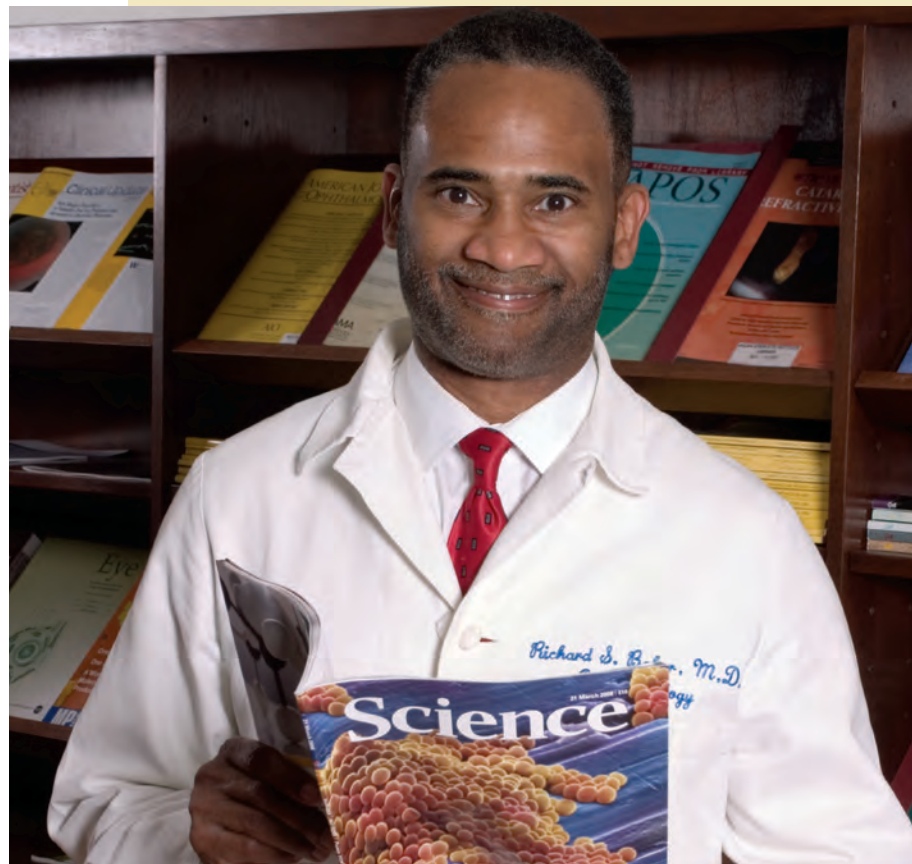
Member, South Los Angeles Health Care
Leadership Roundtable

Reviewer for multiple NIH and AHRQ
Special Emphasis Panels

Reviewer for many scientific journals

Research Grants

Office of Minority Health, Department of Health and Human
Services: Charles R. Drew University of Medicine and Science,
Graduate Medical Education Project for the Improvement of
Health Disparities in Medicine, 2/1/11–1/31/12



Suraj P. Bhat, PhD

Associate Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Member of the Molecular Biology Institute

RESEARCH SUMMARY

Molecular Biology of Vision

Dr. Bhat's laboratory studies the regulation of gene activity during differentiation and development of the vertebrate eye. This involves isolation and characterization of genes and gene products, identification of the regulatory elements and factors, and elucidation of their mechanisms employing both *in vivo* and *in vitro* paradigms with manipulated gene sequences.

Two areas of research currently under investigation are focused on gaining deeper insight into molecular mechanisms that developmentally predispose the eye to visual impairment through ocular lens pathologies such as cataracts, and through retinal diseases including age-related macular degeneration (AMD).

One area of attention is the study of the developmental and tissue-specific control of the heat shock promoter of the α B-crystallin gene and its involvement in cataractogenesis. Another is the elucidation of the physiological function of the α B-crystallin protein in the ocular lens, in the neuroretina and retinal pigment epithelium (RPE), and in the brain. Technically this work involves gene manipulations and the study of their consequences on the phenotype, both *in vitro* (cultured cells) as well as *in vivo* (transgenic animals).

Studies on the regulation of the expression of the small heat shock protein gene, α B-crystallin are focused on heat-shock transcription factor 4 (HSF4), which Dr. Bhat's laboratory has reported to be the predominant heat shock transcription factor of the developing ocular lens and whose post-natal expression correlates with the most prevalent form of early childhood lamellar cataracts. Dr. Bhat's laboratory has generated mouse models of this cataract, thus enabling first-time investigation of this childhood pathology.

Studies on the function of the α B-crystallin protein in the lens and the RPE (in particular its relation to AMD) are focused on elucidating its "noncrystallin" function, which is relevant both in the transparent and nontransparent physiology. These investigations in Dr. Bhat's



laboratory have led to the discovery of the secretion of α B-crystallin from the RPE in lipoprotein vesicles known as exosomes, and initiated studies on elucidation of intercellular communication (via exosomes) in the RPE, in health, and in disease.

Public Service

Member, Joint Working Group INDO-US Collaboration in Vision Research

Assessor, National Health and Medical Research Council, Australia

Editor, *Molecular Vision*

Editorial Board Member, *Developmental Neuroscience*

Editorial Board Member, *International Journal of Biochemistry and Molecular Biology*, e-Century Publishing Corporation, USA

Reviewer for many scientific journals

Dean Bok, PhD

Dolly Green Professor of Ophthalmology

Distinguished Professor of Neurobiology

Member of the Jules Stein Eye Institute

Member of the Brain Research Institute

RESEARCH SUMMARY

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 of 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

Scientific Advisory Board Member, E. Matilda Ziegler Foundation for the Blind, the Karl Kirchgessner Foundation, the Foundation Fighting Blindness, and the Macula Vision Research Foundation

External Advisory Board Member, Center of Biomedical Research Excellence, University of Oklahoma Health Sciences Center; and the Macular Telangiectasia Project, Lowy Medical Research Institute, LTD

Editorial Board Member, *International Review of Cytology*

Reviewer for many scientific journals

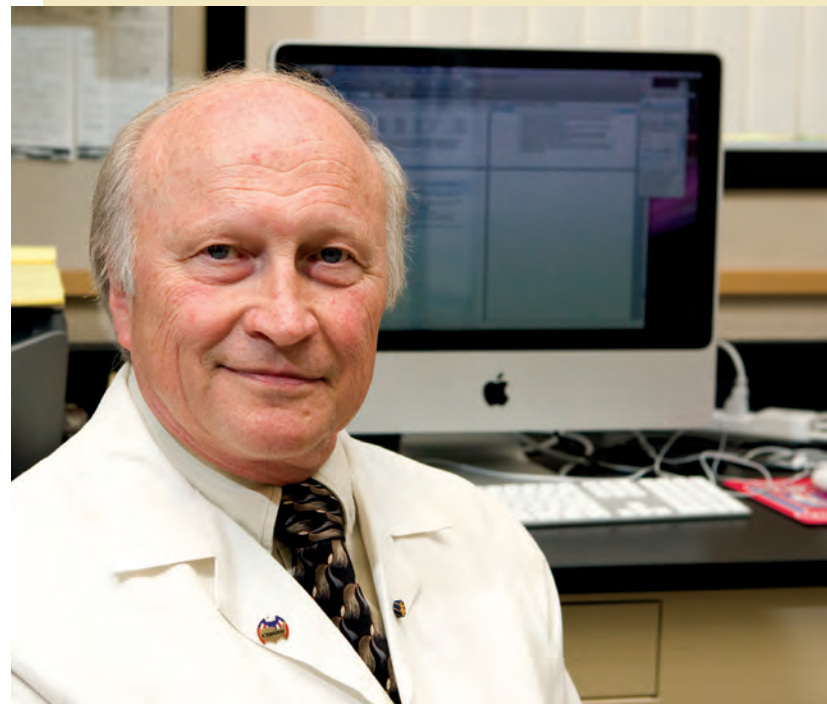
Research Grants

Macula Vision Research Foundation: Identification and Cellular Localization of Gene Products that Affect Photoreceptor Survival in Inherited Retinal Degeneration, 4/1/08–3/31/12

National Eye Institute: Development of Complement Modulating Therapeutics for AMD (Principal Investigator: Gregory S. Hageman, PhD, with other investigators), 8/1/06–7/31/11

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

California Institute for Regenerative Medicine: Development of a Stem Cell-Based Transplantation Strategy for Treating Age-Related Macular Degeneration (Principal Investigator: Gabriel Travis, MD, with other investigators), 11/1/09–10/31/12



Joseph Caprioli, MD

David May II Professor of Ophthalmology

Chief of the Glaucoma Division

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Causes and New Treatments for Glaucoma

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 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, Committee on Practice Improvement

Clinical Volunteer, Venice Family Clinic

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

Reviewer for many scientific journals

Honors

2011 Life Achievement Award, American Academy of Ophthalmology

Research Grants

National Eye Institute: The Neuroprotective Effect of HSP72 Induction in Experimental Glaucoma (Principal Investigator: Natik Piri, PhD), 9/30/09–8/31/14

Outcome Sciences, Inc: Comparing the Effectiveness of Treatment Strategies for Primary Open-Angle Glaucoma, 4/29/11–4/28/13

Massachusetts Eye and Ear Infirmary: A Novel Computer Algorithm to Predict Visual Field Function Based on Structural Imaging in Glaucoma, 7/15/10–7/15/11

Richard Casey, MD

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

RESEARCH SUMMARY

Cornea External Disease

Dr. Casey's research is focused on understanding the causes of corneal disease and developing or improving treatments for patients with these disorders. He is collaborating with the Glaucoma and Ophthalmic Pathology Divisions on clinical research projects to understand the nature of comorbid conditions, such as glaucoma and dry eye disease. For dry eye disease, Dr. Casey is engaged in research to evaluate the ocular surface of patients undergoing corneal transplantation surgery to establish previously undescribed clinical-pathologic correlation with tear insufficiency and corneal epithelial abnormalities. The goal of these investigations is to improve the success of corneal transplantation in high-risk patients with the comorbid conditions of glaucoma and separately tear insufficiency.

Public Health Services/Health Access

Dr. Casey has elected to dedicate a significant portion of his professional career to improving access to health care in specific underserved communities of Los Angeles. He has focused on assessing unmet needs in vision health and developing innovative strategies to meet these deficits. He has established the Los Angeles Ophthalmology Medical Group, a comprehensive eye care service entity, which is currently engaged in a partnership to provide eye care services to facilities of the Los Angeles County, Department of Health Services in South Los Angeles.



Public Service

Lead Physician, Martin Luther King, Jr. Multi-Service Ambulatory Care Center

President, Los Angeles Ophthalmology Medical Group, Inc.

Anne L. Coleman, MD, PhD

Fran 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

Vice Chair of Academic Affairs,
Department of Ophthalmology

RESEARCH SUMMARY

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, including the study of lifestyle limitations imposed on patients with these kinds of eye diseases. Clinical projects include studies that analyze the genetic markers in the trabecular meshwork of patients undergoing glaucoma surgery, the prevention of visual impairment and blindness in school-age children, comparative effectiveness research, and glaucomatous visual field and optic nerve progression.



Public Service

Member, Awards Committee, Association for Research in Vision and Ophthalmology

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

Secretary for Quality Care, American Academy of Ophthalmology

Director, H. Dunbar Hoskins Jr., MD Center for Quality of Eye Care

Consultant, Ophthalmic Devices Panel, Food and Drug Administration

Chair, Program Committee, American Glaucoma Society

Member, Board of Trustees, Helen Keller International

Executive Editor, *American Journal of Ophthalmology*

Director, UCLA Center for Community Ophthalmology and Vision Health

Honors

2011 Secretariat Award, American Academy of Ophthalmology

Research Grants

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease: Prevention of Visual Impairment and Blindness In School-Age Children (Co-Principal Investigator), 1/1/10–12/31/12

Outcome Sciences, Inc: ARRA: Evidence Development for Topics Identified as National Priorities for Comparative Effectiveness Research, 7/19/10–7/18/14

Joseph L. Demer, MD, PhD

Leonard Apt Professor of Pediatric Ophthalmology

Professor of Neurology

Chief of the Pediatric Ophthalmology and Strabismus Division

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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 and nerves 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.

Dr. Demer's research also employs novel micro- and nano-technological techniques to study the biomechanical properties of the extraocular muscles and associated tissues, as well as optical and x-ray imaging of the effects of physiological forces in the tissues.

Public Service

Editorial Board Member, *Investigative Ophthalmology and Visual Science*

Associate Editor, *Strabismus*

Grant Reviewer, United States Public Health Service

Scientific Advisory Committee Member, Knights Templar Eye Foundation and Eye Sight Foundation of Alabama

Council Member, International Strabismological Association

National Eye Institute Board of Scientific Counselors, *ad hoc* member

Reviewer for many scientific journals

Research Grants

National Eye Institute: Biomechanical Analysis in Strabismus Surgery, 5/1/06–4/30/12

National Eye Institute/Children's Hospital Boston: Genetic and Anatomic Basis of the Fibrosis Syndrome, 12/1/08–11/30/11

Research to Prevent Blindness: Walt and Lilly Disney Award for Amblyopia Research, 7/1/04–12/31/12



Sophie X. Deng, MD, PhD

Assistant Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Member of the UCLA Jonsson
Comprehensive Cancer Center

RESEARCH SUMMARY

Limbal Stem Cell Deficiency

Dr. Deng's research is focused on improving the current diagnosis and treatments for patients with limbal stem cell deficiency. One of the ongoing clinical studies that Dr. Deng conducts shows correlated cellular changes in the cornea and limbus, using laser scanning *in vivo* confocal microscopy in patients with limbal stem cell deficiency. Damages to the limbal stem cells could be detected using this new technology and correlated with clinical presentation. This new technique could allow for a better understanding of the pathophysiology of limbal stem cell deficiency, a timely diagnosis and monitoring of disease progression.

Dr. Deng's laboratory studies the microenvironment/ niche of the limbal stem cells to elucidate those factors that govern the fate of limbal stem cells. The role of the Wnt signal transduction pathway in human limbal stem/progenitor cells is under investigation. Recent study in her laboratory reveals that activation of the Wnt/ β -catenin promotes self-renewal of limbal stem cells. Use of small molecules to modulate Wnt signaling is being investigated to increase the efficiency of *ex vivo* expansion of limbal stem cells for transplantation. The second ongoing project in Dr. Deng's laboratory is to achieve patient-specific therapy by regenerating autologous limbal stem cells in a xenobiotic-free culturing system for transplantation.



Public Service

Member, American Academy of Ophthalmology
Ophthalmic Technology Assessment Committee,
Cornea and Anterior Segment Disorders Panel

Research Grants

California Institute for Regenerative Medicine: Regeneration
of Functional Human Corneal Epithelial Progenitor Cells,
3/1/11–2/28/13

Gordon L. Fain, PhD

Distinguished Professor of the Departments of Integrative Biology/Physiology and of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

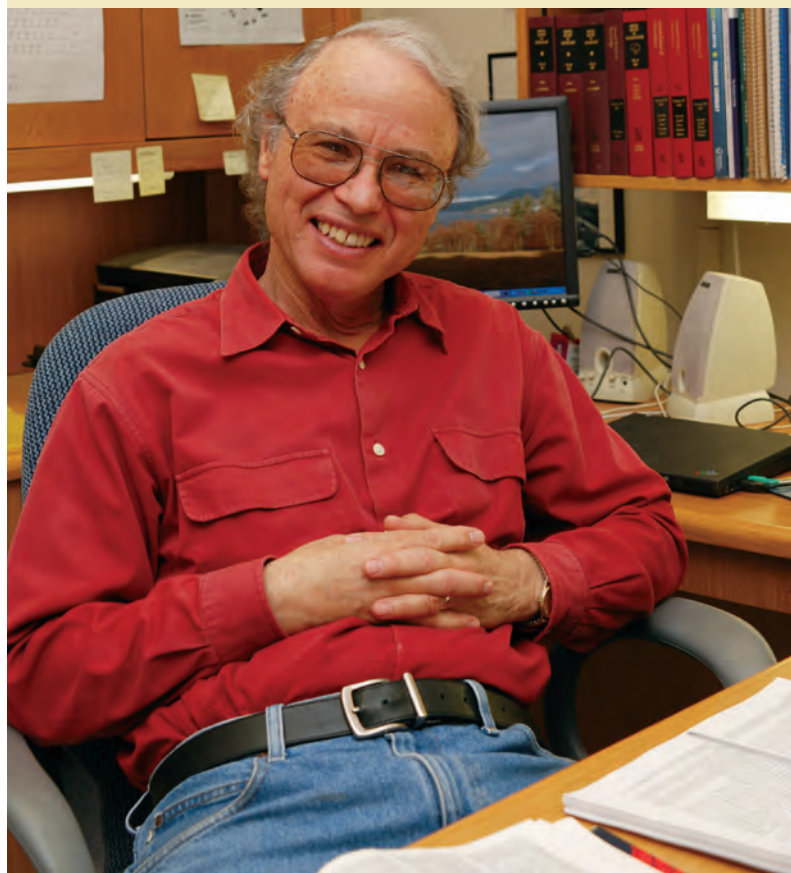
Physiology of Photoreceptors in the Vertebrate Eye

Dr. Fain's primary research interest is in the physiology of photoreceptors in the vertebrate eye. A vertebrate photoreceptor uses a photopigment called rhodopsin and a G-protein cascade to produce the electrical response that signals a change in light intensity. Powerful new techniques have made it possible to understand the working of this cascade in extraordinary detail. Practically all the protein molecules involved in the cascade in a photoreceptor—from the pigment molecule to the G-protein and channels, but also including a large number of control proteins—are expressed only in the photoreceptors and nowhere else in the body. This has enabled scientists to use genetic techniques to create mice in which these proteins have been knocked out, over- or under-expressed, or replaced with proteins of modified structure.

Dr. Fain's laboratory uses electrical recording to study the effects of such genetic alterations on the light responses of mouse rods, in order to understand the role of these proteins in the visual cascade. His research team is especially interested in modulatory enzymes and their function in light and dark adaptation. Dr. Fain also has a long-standing interest in mechanisms of photoreceptor degeneration in genetically inherited disease. His laboratory is presently the only laboratory measuring changes in calcium from mouse rods with fluorescent dyes. Findings have implicated both increases and decreases in calcium concentration as contributing factors in the triggering of apoptosis. Such information may provide insight into the mechanisms of retinal degeneration.

Research Grants

National Eye Institute: Physiology of Photoreceptors, 8/1/08–7/31/12



Debora B. Farber, PhD, DPhhc

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

RESEARCH SUMMARY

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 methods, they rescued mice photoreceptors by delivering the normal gene to these cells); *RP1* (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 retinochisis (*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 mutations 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 are affected with permanent visual impairment; and the study of microvesicles released by mouse embryonic stem cells that 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*; *Journal of Ocular Biology, Diseases, and Informatics*; and *Stem Cells and Cloning Advances and Applications*

Reviewer for many scientific journals

Research Grants

National Eye Institute: Molecular Mechanisms in Retinal Degeneration, 7/1/06–11/30/12

Hope for Vision: Characterization of the Interaction Between ZBED4, a Novel Retinal Protein and SAFB1, 11/1/09–10/31/11

Foundation Fighting Blindness: Clinical and Genetic Characterization of Stargardt and Stargardt-Like Macular Dystrophies: The Potential Role of AMD Risk Factors on the Severity and Progression of These Macular Dystrophies (P.I. Michael Gorin and other investigators), 6/1/11–6/30/13

JoAnn A. Giaconi, MD

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

RESEARCH SUMMARY

Glaucoma

Dr. Giaconi's research focuses on the treatment of glaucoma and the effects of glaucoma surgery on the cornea and vision. She is currently working on a project examining the overtreatment or undertreatment of glaucoma in the veteran population. She is also enrolling patients in two clinical studies at the Jules Stein Eye Institute. One study is examining the effect of various glaucoma surgeries on the corneal endothelium, which is the layer of cells that keeps the cornea clear, and the other is investigating the postoperative eye pressure course following Ahmed valve implant surgery.

Public Service

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

Secretary, Women in Ophthalmology

President, Los Angeles Society of Ophthalmology

Member, American Academy of Ophthalmology Liaisons Committee

Volunteer, Eye Care America

Reviewer for many scientific journals

Research Grants

American Glaucoma Society: Evaluation of Evidence-Based Glaucoma Practices at the VA, 9/1/10–8/31/12



Ben J. Glasgow, MD

Edith and Lew Wasserman Professor of Ophthalmology

Professor of Pathology and Laboratory Medicine

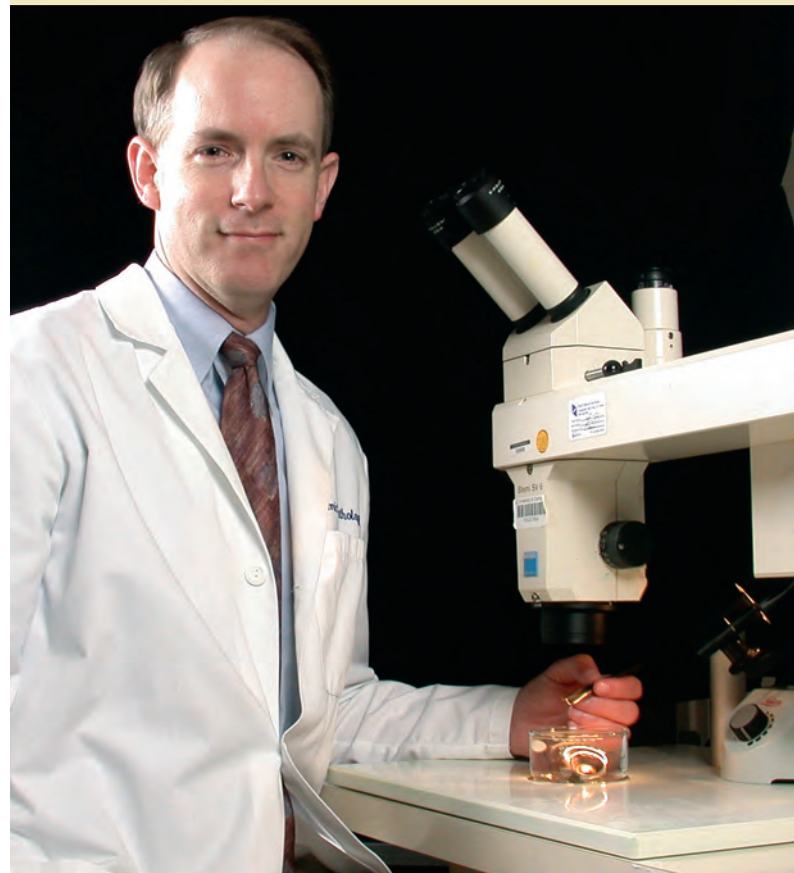
Chief of the Ophthalmic Pathology Division

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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.



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

RESEARCH SUMMARY

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 being recorded in a shared database as a way to understand the natural history and response to treatment of this multifaceted disease, which is a cause of significant visual loss and discomfort. Multicenter studies are underway. Dr. Goldberg is also investigating the underlying causes of thyroid-related orbitopathy. 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 and high-resolution dynamic ultrasonography 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 hyaluronic acid gels, are being developed and studied. In collaboration with the Department of Engineering, custom materials for orbital reconstruction are investigated.

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 of Professional Education, California Academy of Ophthalmology

Fellow and Chair, International Committee, American Society of Ophthalmic Plastic and Reconstructive Surgeons

Fellowship Program Director, American Academy of Cosmetic Surgery and American Society of Ophthalmic Plastic and Reconstructive Surgery

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

Section Editor, American Academy of Ophthalmology, ONE Network



Lynn K. Gordon, MD, PhD

Vernon O. Underwood Family Chair in Ophthalmology

Associate Dean for Academic Diversity,
David Geffen School of Medicine at UCLA

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

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Retinal Cell Biology and Inflammatory Disease

Dr. Gordon's laboratory is involved in two primary 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. The laboratory, in collaboration with others at UCLA, has recently developed a designer antibody fragment that has demonstrated efficacy in *in vitro* studies in the PVR model and in other animal models *in vivo*. Successful completion of this work may lead to the development of new therapy or prevention of PVR.

The second 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. 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. By understanding the role of PD-1 in the retina we may understand how to improve the visual outcome for patients with optic nerve diseases.



Public Service

Member, Dermatologic and Ophthalmic Drugs
Advisory Committee, Federal Drug Administration

Member, Scientific Review Committee, Fight for Sight
Committee Member, American Academy of Ophthalmology,
Basic and Clinical Science Course Section 5, Neuroscience

Member, Association for Research in Vision and
Ophthalmology's Diversity Issues Committee

Chair, Neuro-Ophthalmology Research Committee,
Member of the Board, North American
Neuro-Ophthalmology Society

Editorial Board Member, *Investigative Ophthalmology and
Visual Science*, *Journal of Neuro-Ophthalmology*, and
Ocular Immunology and Inflammation

President, Women in Ophthalmology

Honors

Named as the Vernon O. Underwood Family
Chair in Ophthalmology

Research Grants

National Eye Institute, Novel Therapies to Prevent Blindness
Caused by Proliferative Vitreoretinopathy, 4/1/10–3/31/14

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

RESEARCH SUMMARY

Hereditary Eye Disorders and Molecular Genetics of Age-Related Maculopathy

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

Dr. Gorin investigates the molecular genetics of complex disorders such as cystoid macular edema, age-related cataracts, and glaucoma, as well as monogenic disorders such as hereditary retinal degenerations, glaucoma, cataracts, and ocular syndromes. He is pursuing studies to identify genetic variations that contribute to the severity, complications, and therapeutic responses of these conditions. Dr. Gorin and his clinical team, including Ms. Ariadna Martinez, a certified genetic counselor who specializes in hereditary eye disorders, works with the clinical and research human genetics group at UCLA to explore use of new technologies, including next-generation sequencing for clinical utility in ophthalmic genetics.

Research also focuses on the neurobiology of ocular pain and photophobia (sensitivity to light) to understand the basic biology and neural pathways that contribute to photophobia so that new therapeutic strategies can be developed. Based upon preliminary work, opportunities have emerged to investigate the pathogenesis of light sensitivity for individuals who suffer from migraines and/or mild traumatic brain injury.

Clinical research efforts are directed towards developing 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. Applied research interests include bioinformatics in clinical ophthalmic practice and public health issues pertaining to ocular disease.



Public Service

Medical Director, Jules Stein Eye Institute's Electronic Medical Record System

Member, Medical Education Committee,
David Geffen School of Medicine at UCLA

Editorial Board Member, *Current Eye Research* and
Experimental Eye Research

Advisory Board Member,
American Health Assistance Foundation

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,
Center for Inherited Disease Research

Scientific Advisory Committee Member, the American
Health Assistance Foundation and the Knights Templar
Eye Research Foundation

Founding Member of the von Hippel-Lindau Center
of Excellence at UCLA Medical Center

Listed by Castle Connolly Medical, Ltd. as one of America's
top doctors since 2006

Reviewer for many scientific journals

Research Grants

National Eye Institute: Genetics of Age-Related Maculopathy
(received an ARRA Administrative Supplement),
4/1/07–3/31/13

National Eye Institute: Jules Stein Eye Institute Core Grant
for Vision Research, Module Director, 7/1/10–6/30/13

Neuro Kinetics, Inc.: Rapid, Noninvasive, Regional Functional
Imaging of Diabetic Retina, 9/1/10–11/30/11

Foundation Fighting Blindness: Clinical and Genetic
Characterization of Stargardt and Stargardt-like
Macular Dystrophies: The Potential Role of AMD
Risk Factors on the Severity and Progression of
these Macular Dystrophies, Principal Investigator,
6/1/11–6/30/13

David Rex Hamilton, MD, FACS

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

RESEARCH SUMMARY

Corneal Biomechanics and Tomography

Dr. Hamilton's research interests are in the areas of corneal biomechanics and tomography (3D imaging of the cornea), 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 "premium" IOLs). Dr. Hamilton is actively involved in training residents and fellows in the surgical treatment of refractive errors and cataracts.

Public Service

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

Member, Refractive Leadership Council, Alcon Laboratories

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

Member, American Academy of Ophthalmology, ONE Network, Refractive Surgery

Research Grants

Departmental Unrestricted Research Grant, 2011



Gary N. Holland, MD

Jack H. Skirball Professor of Ocular
Inflammatory Diseases

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

RESEARCH SUMMARY

Uveitis and Cornea-External Ocular Diseases

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. Dr. Holland is conducting various epidemiological and laboratory investigations in collaboration with investigators at the National Institutes of Health, the U.S. Centers for Disease Control and Prevention, and other universities in the United States, Brazil, and Europe to understand the sources of infection, course of disease, response to treatment, and disease outcomes. Patient genetic and parasite-related factors that influence the risk of ocular involvement are being studied.

Since 1981, Dr. Holland has been involved in the study of HIV-related eye disease. He is participating in a large, NIH-supported multicenter study to investigate how the ocular manifestations of HIV disease have changed since the introduction of potent antiretroviral drugs. In particular, he is using data generated in the study to investigate HIV-related "neuroretinal disorder" (NRD), a degenerative condition of the retina that appears to be the cause of subtle changes in vision known to occur in HIV-infected individuals, even among those whose immune function has improved because of antiretroviral drugs. In addition, he is investigating abnormalities of retinal blood vessels and abnormal blood flow as possible contributing factors for development of NRD. Studies performed by Dr. Holland have shown that these vascular changes are markers of non-ocular, sometimes life-threatening diseases among people with AIDS.

In conjunction with members of the Department of Pediatrics–Rheumatology Division, Dr. Holland has established a program to provide care for children with uveitis. He is investigating risk factors for development of vision-threatening complications among children with



juvenile idiopathic arthritis and uveitis, and is studying the most effective techniques for evaluation and treatment of uveitis in children.

Dr. Holland is also investigating birdshot chorioretinopathy, a chronic autoimmune disease of the eye, in conjunction with Drs. Ralph D. Levinson, Steven Nusinowitz, and researchers in Paris, France.

Public Service

Associate Editor, *American Journal of Ophthalmology*

Executive Committee Member, American Uveitis Society

Steering Committee Member, Studies of the
Ocular Complications of AIDS

International Council Member, International
Ocular Inflammation Society

Research Grants

Advanced Cell Technology, Academic Research Organization
for Research with Retinal Cells Derived from Stem Cells for
Age-Related Macular Degeneration, 5/31/11–5/30/13

Advanced Cell Technology, Academic Research Organization
for Research with Retinal Cells Derived from Stem Cells for
Stargardt Macular Dystrophy, 4/25/11–4/24/13

National Eye Institute, Multicenter Uveitis Steroid Treatment
Trial (MUST), 12/1/10–11/30/17

National Eye Institute, UCLA/AUPO Introduction to
Clinical Research Course, 3/1/11–4/30/12

amfAR AIDS Research, International Conference on
AIDS-related CMV Retinitis, 8/1/10–7/31/11

Elizabeth Taylor AIDS Foundation, International Conference
on AIDS-related CMV Retinitis, 8/1/10–7/31/11

Joseph Horwitz, PhD

Oppenheimer Brothers Professor of Ophthalmology

Distinguished Professor of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

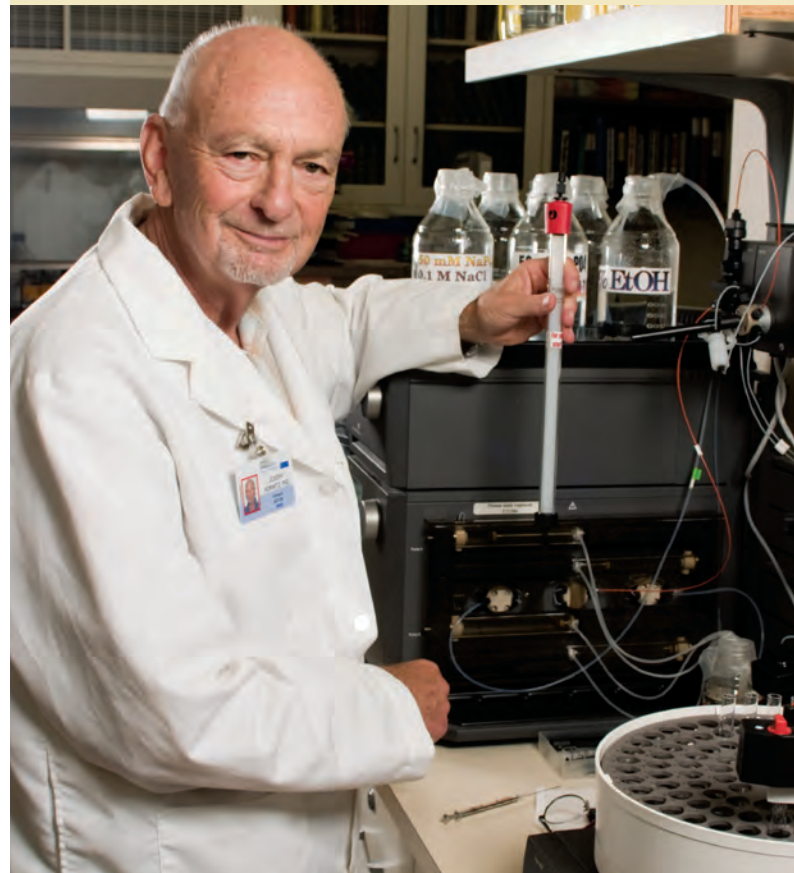
Biochemistry and Biophysics of the Crystalline Lens

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 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



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

RESEARCH SUMMARY

Molecular Basis of Phototransduction in the Vertebrate Retina

Dr. Hubbell's research is focused on understanding the complex relationship between molecular structure, plasticity, and conformational changes that control protein function in the visual system. Of particular interest are proteins that behave as "molecular switches," that is proteins whose structures are switched to an active state by a physical or chemical signal. Examples include rhodopsin, the membrane-bound photoreceptor protein of the retina, and transducin and arrestin, proteins that associate with rhodopsin during function. The overall goal is to determine the structure of these proteins in their native environment, monitor the changes in structure that accompany the transition to an active state, and to understand the role of protein flexibility in function.

To investigate these and other proteins, Dr. Hubbell's laboratory has developed the technique of site-directed spin labeling, 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. While determination of static protein structure is important to understanding function, current research has highlighted a crucial role for protein flexibility (dynamics), which has not been previously appreciated. To explore molecular flexibility in proteins of the visual system, Dr. Hubbell's group is developing novel methods using time-domain and high-pressure EPR.



Public Service

Member, National Academy of Sciences
Member, American Academy of Arts and Sciences

Honors

Elected as a Fellow of the International Society of Magnetic Resonance in Medicine

Research Grants

National Eye Institute: Molecular Basis of Membrane Excitation, 5/1/05–4/30/13
National Eye Institute: Core Grant for Vision Research at the Jules Stein Eye Institute (received an ARRA Administrative Supplement), 3/1/10–2/28/15

Jean-Pierre Hubschman, MD

Assistant Professor of Ophthalmology
Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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 publications include research papers as well as a book chapter about the feasibility of robotic surgery in ophthalmology. Currently, he is also investigating the use of the terahertz laser for the evaluation of ocular tissue hydration.



Public Service

Reviewer for many scientific journals

Research Grants

Advanced Cell Technology: Research with Retinal Cells Derived from Stem Cells for Stargardt Macular Dystrophy (Principal Investigator: Steven D. Schwartz, MD), 3/23/11–3/22/13

Advanced Cell Technology: Research with Retinal Cells Derived from Stem Cells for Age-Related Macular Degeneration (Principal Investigator: Steven D. Schwartz, MD), 4/5/11–4/5/13

National Institutes of Health: A Multicenter, Randomized Trial of Lutein, Zeaxanthin, and Omega-3 Long-Chain Polyunsaturated Fatty Acids in Age-Related Macular Degeneration (Principal Investigator: Steven D. Schwartz, MD), 1/1/06–12/31/12

Genentech, Inc.: A Phase III, Multicenter, Randomized, Double-Masked Study Comparing the Efficacy and Safety of 0.5 mg and 2.0 mg of Ranibizumab in Patients with Subfoveal Neovascular Age-Related Macular Degeneration, 10/13/09–3/1/13

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

RESEARCH SUMMARY

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 the development of the cornea 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 treat bacterial conjunctivitis successfully 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. A new study investigating fungal infections of the eye, which blind approximately 10,000 children annually, has been completed at three sites in India.



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 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 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
President, Costenbader Pediatric Ophthalmology Society
Vice President Elect, American Association for
Pediatric Ophthalmology and Strabismus

Allan E. Kreiger, MD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Chief of the Retina Division

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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



Simon K. Law, MD, PharmD

Associate Clinical Professor of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Optic Disc Evaluation

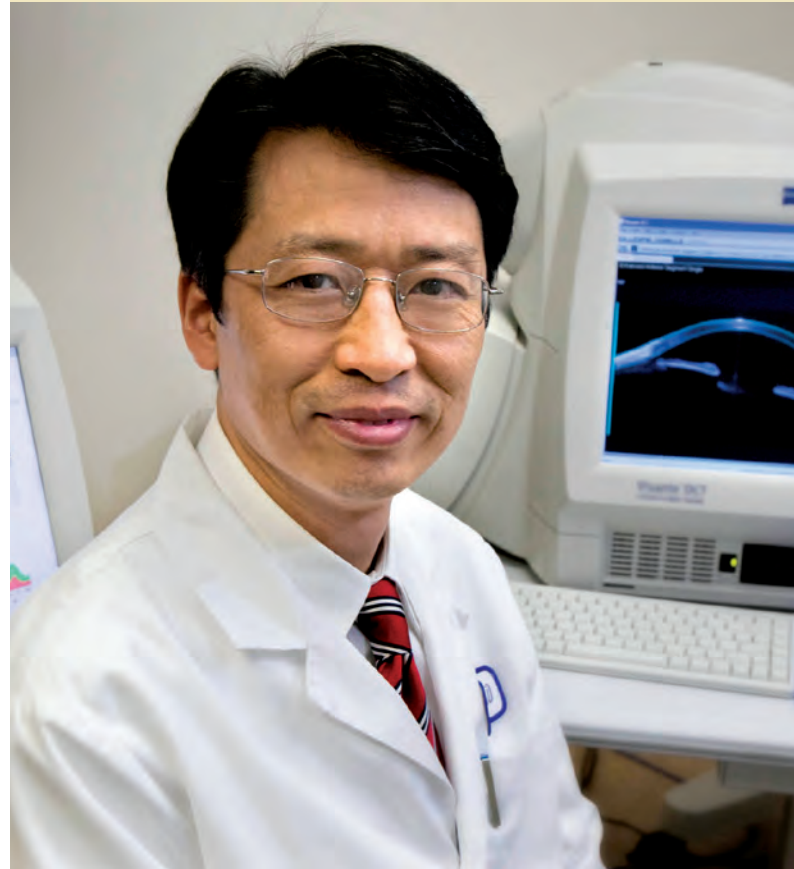
Dr. Law's principal research interest focuses on the structural appearance of the optic disc in different ocular diseases, including patients with high myopia. Assessment of optic disc size is an important component of the diagnostic evaluation for glaucoma. Patients with high myopia are at greater risk of developing glaucoma, and they also have an atypical optic disc that makes diagnosis difficult. The purpose of Dr. Law's research is to characterize the appearance of the optic disc in eyes with high myopia and to identify the related risk factors for development of glaucoma.

Glaucoma Tube Shunt Procedure

To prevent intraocular pressure spikes after an Ahmed valve or tube shunt procedure for glaucoma, Dr. Law is evaluating the effect of using antiglaucoma medications at different times following surgery. Patients are randomized to receive antiglaucoma medications either at an early phase or at the standard time following the surgical procedure.

Acupuncture and Glaucoma

Dr. Law is conducting a prospective study to evaluate the effect of acupuncture in glaucoma. Acupuncture is a popular alternative medicine based on traditional Eastern medical theory. Its effect on glaucoma has not been objectively and scientifically studied.



Public Service

Expert Reviewer, Medical Board of California

Pharmacy Editor, *eMedicine* online Ophthalmology Journal

Member of the Committee on Aging,
American Academy of Ophthalmology

Subcommittee Member, American Academy of
Ophthalmology Basic and Clinical Science Course

Reviewer for many scientific journals

Honors

2011 Achievement Award, American Academy
of Ophthalmology

Ralph D. Levinson, MD

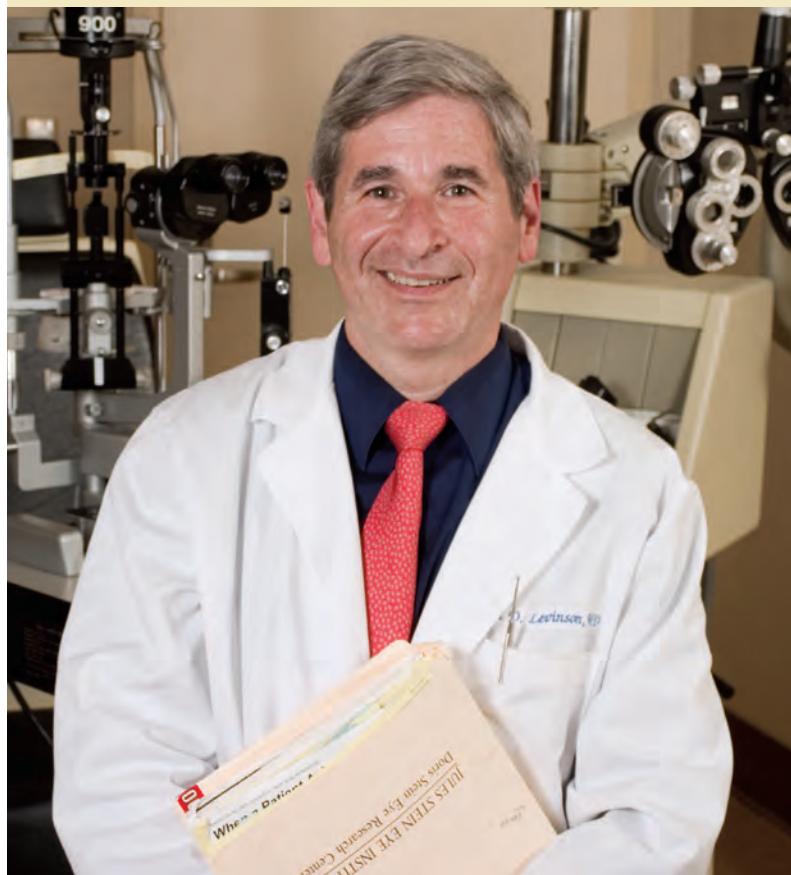
Health Sciences Clinical Professor of Ophthalmology
Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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 basic mechanisms and 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

Member, ONE Uveitis Committee, American Academy of Ophthalmology

Member, Uveitis Panel, Academy of Ophthalmology Practicing Ophthalmologists Curriculum

Reviewer for many scientific journals

Research Grants

MacDonald Family Foundation: Immunologic and Clinical Studies of Eye Disease at the Jules Stein Eye Institute, 12/1/08–12/31/11

Colin A. McCannel, MD

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

RESEARCH SUMMARY

Vitreoretinal Surgery

Dr. McCannel has a longstanding interest in the management of vitreoretinal conditions, particularly complex retinal detachments, complications of diabetic retinopathy, macular holes and epimacular membranes, and age-related macular degeneration. His clinical research efforts are directed at the improvement of vitreoretinal surgical techniques and outcomes, including the prevention of endophthalmitis following intravitreal injections.

Dr. McCannel devotes time to educational research as well. Currently, he is investigating the utility of virtual reality surgery simulation in teaching ophthalmic surgery. He has several ongoing protocols that assess ophthalmic surgical simulation in surgical teaching.

Public Service

Moderator, "Retina Talk" online discussion forum,
American Association of Retina Specialists

Editorial Committee Member, Retina and Vitreous
Basic and Clinical Science Course, Section 12,
American Academy of Ophthalmology

Reviewer of the Retina/Vitreous Section of the
Practicing Ophthalmologists Curriculum for the
Maintenance of Certification Exam Study Kit

Medical Information Technology Committee Member,
American Academy of Ophthalmology

Reviewer for many scientific journals



Tara A. McCannel, MD, PhD

Assistant Professor of Ophthalmology

Director of the Ophthalmic Oncology Center

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Metastatic Ocular Melanoma

Dr. McCannel's primary research interest is metastatic ocular melanoma. Under her direction, the Ophthalmic Oncology Laboratory is studying molecular markers in ocular melanoma to provide prognostic information to patients and advance understanding of metastatic disease. Discovery of candidate genes from tissue of patients undergoing surgical treatment for ocular melanoma is being explored. This information will be important to establish a better understanding of the biology of metastatic ocular melanoma and help develop 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. McCannel is both 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 benefit maximally from her wide range of surgical prognostic and therapeutic expertise.

Vitrectomy with silicone oil placement is a novel therapeutic strategy, which was discovered at UCLA to reduce radiation exposure to the healthy structures of the eye during plaque surgery for melanoma treatment. Dr. McCannel offers this potentially sight-saving technique to patients who need radiation treatment.

Health Psychology and Ocular Melanoma

Central to incorporating an integrative approach to health care, the concerns and wishes of the patient as a whole are important aspects of cancer management. In collaboration with the UCLA Department of Health Psychology and the Jonsson Comprehensive Cancer Center, Dr. McCannel works closely with health psychologists who are interested in providing clinical care while researching factors, which predict psychological adjustment to cancer.



Public Service

Reviewer for many scientific journals

Research Grants

American Association of Cancer Research,
Career Development Award for Translational
Cancer Research: High Resolution Cytogenetic Study of
Archival Metastatic Choroidal Melanoma, 7/1/08–12/30/11

Kevin M. Miller, MD

Kolokotronis Professor of Clinical Ophthalmology
Chief of the Comprehensive Ophthalmology Division
Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Cataract and Refractive Surgery

Dr. Miller's research interests are in cataract and refractive surgery, intraocular lenses, artificial iris implants, ophthalmic optics, surgical devices, and surgical outcomes.

Dr. Miller's clinical practice focuses primarily on refractive cataract surgery and the surgical correction of presbyopia and astigmatism with premium technology intraocular lenses. He developed an astigmatism management service for treating corneal astigmatism at the time of cataract surgery that optimizes postoperative uncorrected visual acuity. He developed a nomogram for peripheral corneal relaxing incisions and participated in the clinical trial of the world's most popular toric intraocular lens. He described a nonparametric multivariate technique for comparing astigmatism outcomes between treatment groups. In addition to refractive cataract surgery, he also performs DSEK, LASIK, and other cornea-based laser refractive procedures.

Dr. Miller runs several clinical trials of artificial iris implants to treat congenital and acquired aniridia. The multicenter Ophtec 311 clinical trial is investigating a colored iris reconstruction lens. Dr. Miller has an individual device exemption from the FDA to study Morcher GmbH artificial iris implants. He is the only surgeon in the United States who is permitted by the FDA to implant Morcher devices at this time. He is also studying a custom artificial iris implant from Dr. Schmidt Intraocularlinsen, a subsidiary of HumanOptics AG. All of these devices are showing promising results in patients who suffer from congenital and acquired iris defects.

Public Service

Course Director, Southern California Cataract Surgery Course for Residents and Fellows

American Academy of Ophthalmology, Skills Transfer Course Advisory Committee

American Academy of Ophthalmology/Physician Consortium for Performance Improvement/National Committee for Quality Assurance Eye Care Work Group, Surgical Management Subgroup Committee

American Academy of Ophthalmology, Annual Meeting Program Committee, Cataract Subcommittee

Column Editor, American Society of Cataract and Refractive Surgery, *EyeWorld* Magazine

American Society of Cataract and Refractive Surgery, Retina Clinical Committee

World Congress of Ophthalmology 2012 Biannual Meeting Program Planning Committee, Cataract Section

International Editorial Board, *Oftalmologia Em Foco*

Faculty of 1000, Post-Publication Peer Review, Lens Disorders Section

American Society of Cataract and Refractive Surgery Skills Transfer Subcommittee

Reviewer for many scientific journals

Research Grants

Physical Optics Corp./NIH: Clinical Testing of the Tracking Adaptive-Optic Scanning Laser Ophthalmoscope, 1/15/11–9/29/11



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

RESEARCH SUMMARY

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 has studied 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 was explored as well as the immune response to staphylococcal endophthalmitis. Other research interests included corneal dystrophies, peripheral corneal ulcers, bullous diseases of the skin and mucous membranes, collagen shields, and contact lens-related corneal ulcers.



Public Service

Medical Advisory Board 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

Honors

2011 Senior Achievement Award,
American Academy of Ophthalmology
2011 Secretariat Award,
American Academy of Ophthalmology

Research Grants

Research to Prevent Blindness: Departmental Unrestricted Grant Award (annual), 2009–2012
National Eye Institute: UCLA/AUPO Introduction to Clinical Research Course, 2010–2012

Kouros Nouri-Mahdavi, MD, MSc

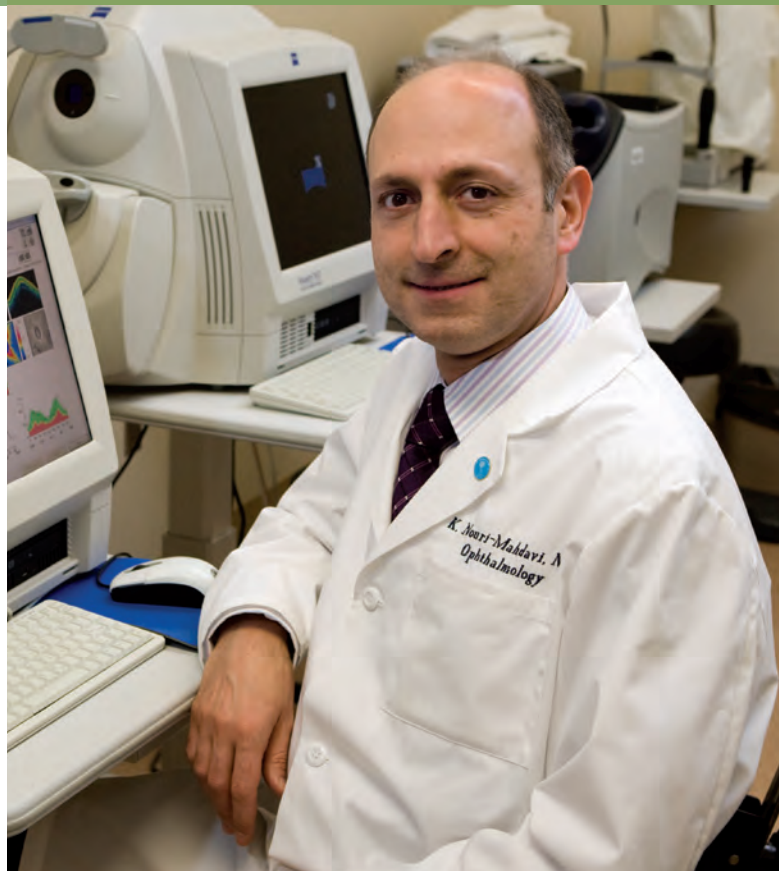
Assistant Professor of Ophthalmology
Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Role of Structural and Functional Measurements for Detection of Glaucoma and Its Progression

Dr. Nouri-Mahdavi's research is focused on improving methods to detect early glaucoma and glaucoma progression with spectral-domain optical coherence tomography (SD-OCT) and various perimetry techniques. More specifically, he is interested in detection of glaucoma progression in patients with advanced disease. SD-OCT has revolutionized glaucoma imaging. Dr. Nouri-Mahdavi is currently exploring the role of macular imaging for detection of glaucoma progression. He is also interested in exploring the structure-function relationships in eyes with angle-closure glaucoma versus eyes with primary open-angle glaucoma. Three cross-sectional and longitudinal SD-OCT imaging studies enrolling open-angle and angle-closure glaucoma patients along with normal control subjects are ongoing in the Glaucoma Division.

Another area of research and clinical interest for Dr. Nouri-Mahdavi is surgical outcomes in glaucoma and newer surgical techniques. The effect of cataract surgery on intraocular pressure control in advanced glaucoma patients is of significant interest to general ophthalmologists and glaucoma specialists alike and will soon be the focus of an upcoming investigation by the research team in the Glaucoma Division.



Public Service

Member, Research Committee, American Glaucoma Society

Volunteer, third annual Los Angeles Sports Arena free clinic sponsored by CareNow, October 20, 2011

Volunteer for EyeCare America

Editorial Board Member,
Journal of Ophthalmic and Vision Research

Reviewer for many scientific journals

Honors

First Distinguished Alumni Lecture, Shiley Eye Center

Research Grants

American Glaucoma Society Mentoring for Advancement of Physician-Scientists (MAPS) Award: Evaluating the Role of Pattern ERG in Glaucoma, 9/1/10–8/31/11

American Glaucoma Society Young Clinician Scientist Award: Optimizing Imaging of the Retinal Nerve Fiber Layer with Spectral-Domain Optical Coherence Tomography, 4/1/11–12/31/12

Gerald Oppenheimer Family Foundation Center for Prevention of Eye Disease Award: Optimizing Macular OCT Imaging for Detection of Glaucoma, 1/1/12–12/31/13

Steven Nusinowitz, PhD

Associate Professor of Ophthalmology

Co-Director of the Visual Physiology Laboratory

Director of the Live Imaging and
Functional Evaluation (LIFE) Core

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Mechanisms of Retinal Degeneration

Dr. Nusinowitz's primary research interest is focused on understanding the cellular contributions to noninvasive 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 and to provide a mechanism for the development of specific diagnostic tools that are sufficiently sensitive for early detection and better diagnosis of clinical disease.

Public Service

Editorial Board Service, *Current Eye Research* and *Investigative Ophthalmology and Visual Science*

Grant Reviewer, Foundation Fighting Blindness and Medical Research Council of Canada

Scientific Advisor: The Mouse Mutant Resource, The Jackson Laboratory; Novartis Pharmaceuticals; Allergan, Inc.; and Revision Therapeutics, Inc.

Reviewer for many scientific journals

Research Grants

California Institute for Regenerative Medicine: Development of a Stem Cell-Based Transplantation Strategy for Treating Age-Related Macular Degeneration (Principal Investigator: Gabriel H. Travis, MD, with other investigators), 11/1/09–10/31/12

National Institutes of Health/National Eye Institute: Jules Stein Eye Institute Core Grant for Vision Research, for shared-use core facilities among investigators at the Jules Stein Eye Institute (Module Co-Director), 3/1/10–2/28/15

UCLA/Foundation Fighting Blindness Center Grant: Module I: Clinical Characterization and Correlation With Molecular Genetic Studies of Individuals With Suspected Stargardt Disease (Co-Investigator), 7/1/10–6/30/13

Research to Prevent Blindness (Unrestricted Department Grant): Characterizing Visual Function in HIV-infected Patients (Principal Investigator), 4/25/11–4/1/12



Stacy L. Pineles, MD

Assistant Professor of Ophthalmology
Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Pediatric Neuro-Ophthalmology and Neurologic Causes of Strabismus

Dr. Pineles' research interests include evaluating the surgical outcomes of strabismus surgery and studying pediatric optic nerve diseases. With her dual training in pediatric ophthalmology and neuro-ophthalmology, she has a special interest in pediatric neuro-ophthalmic diseases, as well as adult patients with neurologic causes of strabismus.



Public Service

Member, Department of Ophthalmology Residency Training Committee and Department of Ophthalmology Residency Selection Committee

Associate Residency Director, Department of Ophthalmology

Member, Research Committee, American Academy of Pediatric Ophthalmology and Strabismus

Member, Professional Education Committee, American Academy of Pediatric Ophthalmology and Strabismus

Reviewer for many scientific journals

Research Grants

Jaeb Center for Health Research: A Randomized Clinical Trial of Observation Versus Occlusion Therapy for Intermittent Exotropia, 2/28/11–12/31/13

Natik Piri, PhD

Associate Professor of Ophthalmology
Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Retinal Ganglion Cell Degeneration in Optic Neuropathies and Neuroprotection

The main directions in Dr. Piri's research are defining the mechanisms leading to retinal ganglion cell (RGC) degeneration in glaucomatous neuropathy; developing strategies for preserving RGCs against neurodegeneration; and identifying and characterizing the genes critical for RGC function and integrity. Different types of RGCs have been identified based on their morphological and physiological characteristics, yet current knowledge of RGC molecular biology is very limited. Dr. Piri has initiated a study to identify the genes expressed in RGCs. Characterization of RGC-expressed genes is fundamental to a better understanding of normal RGC physiology and pathophysiology.

Another area of investigation focuses on understanding the degeneration of RGCs and their axons, which is a hallmark of glaucoma. Dr. Piri's laboratory is analyzing retinal gene expression profiles from the glaucoma model with the aim of identifying factors involved in the initiation and execution of RGC apoptosis. Study results have implicated several members of the crystallin superfamily in this process, including alpha crystallins. Dr. Piri is also studying the involvement of oxidative stress and proteins of the thioredoxin system, particularly in RGC degeneration in the glaucoma model, and the neuroprotective effects of these proteins against glaucomatous RGC death.



Public Service

Reviewer for many scientific journals

Research Grants

National Eye Institute: The Neuroprotective Effect of HSP72 Induction in Experimental Glaucoma, 9/30/09–8/31/14

David Sarraf, MD

Associate Clinical Professor of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Age-Related Macular Degeneration and Crystalline Maculopathy

Dr. Sarraf has credits in approximately 50 publications (including chapters, review papers, case reports, case series, and scientific papers) and has published 40 PubMed articles. His most important contribution involves wet age-related macular degeneration, specifically the subject of retinal pigment epithelial (RPE) detachment and RPE tears. Dr. Sarraf was one of the first to describe RPE tears and to determine the risk factors leading to RPE tears after anti-vascular endothelial growth factor (VEGF) therapy. He recently published a new grading system for RPE tears and was one of the first to describe evolving RPE tears both pre- and post-anti-VEGF therapy. Dr. Sarraf has received a financial grant to conduct a prospective trial (nearing completion) comparing low-dose and high-dose Lucentis therapy for fibrovascular pigment epithelial detachments (PEDs). This study has allowed further insight into therapy for PEDs and the risk factors and mechanisms leading to RPE tears.

Dr. Sarraf has also identified novel retinal diseases, specifically as pertains to crystalline retinopathy. He was the first to describe West African crystalline maculopathy and Triamcinolone-associated crystalline maculopathy. Studies on both topics were published in the Archives of Ophthalmology.

Public Service

Director, Annual Jules Stein Eye Institute and Doheny Eye Institute Comprehensive Ophthalmology Review Course

Co-Director, Los Angeles Imaging Conference for Retinal Specialists

Co-Director, Western Retina Study Meeting, Los Angeles Imaging Conference for Retinal Specialists

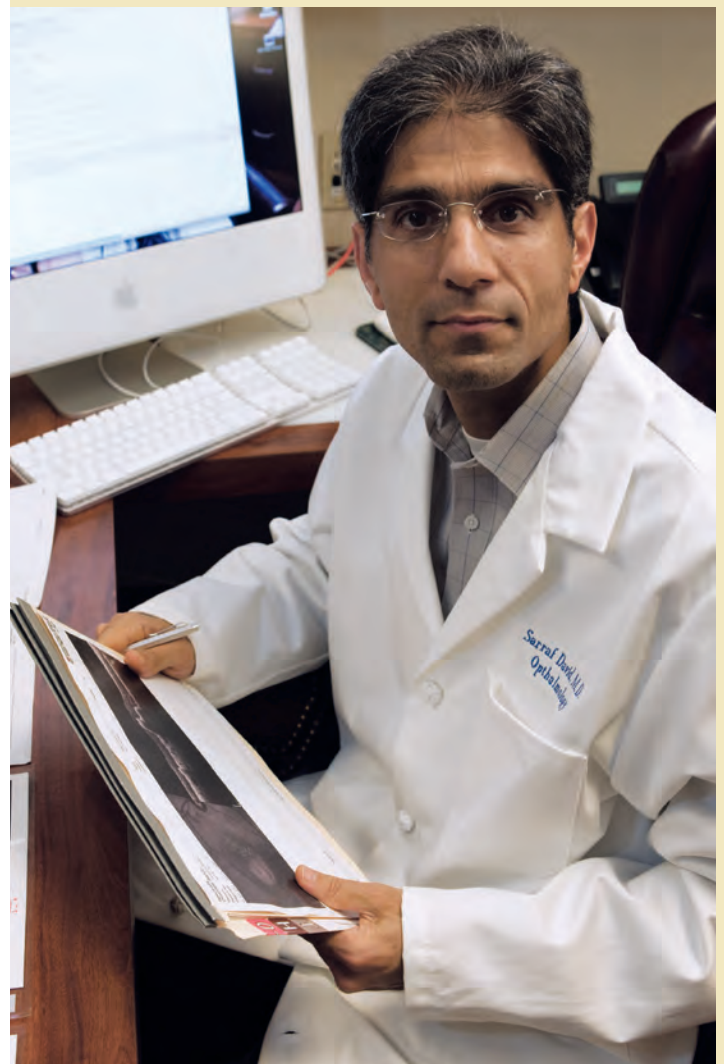
Reviewer for many scientific journals

Honors

Invited to become a member of the Gass Club

Research Grants

Southern California Desert Retina Consultants: Ranibizumab (Lucentis) for Treating Submacular Vascularized PED, 7/2/10–6/30/12



Steven D. Schwartz, MD

Ahmanson Professor of Ophthalmology

Chief of the Retina Division

Director of the UCLA Diabetic Eye Disease and Retinal Vascular Center

Director of the Macula Center

Professor-in-Residence of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Stem Cell Research

Dr. Schwartz is leading two new clinical trials testing the use of stem cell-derived retinal pigment epithelial cells to address vision loss in people suffering from Stargardt macular dystrophy and dry age-related macular degeneration.

Retinal Diseases

Dr. Schwartz's primary areas of research include early diagnosis and treatment of diseases such as retinopathy of prematurity (ROP), diabetic eye disease, and macular degeneration. Additionally, his focus includes development and evaluation of novel medical device technologies, imaging technologies, surgical equipment (including surgical robots), and drug-delivery systems, with particular emphasis on diagnostic and treatment applications. Dr. Schwartz's clinical research focuses on trials of novel pharmacotherapeutic agents to discover treatments for both wet and dry age-related macular degeneration, ROP, and diabetic retinopathy.

Through innovative teleophthalmological approaches to screen for eye diseases, such as diabetic retinopathy and ROP, Dr. Schwartz is dedicated to improving both the quality of and access to specialized ophthalmology care. Currently, a collaborative program with UCLA's Gonda Diabetes Center and 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.



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

Honors

2012 Southern California Super Doctors

Keynote lecturer at the UCLA IMED Seminar Series with Dr. Robert Lanza

Research Grants

Advanced Cell Technology, Inc.: Research with Retinal Cells Derived from Stem Cells for Age-Related Macular Degeneration, 4/5/11–4/4/13

Advanced Cell Technology, Inc.: Research with Retinal Cells Derived from Stem Cells for Stargardt Macular Dystrophy, 3/23/11–3/22/13

Allergan Sales, LLC: DEX PS DDS Applicator System in the Treatment of Patients with Diabetic Macular Edema, 8/25/05–12/31/13

Emmes Corp.: Age-Related Eye Disease Study II, 1/1/06–12/31/12

Gen Vec, Inc.: GV-000.000: Gene Transfer Product Candidates in Clinical Development, 2/27/09–2/26/24

Genentech, Inc.: Ranibizumab Injection, 10/5/07–8/31/12

Lowy Medical Research Institute/NEI: Macular Telangiectasia, 9/1/05–8/31/13

ThromboGenics, Inc.: Resolution of Vitreomacular Adhesion (VMA) Associated with Neovascular Age-Related Macular Degeneration (AMD) with Intravitreal Microplasm, 6/30/09–9/1/13

Hui Sun, PhD

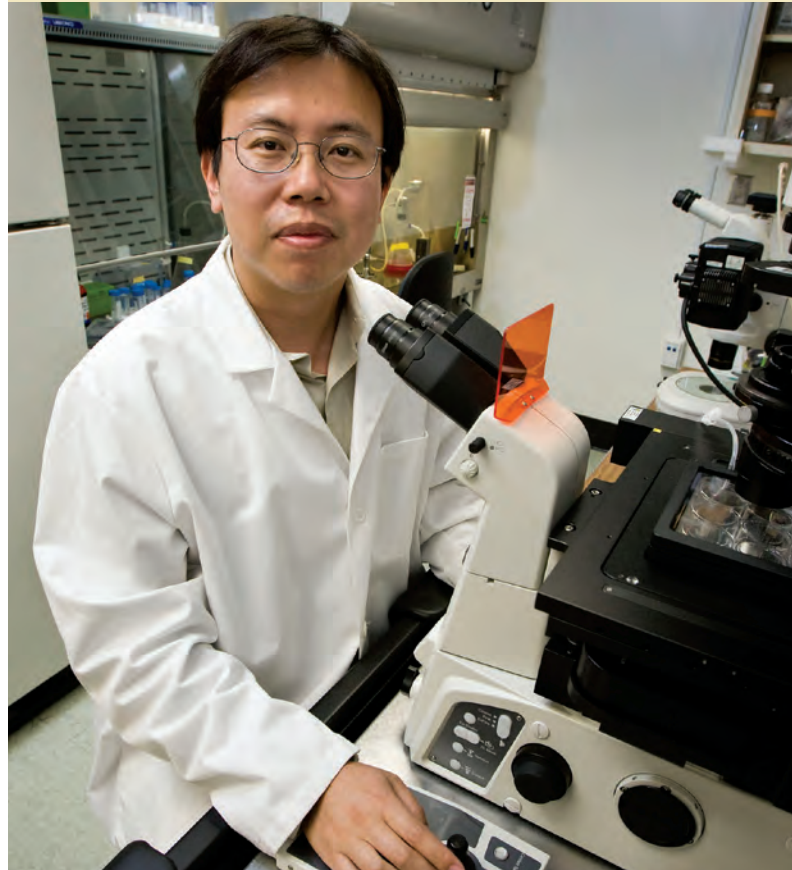
Associate Professor of Physiology and Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Molecular Mechanism of Vitamin A Transport for Vision; Identification of New Therapeutic Targets for Blinding Diseases

Dr. Sun's laboratory studies the molecular mechanism of vitamin A transport for vision and new therapeutic targets for blinding diseases such as age-related macular degeneration. Vitamin A deficiency is the leading cause of blindness in third world countries, and age-related macular degeneration is a leading cause of blindness in the developed 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 and is essential for mobilizing the hepatic vitamin A store. Dr. Sun's laboratory identified the long-sought RBP receptor as a multitransmembrane protein of previously unknown function. It functions simultaneously as a membrane receptor and a membrane transporter that mediates cellular uptake of vitamin A. 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. Human genetic studies found that the RBP receptor is essential for the formation of the human eye and many other organs, consistent with the critical role of vitamin A in embryonic development. Dr. Sun's laboratory is using a variety of techniques to study this membrane transport system.



Public Service

Ad hoc Reviewer, National Science Foundation, National Eye Institute (United States), Health Research Board (Ireland), and Medical Research Council (United Kingdom)

Reviewer for many scientific journals

Research Grants

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

Howard Hughes Medical Institute, 9/1/09–8/31/15

Research to Prevent Blindness Ophthalmic Research Award, 1/1/12–12/31/14

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

RESEARCH SUMMARY

Biochemistry of Vertebrate Photoreceptors and Mechanisms of Retinal Degeneration

Dr. Travis' laboratory uses biochemical and genetic approaches to study the visual cycle and its role in retinal and macular degenerations. Vision in vertebrates is mediated by two types of light-sensitive cells: rods and cones. These cells contain light-detecting molecules called opsin pigments. Detection of a single light particle bleaches the opsin pigment. Restoring light sensitivity to a bleached opsin involves an enzymatic pathway called the visual cycle. Mutations in the genes for many proteins of the visual cycle cause inherited blinding diseases.

One project in Dr. Travis' laboratory studies the function of a transporter protein in rods and cones called *ABCA4*. Mutations in the human *ABCA4* gene cause recessive Stargardt macular degeneration and cone-rod dystrophy. Dr. Travis' group generated mice with a null mutation in this gene. Biochemical analysis of the phenotype in these *ABCA4* "knockout" mice led them to the function of *ABCA4* in photoreceptors, and the biochemical etiology of Stargardt disease. This understanding suggested a pharmacological strategy to reverse the biochemical defect in patients with Stargardt disease and age-related macular degeneration. A phase II clinical trial is currently underway to test a drug based on this strategy as a treatment for age-related macular degeneration.

Another ongoing project in Dr. Travis' laboratory characterizes Rpe65, which catalyzes the critical isomerization step in the visual cycle. Previously, Dr. Travis and co-workers identified Rpe65 as the retinoid isomerase.

Still another project in Dr. Travis' 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 Dr. Travis' group point to the existence of a new enzymatic pathway for regenerating visual pigments in cones. His 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

Grant Reviewer, National Institutes of Health: The Biology and Diseases of the Posterior Eye Study Section

Reviewer, Howard Hughes Medical Institute Investigators

Reviewer for many scientific journals

Research Grants

California Institute for Regenerative Medicine: Development of a Stem Cell-Based Transplantation Strategy for Treating Age-Related Macular Degeneration (Principal Investigator, with other investigators), 11/1/09–10/31/12

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

National Eye Institute: Vision Science Training Grant for the Jules Stein Eye Institute (Principal Investigator), 9/30/05–9/29/12

Bruce Ford and Anne Smith Bundy Foundation, 8/16/11–8/15/12



Federico G. Velez, MD

Assistant Clinical Professor of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Strabismus and Childhood Eye Disorders

Dr. Velez's primary research interest is studying the mechanisms of congenital and acquired forms of strabismus. He has participated in the development of guidelines for preoperative assessment and surgical approaches to patients with convergent (esotropia), divergent (exotropia), and vertical forms of strabismus, and has developed new techniques to treat pediatric patients with eyelid abnormalities and cataracts. Dr. Velez has recently completed studies that apply bioengineering technology to the correction of ocular motility disorders. He has also identified a new ocular motility disorder in patients with the human immunodeficiency virus.



Public Service

Editorial Board Advisory Panel Member, Treatment Strategies—Pediatrics, The Cambridge Research Centre

Editorial Board Member, *Journal of the American Association of Pediatric Ophthalmology and Strabismus*, *Journal of the Colombian Society of Ophthalmology*, and *Video Journal of Ophthalmology*

Member, American Academy of Ophthalmology, American Association for Pediatric Ophthalmology and Strabismus, Latin American Council of Strabismus, Latin American Pediatric Ophthalmology Society, Colombian Society of Ophthalmology, and Colombian Society of Pediatric Ophthalmology and Strabismus

Reviewer for many scientific journals

Research Grants

Jules Stein Eye Institute: Ocular Motility Disorders in Patients Infected with the Human Immunodeficiency Virus, 6/1/11–5/31/12

Barry A. Weissman, OD, PhD

Professor of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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. He has also published an optical model of piggyback contact lens systems. Dr. Weissman investigates the severe complications occasionally encountered with contact lens wear, such as neovascularization, abrasion, and corneal infection, and he has published several recent large cohort series. 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, and he developed a model to predict the tear layer oxygen under different contact lens designs, including piggyback lens systems. 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

Board Member and Past President, Los Angeles County Optometric Society

Board of Trustees Member, California Optometric Association

Honors

2012 Legend Award, Cornea and Contact Lens Section, American Optometric Association

David S. Williams, PhD

Jules and Doris Stein Research to Prevent Blindness
Professor of Ophthalmology

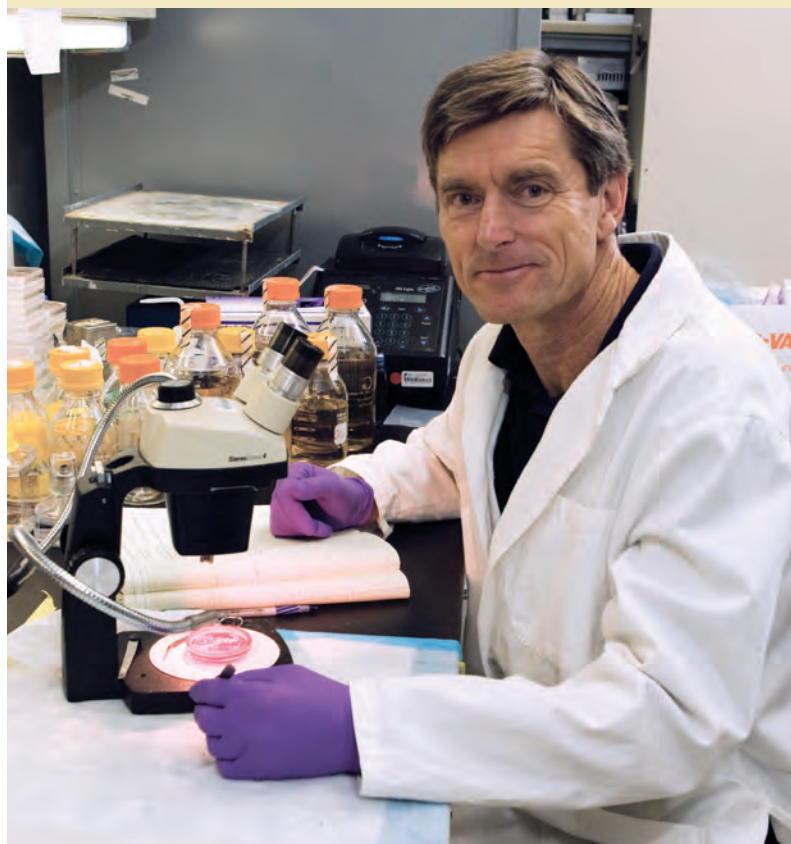
Professor of Neurobiology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Cell Biology of the Retina and Inherited Retinal Disease

Dr. Williams' laboratory focuses on the cell biology of photoreceptor and retinal pigment epithelium cells. His group is especially interested in proteins that function in transport and compartmentalization within these cells. These proteins include those that underlie Usher syndrome. A translational area of his research involves gene therapy experiments aimed at preventing the blindness that ensues from Usher syndrome type 1B.



Public Service

Scientific Advisory Board Member,
Foundation Fighting Blindness

Executive Board Member, Sustainability Council of
New Zealand

Committee Member, ARVO/International Society for
Ocular Cell Biology

Associate Editor, *Visual Neuroscience*

Research Grants

National Eye Institute: Retinal Cell Biology of Myosin VIIA,
7/1/09–6/30/14

National Eye Institute, ARRA Administrative Supplement:
Kinesin in Photoreceptor Cells, 9/30/09–9/29/12

National Neurovision Research Institute, Foundation
Fighting Blindness: Wynn-Gund Translational Research
Acceleration Program Award: MY07A Gene Therapy for
Usher 1B, 7/1/08–6/30/13

California Institute for Regenerative Medicine: Development
of a Stem Cell-Based Transplantation Strategy for Treating
Age-Related Macular Degeneration (Principal Investigator:
Gabriel H. Travis, MD, with other investigators),
11/1/09–10/31/12

Xian-Jie Yang, PhD

Ernest G. Herman Professor of Ophthalmology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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 stem cell-based cell therapy for 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.

Public Service

Ad Hoc Grant Reviewer, Foundation Fighting Blindness, National Science Foundation, Medical Research Council and Wellcome Trust in the United Kingdom, the Research Grant Council of Hong Kong, Biomedical Research Council and National Medical Research Council of Singapore, Israel Science Foundation, and the National Science Foundation of China

Standing Member, National Institutes of Health, Biology of the Visual System study section

Editorial Board Member, *Visual Neuroscience*, *Translational Vision Science & Technology*

Reviewer for many scientific journals

Honors

Named as the Ernest G. Herman Endowed Chair in Ophthalmology

Research Grants

National Eye Institute: Hedgehog Signaling in Photoreceptor Differentiation and Maintenance, 12/1/09–11/30/13

California Institute for Regenerative Medicine: Development of a Stem Cell-Based Transplantation Strategy for Treating Age-Related Macular Degeneration (Principal Investigator: Gabriel H. Travis, MD, with other investigators), 11/1/09–10/31/12



INSTITUTE MEMBERS BASED AT OTHER SITES

James W. Bisley, PhD

Assistant Professor of Neurobiology and Psychology

Member of the Jules Stein Eye Institute

Member of the Brain Research Institute

RESEARCH SUMMARY

Cognitive Processing of Visual Information

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. His recent work has focused on how the responses of neurons in the posterior parietal cortex are involved in the allocation of visual attention to neurons in visual cortices and how they guide eye movements in goal-directed visual search.

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

RESEARCH SUMMARY

Functional and Structural Organization of the Mammalian Retina

Dr. Brecha's research focuses on the elucidation of the structural organization of the outer and inner retina for understanding visual information processing by the retina. Morphological studies have defined cell types and classes, and microcircuitry organization in the retina, and neurochemical studies have investigated the action of neurotransmitters and neuroactive peptides in retinal microcircuits. Experimental work has clarified the functional role of neuropeptides in the inner retina and supports the current hypothesis that certain neuropeptides are modulators of retinal neurons and circuitry that influence light and dark adaptation; they also influence retinal circuitry that mediates form vision. Other experimental work has investigated the photoreceptor synaptic triad, a specialized synaptic complex that is the site of initial transfer of visual information from photoreceptors and is critically important for visual processing. Experimental studies are testing the idea that a vesicular mechanism underlies transmitter

release from horizontal cells in this triad to mediate feedback and feed forward signaling, which is critically important for the formation of visual receptive fields. These investigations are fundamental steps in establishing the retina's functional organization and provide the basis for understanding the pathophysiology of retinal dysfunction.

Patrick T. Dowling, MD, MPH

Chairman of the UCLA Department of Family Medicine

Kaiser Permanente Endowed Professor of
Community Medicine

Member of the Jules Stein Eye Institute

Health Care Policy and Access for Underserved Populations

Dr. Dowling is a member of the California Community Foundation's Board of Directors and the Board of Trustees at the Charles Drew University of Medicine and Science. He has received numerous grants for international medical graduate training, residency training and family medicine training. He has made unparalleled contributions to the community and to the training of physicians to support the community at a primary level. He is a prior Commissioner of Public Health for the Los Angeles County Department of Health and currently has funding for an innovative program to increase the number of Hispanic physicians in California. Dr. Dowling worked closely with Dr. Anne Coleman on the Remote Area Medical Program, which provided care to the homeless and indigent in the Los Angeles community. Dr. Dowling's presence as a member of the Jules Stein Eye Institute adds a new dimension that is being developed and pioneered by Dr. Coleman at the Institute's Center for Eye Epidemiology.

Antoni Ribas, MD

Professor of Medicine, Surgery, and Molecular and Medical Pharmacology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

The Immune System and Oncogene-Targeted Therapies in the Treatment of Cancer

Dr. Antoni Ribas conducts research focused on melanoma, an aggressive form of skin and eye cancer. His research aims at developing more effective and less toxic therapies for patients with advanced melanoma by studying how the immune system can be effectively used to fight cancer and also how targeted therapies can specifically block cancer genes. His projects include laboratory and clinical translational research in adoptive cell transfer therapy using T-cell receptor engineered lymphocytes designed to seek out melanoma cells, with the application of molecular imaging and advanced monitoring of the immune system to better study how it can fight cancer. Another way to engage an anti-cancer immune response is through the use of immune modulating antibodies, in particular by releasing the immune breaks CTLA4 and PD-1. He is also testing, both in the laboratory and the clinic, novel targeted therapies blocking cancer-causing events that result in melanoma, as well as the potential clinical applications of nanoparticle delivery of siRNA, which interferes with gene expression related to cancer. Dr. Ribas' goal is to bring new concepts from the laboratory to the clinic to help patients with advanced melanoma.

Dario L. Ringach, PhD

Professor of Neurobiology and Psychology, Biomedical Engineering Program

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

Visual Perception and Neurophysiology

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, navigating, and adjusting body posture, is influenced by visual information and impaired vision. In collaboration with a team of neurosurgeons at UCLA, Dr. Ringach's laboratory is also recording the brain activity of patients with epilepsy who are undergoing clinical evaluation for surgical treatment. This unique opportunity is shedding new light into the processes involved in object recognition and perception.

Guido A. Zampighi, PhD

Professor of Neurobiology

Member of the Jules Stein Eye Institute

RESEARCH SUMMARY

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 that form them. The chemical synapse is composed of a presynaptic neuron filled with small diameter vesicles that contain a 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 increase understanding of the mechanisms mediating cell communication.

PROFESSIONAL RESEARCH SERIES

Novruz Ahmedli, PhD

Associate Research Ophthalmologist

RESEARCH SUMMARY

Studies on Müller Cells

Zbed4 is a multifunctional protein that plays a key role in the cells where it is expressed. Dr. Ahmedli's results indicate that this important protein appears early in embryonic life and while in mouse retina it is detected only in Müller cells, in humans it is expressed in cones and Müller cells. In addition, he has found that the length and shape of Müller cell processes depend on the levels of Zbed4. Dr. Ahmedli's work aims to identify the pathway, which is essential for proper functioning of Zbed4 in Müller cells.

Christian Altenbach, PhD

Research Ophthalmologist

RESEARCH SUMMARY

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 and electron paramagnetic resonance spectroscopy to study the structure of rhodopsin in the absence of light, as well as the changes in structure caused by light.

Barry L. Burgess, BS

Research Specialist IV

RESEARCH SUMMARY

Ocular Melanoma Molecular Genetics

Mr. Burgess provides research support for the Ophthalmic Oncology Center under the direction of Tara A. McCannel, MD, PhD. His research interests include investigation of cytogenetic abnormalities of ocular melanoma and gene discovery for the metastatic form of this cancer. He has developed highly characterized cell lines from both primary ocular melanomas and metastatic lesions to complement the Center's study of biopsy material. His research goals are to identify biochemical pathways that lead to a metastatic outcome and to find targets for therapeutic intervention that may preempt the progression of metastatic disease.

Rajendra Gangalum, PhD

Assistant Research Specialist II

RESEARCH SUMMARY

Function and Regulation of Small Heat Shock Protein α B-crystallin in Health and Disease

Dr. Gangalum's research seeks to gain understanding of the physiological function of α B-crystallin in the developing ocular lens and nonocular tissues. α B-crystallin has been shown to associate with pathologies such as cataracts, cancer, age-related macular degeneration (AMD), and other neurodegenerative diseases. Dr. Gangalum has discovered that α B-crystallin is a Golgi-associated membrane protein, secreted into extracellular medium via exosomes from retinal pigment epithelial cells. These findings explain how α B-crystallin is detected in the protein-lipid deposits known as drusen in AMD. Dr. Gangalum has generated the transgenic mice model of childhood cataract to study the molecular basis of its pathology. Cataracts in infants are debilitating, because opacities in the lens hinder the transmission of light to the retina, which impairs the development of visual cortex in the brain. This model system is the only paradigm available for future investigations on early childhood cataracts.

Yekaterina Gribanova, MD

Assistant Research Specialist III

RESEARCH SUMMARY

Characterization of Novel Retinal Protein 7R

A novel retinal protein, 7R, has been linked to autosomal recessive retinitis pigmentosa, a disease leading to incurable blindness. Dr. Gribanova is using immunohistochemical analysis, *in situ* proximity ligation assay, co-immunoprecipitation, immunoelectron cryo-microscopy, and gradient flotation fractionation combined with solid-phase immunoadsorption to determine and characterize 7R function in photoreceptor cells. These methods will identify 7R's interacting partners and indicate whether 7R is contributing to the sorting and transport of phototransduction proteins to the outer segment of photoreceptor cells.

Qingling Huang, MD

Assistant Research Ophthalmologist

RESEARCH SUMMARY

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 extremely important because it is over-expressed in many neurological diseases.

Joanna J. Kaylor, PhD

Assistant Research Ophthalmologist

RESEARCH SUMMARY

Characterization and Identification of the Enzymes of the Cone Visual Cycle

Bright light vision is solely mediated by the cone photoreceptor cells of the retina. Recent biochemical evidence supports the existence of a new metabolic pathway in the retina for the regeneration of cone opsin visual pigment. Dr. Kaylor is using biochemistry and molecular biology techniques to characterize and identify the enzymes responsible. Her work has led to the identification of the first vitamin A retinol isomerase, dihydroceramide desaturase-1 (DES1). Understanding the role of DES1 in vision is the current focus of her research.

Jacky M.K. Kwong, PhD

Associate Research Ophthalmologist

RESEARCH SUMMARY

Degeneration of Retinal Ganglion Cells and Neuroprotection

Dr. Kwong's research goal is to identify novel neuro-protective therapies for glaucoma. To understand the loss of retinal ganglion cells in glaucoma, his research focuses on the response and the cell death pathway of retinal ganglion cells in animal models related to optic nerve injury and glaucoma. Dr. Kwong and his colleagues recently found retinal ganglion cell-specific proteins. He is utilizing these proteins to visualize retinal ganglion cells and to investigate their function in retinal ganglion cells during degeneration. He is also applying pharmacologic techniques to evaluate therapies that enhance endogenous neuroprotective responses against glaucomatous, excitotoxic, and axonal damage to nerve cells, and is utilizing multidisciplinary methods to understand the protective mechanisms.

Anna Matynia, PhD

Assistant Research Ophthalmologist

RESEARCH SUMMARY

Neural and Molecular Basis of Photoallodynia

Dr. Matynia is investigating the mechanisms of photoallodynia, a condition in which normal levels of light produce or enhance ocular or headache pain. Using a combination of behavioral, molecular, and cellular approaches in genetic mouse models, the goal is to identify mechanisms of light-pain association for different causes of photoallodynia, including corneal, retinal, and central causes such as dry eye injury, achromatopsia, and migraine respectively. The research findings will form the basis of treatment strategies for this condition.

Michael D. Olson, OD, PhD

Associate Research Ophthalmologist

RESEARCH SUMMARY

Comprehensive Ophthalmology

Dr. Olson's research activities focus on the visual and surgical outcomes following cataract surgery. This includes the surgical correction of refractive errors, evaluating the safety and efficacy of specialty use ocular implants, and functional visual outcomes following ocular trauma cases and complicated cataract surgery. He is currently investigating three iris implants: the HumanOptic Artificial Iris, which is a customized, handmade color match of the patient's fellow eye; Morcher GmbH aniridia implants; and the Ophtec Reconstruction Lens for the treatment of eyes with congenital aniridia, acquired iris defects, or complete aniridia. He is also investigating a unique intraocular lens whose power can be modified after implantation, correcting the residual refractive error, both spherical and astigmatic, to improve uncorrected visual acuity.

Maria Carolina Ortube, MD

Assistant Research Ophthalmologist

Clinical Director of Research Studies,
Retinal Disorders and Ophthalmic Genetics Division

RESEARCH SUMMARY

Ocular Genetics

Dr. Ortube is a fellowship-trained specialist in pediatric ophthalmology, strabismus, and pediatric genetic conditions. She is an investigator in four clinical and translational research projects related to ocular genetics. The genetics of inherited eye disorders and Stargardt protocols provide clinical characterization of affected individuals and at-risk family members. The Genetics of Age-Related Maculopathy study focuses on the genetic and environmental risk factors that contribute to age-related maculopathy. The protocols use state-of-the-art imaging and functional technologies in conjunction with molecular genetic testing to identify causative genes and mutations. Dr. Ortube has a special interest in children born with craniofacial ocular disorders. She is also investigating a simple, noninvasive, rapid method for widespread screening of diabetics using the pupillary light reflex. This study aims to identify those who may require medical attention and/or therapy for diabetic retinopathy. Dr. Ortube is a co-investigator in collaborative research efforts with the University of Pittsburgh and Neurokinetics, Inc.

Roxana A. Radu, MD

Associate Research Ophthalmologist

RESEARCH SUMMARY

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. She studies the *in vivo* association of the complement negative regulator genes and age-related macular degeneration (AMD) development. The mechanism by which dysfunction of complement factor H (*CFH*, one of the complement regulatory genes) causes AMD is not known. To investigate the relationship between abnormal build-up of vitamin A-based toxic compounds such as A2E and the complement system, Dr. Radu will generate a mouse lacking both genes *ABCA4* and *CFH*. This complex mouse genetic model will advance understanding of the relationship between lipofuscin accumulation, complement activation, and photoreceptor degeneration in AMD, and it will be a valuable tool for developing new treatments for this disease.

Kiyo Sakagami, PhD

Assistant Research Ophthalmologist

RESEARCH SUMMARY

Hedgehog Signaling and PTEN/PI3K Signaling on Retinal Development

Dr. Sakagami's research aims to understand how extracellular signals coordinate retinal cell fate and behavior during development, using genetic strategies for conditional mutagenesis in the mouse. The more specific goals of her research are to understand how hedgehog signaling regulates bHLH genes to determine cell cycle and cell fate decisions and to investigate the potential role of PTEN/PI3K signaling on retinal formation.

Ned Van Eps, PhD

Assistant Research Ophthalmologist

RESEARCH SUMMARY

The Molecular Mechanism of Transducin Activation

The conversion of light energy into rod cell impulse responses requires signal transfer between a photoreceptor, rhodopsin, and a rod cell protein called transducin. Dr. Van Eps is studying the structural changes in transducin that are necessary for signal relay between the two proteins. The techniques of site-directed spin labeling and electron paramagnetic resonance are used to follow transducin conformational changes that are important for its function and catalytic cycle.

Quan Yuan, PhD

Assistant Research Ophthalmologist

RESEARCH SUMMARY

Biochemistry of Visual Cycle and Retinal Degeneration

Dr. Yuan's research focuses on the biochemical mechanism of key proteins involved in the retinoid visual cycle. Retinal Pigment Epithelium Specific Protein 65kD (Rpe65) is one of the most important enzymes in the visual cycle that converts all-trans-retinyl ester to 11-cis-retinol and regenerates the visual pigment. He has investigated the biochemistry behind the interaction of Rpe65 with ER membrane and resolved the puzzle of Rpe65 membrane association. He is also investigating the chemical mechanism that regulates Rpe65 enzymatic activity, using chemical and state-of-the-art instrumental approaches. In other studies, Dr. Yuan and his colleagues are identifying candidate enzymes involved in the putative secondary isomerase pathway in cone dominant species. Another research interest is elucidating the biochemistry of *ABCA4* protein in Stargardt disease and age-related macular degeneration.

PROFESSIONAL CLINICAL SERIES

John D. Bartlett, MD

Assistant Clinical Professor of Ophthalmology

Clinical Director, University Ophthalmology Associates

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. He also is responsible for the continued development of the resident cataract surgery educational curriculum.

Gavin G. Bahadur, MD

Associate Physician Diplomate

RESEARCH SUMMARY

Comprehensive Ophthalmology, including Cataract, Pterygium, and Glaucoma Surgery

Dr. Bahadur teaches medical students during their ophthalmology surgical subspecialties clinical rotation. He is a full-time comprehensive ophthalmologist at the Jules Stein Eye Center in Santa Monica.

Laura Bonelli, MD

Clinical Instructor of Ophthalmology

RESEARCH SUMMARY

Neuro-Ophthalmology and Comprehensive Ophthalmology

Dr. Bonelli provides clinical supervision to resident physicians at the University Ophthalmology Associates and teaches medical students during their ophthalmology surgical subspecialties clinical rotation. She is collaborating on a study to learn and better understand giant cell arteritis (GCA), an inflammation of the lining of the arteries. GCA frequently causes blurred or double vision and, if left untreated, may result in loss of vision. She is also a co-investigator for the National Eye Institute-sponsored study of idiopathic intracranial hypertension.

Vicki Chan, MD

Associate Physician Diplomate

Glaucoma and Comprehensive Ophthalmology

Dr. Chan teaches residents, fellows, and medical students at the Jules Stein Eye Institute and at Harbor-UCLA Medical Center.

Melissa W. Chun, OD

Associate Clinical Professor of Ophthalmology

Director of the UCLA Vision Rehabilitation Center

RESEARCH SUMMARY

Vision Rehabilitation

Dr. Chun's clinical research interests are in the areas of vision rehabilitation outcomes and training techniques that maximize visual function. She is a member of the Low Vision Research Network, a nationwide collaboration of low vision specialists for multicenter clinical studies. She is currently participating in the Low Vision Rehabilitation Outcomes Study, a multicenter pilot study that utilizes surveys and questionnaires to assess outcome and effectiveness of low vision rehabilitation.

Rachel Feit-Leichman, MD

Associate Physician Diplomate

Cataract Surgery

Dr. Feit-Leichman divides her time between supervising residents and providing patient care at the Jules Stein Eye Institute's Urgent Care Clinic, University Ophthalmology Associates; and teaching cataract surgery and overseeing residents at the ophthalmology clinic of the Harbor-UCLA Medical Center. Dr. Feit-Leichman is also active in striving to improve patient access to eye care in the greater Los Angeles County Healthcare System.

Catherine J. Hwang, MD, MPH

Associate Physician Diplomate

RESEARCH SUMMARY

Thyroid Eye Disease, Ocular Surface Disease, Eyelid Disorders

Dr. Hwang's research includes studies involving thyroid eye disease (Graves disease), ocular surface disease, and eyelid disorders such as blepharospasm. Dr. Hwang has a dedicated thyroid eye disease clinic to investigate the clinical course of the disease and treatments, as well as to provide education and patient support. The clinic is the first in the country to provide an orbital specialist, Dr. Hwang, and a rheumatologist, Dr. Ben-Artzi, who work together to evaluate and treat patients affected with thyroid eye disease. Dr. Hwang will be starting a blepharospasm clinic in order to better educate patients, form support groups, and aid in clinical studies. In addition, Dr. Hwang collaborates with researchers from other departments, such as interventional radiology and head and neck surgery, on various projects.

Susan S. Ransome, MD

Clinical Instructor of Ophthalmology

RESEARCH SUMMARY

Cytomegalovirus Retinitis

Dr. Ransome is participating in several clinical research studies involving HIV-infected patients, some of whom have AIDS and cytomegalovirus 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. Dr. Ransome is also following patients with HIV who have diabetes to see whether there is increased risk of development or progression of diabetic retinopathy when subjects are treated for abdominal lipodystrophy with Egrifta (tesamorelin).

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.

Mehryar “Ray” Taban, MD, FACS

Assistant Clinical Professor of Ophthalmology
Associate Physician Diplomate

Aesthetic and Reconstructive Oculoplastic Surgery

Dr. Taban provides clinical supervision to resident physicians and oculoplastic fellows at the Jules Stein Eye Institute. He focuses on nonsurgical and surgical management of disorders of the eyelid, orbital, and lacrimal system.

Irena Tsui, MD

Associate Physician Diplomate

Adult and Pediatric Retina

Dr. Tsui provides clinical supervision to resident and fellow physicians at the Ronald Reagan UCLA Medical Center. She leads the Retinopathy of Prematurity Service and manages complex retinal diseases affecting inpatients. Dr. Tsui’s clinical and research interests include diabetic retinopathy, and her publications have focused on surgical techniques and wide-angle imaging in central retinal vein occlusions.

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

Marc O. Yoshizumi, MD

Professor of Ophthalmology Emeritus
Member of the Jules Stein Eye Institute

Richard W. Young, PhD

Professor of Neurobiology Emeritus
Member of the Jules Stein Eye Institute

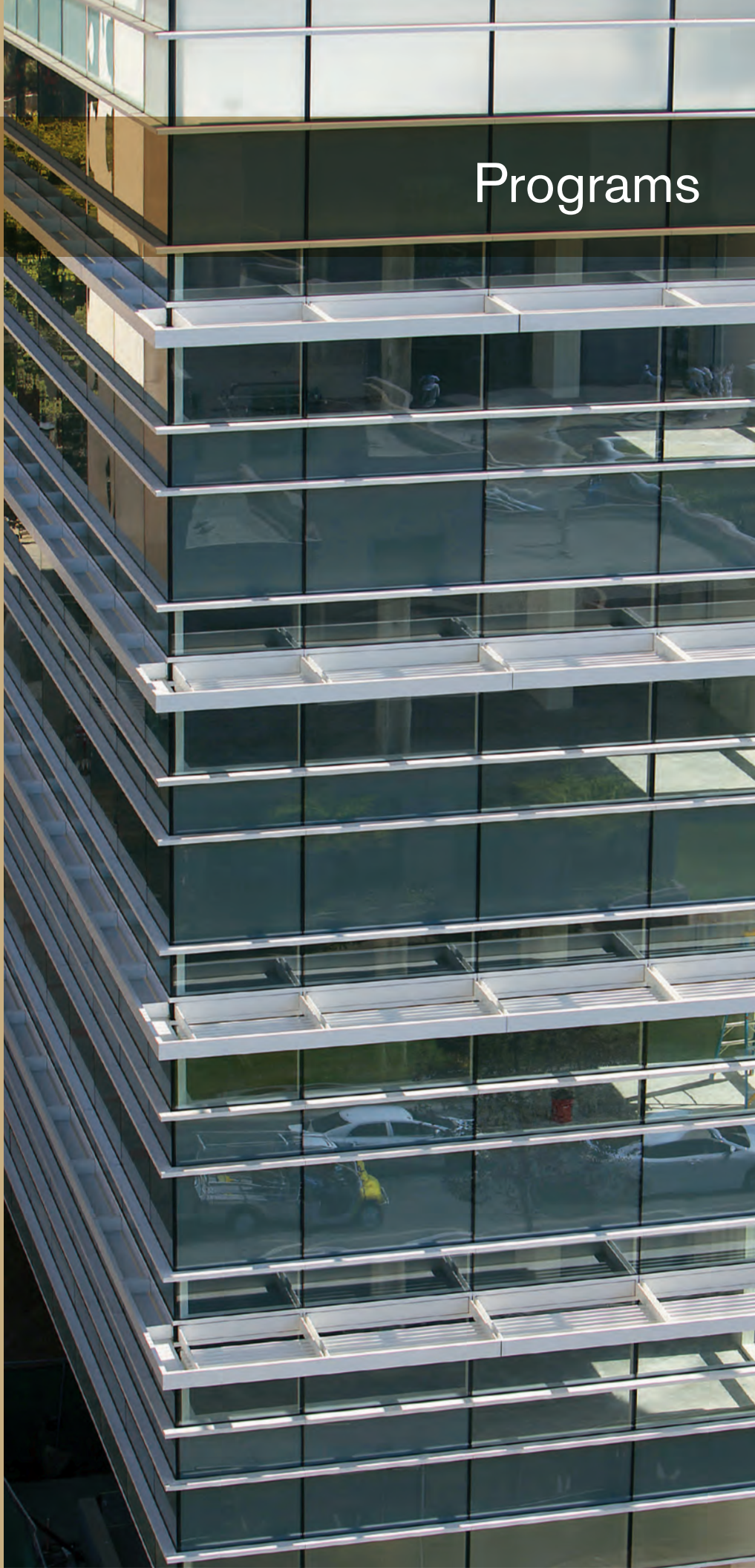
LECTURERS

Kathleen L. Boldy, VMD

Lecturer in Ophthalmology



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. The newly established UCLA Jules Stein Eye Center, Santa Monica, offers the premier service of the Jules Stein Eye Institute in a convenient neighborhood location.

Faculty Consultation Service

Institute faculty members provide direct consultation and treatment, including emerging therapies, to patients through the Ophthalmology Faculty Consultation Service. Faculty members have extensive, advanced training in ophthalmic subspecialties, providing referring physicians and patients with a valuable resource for special eye problems.

Inpatient Consultation Service

Jules Stein Eye Institute, Westwood

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

Jules Stein Eye Center, Santa Monica

The Ophthalmology Inpatient Consultation Service, operating through the Jules Stein Eye Center, Santa Monica, provides consultation and treatment to pediatric and adult patients admitted to the hospital's medical, surgical, and psychiatric inpatient services. Led by **Dr. Laura Bonelli**, the consultation team consists of physician-residents. Subspecialty coverage from faculty is provided 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, laser vision-correction 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 members 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 preoperative and postoperative care.

University Ophthalmology Associates

Comprehensive and subspecialty eye care in all medical and surgical areas of ophthalmology is offered through University Ophthalmology Associates. **Dr. John D. Bartlett** is medical director and ophthalmologists who are members of the UCLA Medical Group staff the practice.

Jules Stein Eye Center, Santa Monica

The Jules Stein Eye Center, under the direction of **Dr. Colin A. McCannel**, offers the world-renowned comprehensive and subspecialty eye care of the Jules Stein Eye Institute at a convenient new location in Santa Monica. Established in 2011, the Jules Stein Eye Center features well-equipped exam rooms, an optical shop, convenient on-site parking for easy access, and testing facilities offering a wide range of examinations including visual field, corneal map (corneal topography), intraocular lens measurement, retinal imaging—including fluorescein angiography—and others.

Nearly all the evaluation, diagnosis, testing, and treatment services available at the Jules Stein Eye Institute in Westwood are offered at the Jules Stein Eye Center, Santa Monica, and mostly by the same experts in retinal disorders, corneal disorders, glaucoma, neuro-ophthalmology, and laser refraction surgery. For surgeries and seldom-needed tests requiring specialized laboratories, patients would be referred to the main facility in Westwood. The Jules Stein Eye Center is located at 1807 Wilshire Boulevard, Suite 203, Santa Monica, California, 90403. The telephone number is (310) 829-0160, the fax number is (310) 829-0170, and the email address is jsec_sm@jsei.ucla.edu.

UCLA Mobile Eye Clinic

The UCLA Mobile Eye Clinic, a 39-foot-long bus specially outfitted with eye examination equipment, is supported by charitable contributions to the Jules Stein Eye Institute. The Mobile Eye Clinic's staff of trained ophthalmic personnel, led by **Dr. Anne L. Coleman**, provides general eye care to over 4,000 underserved adults and children annually throughout Southern California. Services 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 care.

Summary of Patient Care Statistics

	2010–2011	2011–2012
Faculty Consultation Service		
Patient visits	72,223	82,157
University Ophthalmology Associates		
Patient visits	17,369*	20,499
Inpatient Consultation Service		
Patient evaluations	283	540
Clinical Laboratories		
Procedures	32,956	33,574
Surgery Services		
Number of procedures	9,413	11,348
Mobile Eye Clinic		
Number of patients seen	4,969	4,897
Ocular abnormalities	38%	64%
Number of trips	177	180

*Revised

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 with 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 in other UCLA clinical departments, to create a multidisciplinary team customized for each patient's unique medical needs.

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. **Drs. Catherine J. Hwang** and **Mehryar (Ray) Taban** also see patients. Established in 1998, the Center has earned a reputation for high quality, individualized care delivered by surgeons trained in both ophthalmic and plastic surgery.

Surgical services include upper and lower eyelid blepharoplasty, endoscopic forehead lifting, endoscopic midface surgery, lifting of the neck and face, liposuction, fat transfer, sclerotherapy, dermal filler and other cosmetic injections to smooth facial lines. Minimal incision approaches are utilized to provide the optimal aesthetic result. A major goal of the Center is to conduct research focused on improving understanding of skin processes, such as aging and healing, and on developing new techniques and substances for aesthetic surgery. Center physicians have pioneered surgical techniques to enhance the normal function and appearance of the eyes and face, and often receive referrals for complex plastic surgery cases.

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. It is supported by private donations including an endowment established by The Ahmanson Foundation. The Center maintains and improves vision health through public health research and intervention, and serves as a coordinating body for expanding and sharing information.

Center members have expertise in epidemiology, biostatistics, health policy, public health, and international health. Members draw on their diverse backgrounds and complementary skills to promote an understanding of issues related to vision health as it affects individuals, communities, and society. The Center encourages collaborative research among faculty and investigators from various UCLA departments and other institutions around the world to advance knowledge related to the causes and prevention of specific eye diseases.

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. UCLA physicians and basic scientists, including **Drs. Leonard Apt** (co-director), **Gary N. Holland**, **Steven Nusinowitz**, and **Irwin Weiss**, collaborate on research, education, and patient care programs designed to increase awareness and help treat pediatric blindness. Significant emphasis is on the development and evaluation of ophthalmic medical and surgical options for children.

Center members are developing a new 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. In another avenue of research, the Center developed a very inexpensive antiseptic solution to treat pediatric corneal infections in underdeveloped areas, and completed a study showing its effectiveness in treating corneal ulcers that now blind more than 400,000 children worldwide. A second study, which evaluated the solution's effectiveness in treating fungal corneal infections, a major cause of pediatric blindness in tropical countries, is now undergoing statistical evaluation.

Clinical Research Center

The Jules Stein Eye Institute's Clinical Research Center (CRC) was established in 1998, to provide core support to faculty members who are conducting patient-based research studies. This support involves vital, behind-the-scenes activities that facilitate the clinical research process. **Dr. Gary N. Holland** serves as director of the CRC; additional members of the Board of Directors include **Drs. Joseph Caprioli**, **Michael B. Gorin**, **Ralph D. Levinson**, and **Steven D. Schwartz**. The CRC has a full-time administrator, **Ms. Ellen Haupt**, and an in-house statistician, **Dr. Fei Yu**. CRC staff members interact with granting 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 members are currently conducting more than 60 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 (eg, aphakia, keratoconus, post-corneal transplants, corneal trauma, and infection).

The Center is one of several across the nation that participated in the landmark Collaborative Longitudinal Evaluation of Keratoconus (CLEK) 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.

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 comprehensive ophthalmic care. Established more than a decade ago, the Center has contributed significantly to the understanding, treatment, and prevention of diabetic eye disease. Current focus is on innovation in technologies and techniques that expand the standard of treatment, such as new lasers and laser strategies, refinement of microsurgical techniques specific to diabetic eye diseases, and nontraditional treatment approaches.

The Center's treatment philosophy is based upon the systemic nature of diabetes. Patient care is coordinated with other UCLA departments to address the special needs of diabetics that lie outside the field of ophthalmology. Center treatment interventions include laser and ophthalmic surgery. Recognizing the special care needed for diabetics in any 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.

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. 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 follow up. Primary surgical repairs are performed immediately for new trauma while secondary repairs are usually scheduled.

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 supported by the Foundation include genetic and environmental factors that may cause eye disease, and pharmacologic and natural agents to prevent eye disease. The Center complements an expanding array of research in many other fields at UCLA, where rigorous scientific methods are being applied to study novel approaches to health care.

UCLA Laser Refractive Center

The UCLA Laser Refractive Center is under the direction of **Dr. David Rex Hamilton**. Founded in 1991, the Center specializes in refractive surgery of both the cornea and lens of the eye, 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 UCLA Laser Refractive Center offers all cornea refractive procedures, including LASIK and LASEK/PRK; astigmatic keratotomy; conductive keratoplasty, and intracorneal ring implantation. Advanced intraocular lens (IOL) procedures are also available, including presbyopia-correcting IOLs (multifocal and accommodating), toric IOLs, and phakic IOLs. Patients referred to the Center undergo a complete ocular examination that includes corneal topographic mapping, wavefront analysis, and corneal biomechanical measurements to identify conditions that may interfere with surgical correction of refractive errors. Candidates for laser or intraocular lens surgery receive intensive education to understand the benefits, risks, and alternatives to surgery. Participation in clinical trials for new refractive devices and techniques to treat nearsightedness, farsightedness, and presbyopia may be an option for qualified patients.

Macular Disease Center

The Macular Disease Center, under the direction of **Dr. Steven D. Schwartz**, was created in 1994 in response to the growing, national incidence of macular degeneration. The Center's mission 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 translational 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 often considered for clinical trials, such as the stem cell programs, and their cases are 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 are diagnosed and treated with cutting-edge therapies. Treatment options for wet macular disease include therapy and participation in 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 coordinate research, educational activities, and patient-care services related to a broad spectrum of inflammatory eye disorders, including uveitis, infectious corneal ulcers, endophthalmitis, autoimmune diseases of the cornea and ocular surface, and the ophthalmic manifestations of HIV disease. The Center has a long history of participating in clinical studies and drug-therapy investigations that have furthered the understanding and treatment of these diseases.

Center faculty members were the first to describe cytomegalovirus (CMV) retinitis as an ophthalmic manifestation of AIDS; today the Center is a nationally recognized site of expertise for AIDS-related ophthalmic disease. Other special programs have been developed in the following areas: ocular toxoplasmosis, uveitis in children, birdshot chorioretinopathy, immunogenetics of inflammatory eye diseases, unusual corneal infections, and chemical mediators of intraocular inflammation.

Ophthalmic Oncology Center

The Ophthalmic Oncology Center, under the direction of **Dr. Tara A. McCannel**, is renowned for its expertise in teaching, research, and clinical management of adult posterior segment tumors. Established in the early 1980s by the Institute's Founding Director, **Dr. Bradley R. Straatsma**, the Center is internationally recognized for the diagnosis and management of ocular melanoma. The Center serves as a hub for national, long-term studies investigating ocular melanoma, and played an important role in the Collaborative Ocular Melanoma Study (COMS) sponsored by the National Eye Institute.

The Center's clinical goal is successful treatment of the primary eye tumor. Patients diagnosed with ocular melanoma may be offered highly sophisticated treatment plans coordinated with UCLA radiation physicists and radiation oncologists. Patients may also qualify to participate in clinical research studies in partnership with the UCLA Jonsson Comprehensive Cancer Center. The Center's primary research goal is to gain a fundamental understanding of the molecular biology of metastatic ocular melanoma. In addition to providing genetic prognostic information to patients on their risk of tumor metastasis, the Center has identified key genes associated with metastatic tumors.

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.

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**, was founded in 1991. The Center brings multidisciplinary expertise to the treatment and study of orbital diseases arising from trauma, cancer, inflammation, and infection. Care is organized around a team of experts in ophthalmology, neuroradiology, neurosurgery, head and neck surgery, radiation oncology, and craniofacial surgery, bringing to the treatment of orbital diseases a depth of knowledge and experience not available elsewhere in Southern California.

The Center provides both medical and surgical management of orbital diseases; however, surgery is the primary treatment approach. The team performs procedures in the Institute's modern operating rooms 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 Center has an active program on Graves disease. New surgical techniques are evaluated for Graves patients and basic science research is carried out to advance understanding about the disease.

Vision Genetics Center

Initially established in 1978 as the UCLA Retinitis Pigmentosa Registry, the Vision Genetics Center, under the direction of **Dr. Michael B. Gorin**, is an integrated clinical and research program that addresses the full spectrum of hereditary eye disorders. Center members, representing multiple disciplines, combine their efforts to understand the underlying molecular basis of a broad range of ocular conditions, including those involving the development of the eye, cornea, lens, extraocular muscles, retina, vitreous, and optic nerve. Areas of interest include both simple inherited conditions caused by alterations in single genes, as well as conditions in which multiple genetic variations and other risk factors play a role.

The Center offers patients and their family members state-of-the-art diagnosis and care of the hereditary eye or vision condition. Services include genetic counseling and, when appropriate, DNA testing either as a clinical diagnostic service, a research program, or in combination. The Center's faculty members collaborate with a number of genetic research groups around the world to ensure that patients can participate in the most advanced research for their particular condition.

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 to maximize visual function and quality of life of patients with low vision, defined as best corrected vision of 20/70 or worse in the better eye. These outcomes are accomplished with a rehabilitation plan tailored to each patient's specific needs and goals.

The Center provides assistance in the form of patient consultation and training, including reading and computer training, as well as evaluation with the latest low-vision devices that can help patients adapt to their visual restrictions. The Center utilizes a wide array of technologically advanced devices, such as magnifiers, telescopes, and digital and computer technology. Customized for each patient's individual needs, services may range from simple solutions to specialized approaches. One unique feature of the Center is a special "lending library" of select low-vision devices that enables patients to try them at home or in the office prior to purchase. When appropriate, referrals are provided to assist independent living through occupational therapy and orientation and mobility training.



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.

Corneal Diagnostic Laboratory

The Corneal Diagnostic Laboratory, under the direction of **Dr. Anthony J. Aldave**, offers a comprehensive array of corneal imaging modalities. Services include imaging of the anterior and posterior corneal surfaces with the Marco OPD-Scan III and Bausch and Lomb Orbscan topographers and the Ziemer GALILEI Dual Scheimpflug Analyzer, and imaging of the corneal endothelium for assessment of corneal endothelial cell morphology and density using the KONAN CellChek XL specular microscope. Full-thickness confocal microscopic imaging of the cornea, a very useful tool in the diagnosis of suspected fungal, acanthamoebic and other parasitic infections of the cornea, is performed with the Heidelberg HRT3 confocal microscope. This instrument can also perform optical pachymetry to noninvasively measure LASIK residual bed thicknesses and flap thicknesses as well as evaluate the LASIK interface for possible infections, diffuse lamellar keratitis, and ingrowth.

Glaucoma Photography Laboratory

The Glaucoma Photography Laboratory, under the direction of **Dr. Joseph Caprioli**, provides specialized photographs for new and follow-up glaucoma patients to assist the ophthalmologist in the management of patients with this disease. 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, using confocal laser light, measures additional parameters of the optic nerve, and provides more information on the nerve fiber layer. Optical coherence tomography 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. Several types of tests are performed. 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. The Laboratory also engages in basic science research to further understanding of eye movement as well as diseases of the eye, brain, and muscles, and related tissues of the inner ear.



Under the direction of Dr. Joseph L. Demer (standing), the Ocular Motility Clinical and Basic Science Laboratory engages in basic science research to further understanding of eye movement and diseases of the eye, brain, muscles, and related tissues of the inner ear.

Ophthalmic Photography Clinical Laboratory

The Ophthalmic Photography Clinical Laboratory, under the direction of **Dr. Tara A. McCannel**, 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 **Dr. Steven D. Schwartz**, performs clinical examinations that are useful in diagnosing both ocular and orbital eye diseases. 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 intraocular lens calculations are also performed in the Laboratory, under the direction of **Dr. Ralph Levinson**. Biometry measures the axial eye length, anterior chamber depth, and lens thickness; intraocular lens calculations are performed to determine the power of the lens implant for cataract patients.

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 lights 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 diagnostic possibilities. Electrophysiological tests, including both the full-field and multifocal electroretinograms (ERG and mfERG), the electro-oculogram (EOG), and visually evoked cortical potentials (VECP), record electrical signals from different layers of the visual system to identify the site responsible for visual symptoms. Psychophysical tests require the participation of the patient in specific tasks to evaluate visual functions like color blindness, contrast sensitivity, and visual acuity. In many cases, both electrophysical and psychophysical tests are performed together 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. The programs 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 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. Predoctoral and postdoctoral 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 have 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. Third-year medical students complete a one-week rotation in ophthalmology, and the fourth-year medical student program is made up of various elective programs. Elective courses provide intensive exposure to clinical ophthalmology and basic visual sciences.



Jules Stein Eye Institute residents practice cataract surgery techniques at Alcon Laboratories.

Medical Student Research Program

At the Jules Stein Eye Institute, medical students have taken clinical and laboratory research electives for decades; however, there has been no formal program wherein a medical student could obtain salary and research support. The Medical Student Research Program allows select medical students to familiarize themselves with laboratory or clinical vision science research, in the hopes that this will enhance their desire to undertake a career in ophthalmology, with a focus on academic ophthalmology. Each year, a committee selects one or two medical student researchers to receive salary and research support for 6–12 months in the laboratory or clinical research area of the student's mentor. The goal of the program is to encourage medical students to pursue careers in academic ophthalmology.

UCLA Ophthalmology Residency Program

The Department of Ophthalmology conducts an accredited three-year residency program for 24 residents; eight new residents begin training each July. The full breadth of ophthalmology training is offered, including experience in general ophthalmology and ophthalmic subspecialties. Training incorporates the resources of the 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, and walk-in patients. They also serve as an ophthalmology consult service for inpatients in the 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.

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 Basic and Clinical Sciences Course. These lectures are followed by Grand Rounds, which consist 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.

Surgery Training

Residents begin to perform surgery in their first year of training and continue to operate throughout their residency. Surgical cases are assigned commensurate with level of training and experience. First-year residents begin in the Institute's Microsurgery Laboratory, an organized surgical course that includes computerized surgical simulators. This facility is available to residents throughout their training. Residents first assist on selected surgical cases; by the end of their residency, they are performing procedures independently.

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 ongoing clinical or basic science research projects 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

For physicians who are interested in academic careers and professional leadership as clinician-scientists, the Jules Stein Eye Institute offers an Ophthalmology Specialty Training and Advanced Research Program, referred to as EyeSTAR, which 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 already has a doctorate. EyeSTAR trainees work under the guidance of a faculty advisory panel representing the trainee's clinical and research interests.

The unique program began in 1995 and is geared to physicians committed to academic careers in ophthalmology, combining basic science with clinical practice in a five-year or six-year curriculum. EyeSTAR graduates are trained to compete not just with clinical scientists but also with top basic scientists from all institutions. Trainees select their faculty mentors from the Vision Research Division of the Jules Stein Eye Institute or from the David Geffen School of Medicine at UCLA, College of Letters and Sciences, School of Public Health, Clinical Scholars Program, and RAND Graduate School.

EyeSTAR is recognized by the National Eye Institute and the Association of University Professors of Ophthalmology as a model training program for clinician-scientists in ophthalmology.



UCLA Clinical Ophthalmology and Vision-Science Fellowship Programs

The Jules Stein Eye Institute offers particularly well-qualified persons the opportunity to receive fellowship training in specific areas of clinical ophthalmology or vision-science research.

Following successful completion of a residency program, a clinical fellowship combines outpatient, inpatient, and surgical experience in an ophthalmic subspecialty. The clinical fellow assumes increasing responsibility for patient care under the supervision of faculty members responsible for the program. In addition to receiving training 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 ongoing research projects in a field related to their specialty.

Vision-science fellowship training is laboratory-based and offers both predoctoral and postdoctoral opportunities to trainees in specific areas of vision science that encompass 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. The scope and nature of the training program for each predoctoral or postdoctoral fellow is developed by the trainee and his/her faculty mentor.



Sylvia Yoo receives hands-on instruction at the Basic Cataract Surgery Course held October 1, 2011.

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 graduates of residency training programs for careers in academic comprehensive ophthalmology, emphasizing the latest techniques in cataract surgery and combined cataract-refractive surgery. Fellows gain clinical experience by working under the program director in the comprehensive ophthalmology consultation suite and University Ophthalmology Associates, performing independent and supervised surgery and supervising residents. Teaching is an integral part of the fellowship experience. Fellows are expected to be instructors in courses offered by the Comprehensive Ophthalmology Division, instruct medical students, present cases at Grand Rounds, and participate in courses offered during the annual American Society of Cataract and Refractive Surgery and American Academy of Ophthalmology meetings. Fellows are also expected to undertake several clinical research projects during the year and are required to present the results of one study at one of the meetings.

Fellowship in Contact Lens Practice

This one-year fellowship, under the direction of **Drs. Barry A. Weissman and Melissa W. Chun**, offers optometrists and ophthalmologists advanced training in contact lens care. Fellows participate in patient care in the Jules Stein Eye Institute Contact Lens Center. Working with optometrists, ophthalmology residents, and ophthalmology fellows of various subspecialties provides 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, adult and pediatric aphakia, presbyopia, postsurgical corneas, irregular corneas secondary to trauma, and diseased corneas. Fellows are 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, fellows become 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.

Fellowship in Cornea–External Ocular Diseases and Refractive Surgery

Under the direction of **Drs. Anthony J. Aldave, Bartly J. Mondino, Gary N. Holland, Sophie X. Deng, Barry A. Weissman,** and **David Rex Hamilton**, one-year fellowships are offered in the study of diseases of the cornea, external eye, anterior segment, and refractive surgery. Clinical experience consists of participation in the cornea faculty practices, including surgery, and in the care of emergency cornea cases at the Jules Stein Eye Institute. Fellows work in the microsurgical laboratory, and assist in teaching microsurgical 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 Institute, fellows supervise patient care in the cornea clinics at the West Los Angeles Veterans Affairs Healthcare Center. Experience and knowledge concerning contact lens fitting, contact lens management, and related aspects of corneal physiology are also obtained. 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, Simon K. Law,** and **Kouros Nouri-Mahdavi**, the one-year or two-year glaucoma fellowship provides clinical and laboratory experience in glaucoma diagnosis and management. Clinical experience is gained by examining patients in the consultation suite and participating in their clinical and surgical management. Fellows work in the glaucoma microsurgical laboratory, participate in microsurgery courses, assist in the glaucoma clinic, and develop expertise in the various diagnostic techniques used in glaucoma treatment through preceptor-type relationships with faculty. They participate in glaucoma teaching at the Jules Stein Eye Institute and affiliated institutions, present cases at teaching rounds, and prepare presentations for regularly scheduled glaucoma conferences. Fellows also undertake at least one research project, which may be a clinical study or an applied research project in the laboratory, in cooperation with the faculty advisor.

Fellowship in Medical Retina and Genetics

This one-year fellowship, under the directorship of **Dr. Michael B. Gorin**, provides clinical knowledge pertaining to the diagnosis and management of a broad array of retinal disorders including age-related macular degeneration, diabetic retinopathy, retinal vascular disease, inflammatory retinopathies, drug-related toxic retinopathies, and hereditary retinal and macular degenerations and dystrophies. Fellows are instructed in the proper use and interpretation of noninvasive diagnostic tools, and training includes genetic counseling and the proper use of molecular genetic diagnostics. Fellows will gain experience with a diverse set of interventional skills including a wide spectrum of retinal laser procedures and periocular and intravitreal injection of various classes of drugs.

Fellows divide their time among the clinical practices of Drs. Gorin, **David Sarraf**, and **Colin A. McCannel** within the Division of Retinal Disorders and Ophthalmic Genetics as well as in the Retinal Diagnostics Unit and the Visual Physiology Laboratory directed by **Dr. Steven Nusinowitz** at UCLA. Dr. McCannel's clinic provides exposure to surgical retinal decision-making and management issues. The fellows also provide care and teach residents in retina subspecialty clinics at two UCLA-affiliated hospitals. Fellows are strongly encouraged to engage in translational clinical research and/or clinical trials and descriptive retrospective studies and develop an in-depth working knowledge of the current scientific literature of medical and genetic retina. They are expected to participate in genetic and imaging conferences as well as other relevant meetings.

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 David Geffen School of Medicine at UCLA maintains major clinical and research programs in neurology, neurosurgery, and neuroradiology. Fellows attend the weekly Neurology and Neurosurgery Grand Rounds, take an active part in seeing relevant inpatient consultations throughout the medical center, and assist in selected surgical procedures of interest to neuro-ophthalmologists. Attendance at the weekly neuro-radiology teaching conferences is encouraged. Time is allotted for scientific reading and for research activities. Participation in clinical research, such as studies of eye movement disorders and disturbances of visual pathways, is expected.

Fellowship in Ophthalmic Pathology

Under the direction of **Dr. Ben J. Glasgow**, this fellowship provides preparation for an academic career in ophthalmic pathology. One-year, two-year, and three-year training programs are available depending on the background of the applicant. Training encompasses many aspects of ophthalmic pathology. Fellows may choose between a research or clinical-based curriculum. Clinical fellows gain expertise in surgical pathology; autopsy pathology; cytology, including fine-needle aspiration; electron microscopy; immunohistochemistry; DNA *in situ* hybridization; Southern blot analysis; and polymerase chain reaction techniques for diagnostic work. The fellowship programs are individualized according to the credentials and capabilities of each fellow.

Fellowship in Orbital and Ophthalmic Plastic Surgery

Fellowships in orbital and ophthalmic plastic surgery, under the overall supervision of **Drs. Henry I. Baylis, Robert Alan Goldberg, Jonathan Hoenig, and Norman Shorr**, provide training for ophthalmologists who are interested in specializing in orbital and adnexal disorders, and in aesthetic and reconstructive orbitofacial surgery. The fellowship program is approved by the American Society of Ophthalmic Plastic and Reconstructive Surgery and the American Academy of Cosmetic Surgery. Fellows participate in orbital and ophthalmic plastic surgery outpatient consultation, inpatient care, and surgical procedures at the Jules Stein Eye Institute and affiliated hospitals. They also participate extensively in the continuing education and 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. One to two international fellows also participate in the program annually.

Fellowship in Pediatric Ophthalmology and Strabismus

The division of Pediatric Ophthalmology and Strabismus offers one-year fellowships, under the directorship of **Drs. Sherwin J. Isenberg and Joseph L. Demer**. Clinical experience 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 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 Uveitis and Inflammatory Eye Diseases

This one-year fellowship, under the direction of **Drs. Gary N. Holland and Ralph D. Levinson**, offers comprehensive training in the evaluation and management of uveitis and other inflammatory eye diseases. Fellows participate in faculty practices at the Jules Stein Eye Institute, as well as uveitis clinics at two UCLA-affiliated hospitals, assisting with diagnostic evaluations, emergency cases, management of immunomodulatory therapies, and perioperative care of patients undergoing surgical procedures. Research is an integral part of the fellowship program. Fellows may become involved in patient-based or laboratory-based projects, including special research programs in the Ocular Inflammatory Disease Center and collaborations with investigators at other institutions. Fellows typically complete and publish one or two original research articles and frequently prepare a book chapter or review on a subject of interest. Support is provided for fellows to participate in the activities of related subspecialty organizations, such as the annual meetings of the American Uveitis Society.

Fellowship in Vitreoretinal Diseases and Surgery

Under the direction of **Allan E. Kreiger** as director and **Steven D. Schwartz** as co-director, the Vitreoretinal Diseases and Surgery Fellowship in the Department of Ophthalmology at the Jules Stein Eye Institute is a two-year program designed to provide medical and surgical training and clinical and vision science research opportunities related to vitreoretinal disease. Major components of the fellowship relate to diabetic retinopathy, diseases of the macula and retina, hereditary retinal degenerations, ocular trauma, ophthalmic oncology, rhegmatogenous retinal disease, vitreoretinal surgery, pediatric retinal disease, and diagnostic imaging. Clinical training includes the prevention, diagnosis, and treatment of retinal, choroidal, vitreous, and related ocular disease. Fellows participate in retinal clinics and surgical procedures at the Jules Stein Eye Institute and four UCLA-affiliated hospitals. Research is encouraged, whether clinical, laboratory, or translational. Other activities include vitreoretinal disease teaching at the Jules Stein Eye Institute and affiliated institutions and case presentations at teaching sessions. The program also includes the participation of several international fellows.

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** and directed by **Dr. Gabriel H. Travis**.

Predoctoral fellows take a defined program of core courses and carry out eye-related research, obtaining doctorates in about six years. Fellows are required to present their research at informal and formal seminars, and are encouraged to participate in national and international meetings 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-year to two-year fellowships under the supervision of specific Institute faculty. Candidates for these 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.



Vision Science Fellows are supervised by Institute faculty members who are engaged in basic science research and have active laboratories.



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
William P. Chen, 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
Ezra Maguen, MD
Robert K. Maloney, MD
Samuel Masket, MD
Albert T. Milauskas, MD
Anthony B. Nesburn, MD
Leon G. Partamian, MD
Yaron S. Rabinowitz, MD
Teresa O. Rosales, MD
Robert J. Schechter, MD
Alan L. Shabo, MD
Norman Shorr, MD
Roger W. Sorenson, MD

Associate Clinical Professor of Ophthalmology

Kevin J. Belville, MD
W. Benton Boone, MD
Harvey Brown, MD
Andrew E. Choy, MD
Peter J. Cornell, MD
Uday Devgan, MD
Paul B. Donzis, MD
David R. Fett, 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
David F. Kamin, MD
Brian L. Lee, MD
Jonathan I. Macy, MD
Joan E. McFarland, MD
John F. Paschal, MD
Gene J. Pawlowski, MD
George M. Rajacich, MD
Michael Reynard, MD
David S. Robbin, MD
David E. Savar, MD
Timothy V. Scott, MD
Albert Sheffer, MD
James D. Shuler, MD
Yossi Sidikaro, MD, PhD
Matthew Sloan, MD
Ronald J. Smith, MD
Alfred Solish, MD, MS
Kenneth D. Steinsapir, MD
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
John D. Bartlett, MD
Mark A. Baskin, MD
Arthur Benjamin, MD
Katherine L. Bergwerk, MD
Betsy E. Blechman, MD
Cynthia A. Boxrud, MD
Amarpreet S. Brar, MD
Almira W. Cann, MD, PhD
Arnett Carraby, MD
Vicki K. Chan, MD
Andrew M. Chang, MD
Candice Chen, 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
Robert E. Engstrom, MD
Doreen T. Fazio, MD
Sanford G. Feldman, MD
Laura E. Fox, MD
Ronald P. Gallemore, MD
George H. Garcia, MD
Kathryn M. Gardner, MD
W. James Gealy, Jr., MD
Damien Goldberg, MD
Richard Havunjian, MD
Man M. Singh Hayreh, MD
Matthew L. Hecht, MD
Jonathan A. Hoenig, MD
David Hollander, MD
Jeffrey Hong, MD
Morton P. Israel, MD
Steven J. Jacobson, MD
Batool Jafri, MD
Véronique H. Jotterand, MD
J. David Karlin, MD
David S. Katzin, MD
Jerome R. Klein, MD
Craig H. Kliger, MD
Steven Leibowitz, MD

**Assistant Clinical Professor
of Ophthalmology** continued

Robert T. Lin, MD
Joanne E. Low, MD
Bryant J. Lum, MD
Michael C. Lynch, MD
M. Polly McKinstry, MD
Ashish M. Mehta, MD
David R. Milstein, MD
Ronald L. Morton, MD
Roger L. Novack, MD, PhD
Alpa A.S. Patel, MD
James H. Peace, MD
Cheryl J. Powell, MD
Firas Rahhal, MD
Laurence N. Roer, MD
Barry S. Seibel, MD
Meryl Shapiro-Tuchin, MD
David M. Shultz, MD
Eliot B. Siegel, MD
Lance M. Siegel, MD
John D. Slaney, MD
Robert J. Smyth, MD
Kenneth O. Sparks, MD
Sadiqa Stelzner, MD
Mehryar "Ray" Taban, MD
Robert C. Tarter, MD
Debra G. Tennen, MD
Teddy Y. Tong, MD
Henry E. Ullman, MD
Sidney J. Weiss, MD
Scott Whitcup, MD
Jeffrey V. Winston, MD
David L. Wirta, MD
Barry J. Wolstan, MD
Wilson C. Wu, MD, PhD
Michael C. Yang, MD
Patrick C. Yeh, MD
Richard H. Yook, MD

**Clinical Instructor
in Ophthalmology**

Gavin G. Bahadur, MD
Eduardo Besser, MD
Maria Braun, MD
Neil D. Brouman, MD
Stephen S. Bylsma, MD
Andrew Caster, MD
Joseph H. Chang, MD
Hajir Dadgostar, MD
Paul J. Dougherty, MD
Sean Dumars, MD
Daniel Ebroon, MD
Brad S. Elkins, MD
Satvinder Gujral, MD
Lawrence M. Hopp, MD, MS
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
Jayantkumar Patel, MD
Susan Ransome, MD
Steven H. Rauchman, MD
Richard H. Roe, MD
Aaron Savar, MD
Kayar Shah, MD
Mark Silverberg, MD
Abraham Soroudi, MD
Sharon N. Spooner-Dailey, MD
Dana P. Tannenbaum, MD
William L. Trotter, MD
Mathew Wang, MD
Peter H. Win, 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
Sherman M. Mellinkoff, MD
Professor Emeritus of Medicine
Former Dean, UCLA School
of Medicine
C. Kumar Patel, PhD
Professor, Department of
Physics and Astronomy
Antoni Ribas, MD
Associate Professor, Departments
of Hematology/Oncology and
Surgical Oncology
Assistant Director for
Clinical Programs, UCLA
Human Gene Medicine Program
Director, JCCC Cell and
Gene Therapy Core Facility
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 2009–2012

Robert M. Beardsley, MD
Jamison J. Engle, MD
Shaheen P. Karim, MD (EyeSTAR)
Hanna Y. Kim, MD
John D. Pitcher, MD
Joanne C. Wen, MD
Allen B. Yeroushalmi, MD
Sandy X. Zhang-Nunes, MD

Second-Year Residents 2010–2013

Wanda Hu, MD
Crystal Hung, MD
Helen Lee Kornmann, MD, PhD
(EyeSTAR)
Ehsan Rahimy, MD
David C. Reed, MD
Neeta Varshney, MD
Sylvia H. Yoo, MD

First-Year Residents 2011–2014

Meena George, MD
Anthony Joseph, MD
Tina Ku, MD
Robert Kule, MD
Christine Lin, MD
C. Nathaniel Roybal, MD, PhD
(EyeSTAR)
Anitra Thomas, MD
Dong Dawn Yang, MD

EyeSTAR Trainees

Shaheen P. Karim, MD
Diana Katsman, MD
Helen Lee Kornmann, MD, PhD
C. Nathaniel Roybal, MD, PhD
Mauricio E. Vargas, MD, PhD

Clinical Fellows

Corneal and External Ocular Diseases and Refractive Surgery

Sara Akbari, MD
Roger Duncan Johnson, MD

Glaucoma

Jennifer Huang, MD
Michael Kapamajian, MD
Amelia Chen Sheh, MD

Orbital and Ophthalmic Plastic Surgery

David Isaacs, MD
Joseph Lin, MD

Pediatric Ophthalmology and Strabismus

Jason Peragallo, MD
Kirsta Schoeff, DO

Uveitis and Inflammatory Eye Disease

Alla Kukuyev, MD

Vitreoretinal Diseases and Surgery

Christopher Gee, MD
Adriana Ramirez, MD
Carolyn Pan, MD
Vinod Voleti, MD

Specialized Clinical Fellow

Vivian Phan, OD (Contact Lens)

International Fellows

Comprehensive Ophthalmology

Ahmed E.M.M. Daifalla, MSc, MD
Egypt
Hamad Elzarrug, MD
Libya

Glaucoma

Parham Azarbod, Bsc, MBBS, MRCS,
FRCOphth
United Kingdom
Hamid Hosseini, MD
Iran
Joon Mo Kim, MD
Korea
Haksu Kyung, MD, PhD
Korea
Sasan Moghimi, MD
Iran
Nariman Nassiri, MD
Iran
Naveed Nilforushan, MD
Iran

Orbital and Ophthalmic Plastic Surgery

Jocelyne Kohn, MD
Chile
Konstantinos Papageorgiou, MD
Greece

Pediatric Ophthalmology

Abubaker Affan, MD
Libya
Zia Chaudhuri, MBBS, MS, FRCS
(Glasg)
India
Karen Hendler, MD
Israel

Pathology (Eye)

Po-Ting Yeh, MD
Taiwan

Visual Physiology

Letícia D. Alves, MD
Brazil

Vitreoretinal Diseases and Surgery

Valentina Franco-Cardenas, MD
Mexico
Gad Heilweil, MD
Israel
Kentaro Nishida, MD
Japan

Postdoctoral Research Fellows

Negin Ashki, PhD
Emilie Colin, PhD
Jeremy Cook, PhD
Jun Deng, PhD
Julian Esteve-Rudd, PhD
Oluwatoyin Fafowora, MD, MPH
Sheyla Gonzalez-Garrido, PhD
Sonia Guha, PhD
Mei Jiang, PhD
Miyeon Kim, PhD
Gergana Kodjebacheva, PhD
Carrie Louie, PhD
John McCoy, PhD
Hua Mei, PhD
Shawn Morales, PhD
Martin Nakatsu, PhD
Yu “Christie” Qin, PhD
Agrani Rump, PhD
Shanta Sarfare, PhD
Samuel Strom, PhD
Deepti Trivedi, PhD
Thu Thuy Truong, PhD
Zhongyu Yang, PhD
Jang “Lawrence” Yoo, PhD
Alejandra Young, PhD

Predocctoral Research Fellows

Kelly Cadenas
Anita Dushyanth
Jun Isobe
Michael Lerch
Carlos Lopez
Sheryll Mangahas
Allison Sargoy
Kwang Sup “Andrew” Shin
Binbin Xie
Yibo Yu

Educational Offerings

Ophthalmology and Vision Science Training Programs

Seventeenth Annual Vision Science Conference

October 28–30, 2011

At this annual event, sponsored jointly by the Jules Stein Eye Institute and the National Eye Institute Vision Science Training Grant, pre- and postdoctoral fellows and faculty 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 2011–2012, the following course components were offered:

Glaucoma

September 7, 2011–November 9, 2011

Section Chairman

Joseph Caprioli, MD

External Disease and Cornea

November 16, 2011–February 8, 2012

Section Chairman

Gary N. Holland, MD

Pathology

February 22, 2012–April 4, 2012

Section Chairman

Ben J. Glasgow, MD

Lens and Cataract

April 11, 2012–May 30, 2012

Section Chairman

Kevin M. Miller, MD

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 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

Coordinators

Sophie X. Deng, MD, PhD

David S. Williams, 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. The series frequently includes presentations by eminent visitors to the UCLA campus.

Phacoemulsification Course

October 1, 2011

March 17, 2012

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.

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.

Neuro-Ophthalmology Conference

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

Oculoplastics Conference

This conference meets bimonthly and includes full-time and volunteer clinical faculty and visitors from the community who 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, at the Jules Stein Eye Institute.

Pediatric Rheumatology and Uveitis Conference

Members of the Uveitis Service meet each week with members of the Rheumatology Service from the Department of Pediatrics to discuss patient-care issues and research topics of mutual interest. The conference is attended by faculty, clinical fellows from the Departments of Ophthalmology and Pediatrics, and research staff. The conference is coordinated by Gary N. Holland, MD.

Continuing Education Programs

Aesthetic Eyelid and Orbitofacial Surgery Course

June 15–16, 2012

Robert Axelrod Memorial Lecturer

Don O. Kikkawa, MD
University of California, San Diego

Held by the Orbital and Ophthalmic Plastic Surgery Division, this event attracted ophthalmologists, dermatologists, and cosmetic surgeons from around the country and Asia. Surgical demonstrations, a cadaver dissection, and didactic lectures informed participants of the latest advances in the field of aesthetic and reconstructive surgery for the eyelids and face.

Advances in Eye Care

January 29, 2012

Course Chair

Melissa W. Chun, OD

Optometrists from across California traveled to Los Angeles to attend the 14th Annual Jules Stein Eye Institute and Southern California College of Optometry Joint Optometric Symposium focusing on advances in eye care. The program included lectures by featured speakers from the Jules Stein Eye Institute and other institutions.

Comprehensive Ophthalmology Review Course

February 23–26, 2012

Course Directors

David Sarraf, MD
John Irvine, MD

The Jules Stein Eye Institute and the Doheny Eye Institute sponsored the Sixth Annual Comprehensive Ophthalmology Review Course. Developed to serve ophthalmology-training programs in Southern California, the program concentrated on the epidemiology, clinical presentation, diagnosis, and management of ophthalmological disease.

JSEI Clinical and Research Seminar

June 8, 2012

Coordinators

Anthony C. Arnold, MD
Robert A. Goldberg, MD
Bartly J. Mondino, MD
Xian-Jie Yang, PhD

Geared to physicians and basic scientists, this seminar is an intensive course in which UCLA and guest faculty present current concepts and recent advances in ophthalmology. The Jules Stein Lecture, the Bradley R. Straatsma Lecture, and the Thomas H. Pettit Lecture, which commemorate each doctor's contributions to ophthalmic science at UCLA and throughout the United States, are held in conjunction with this seminar and are among the academic highlights of the year.

43rd Jules Stein Lecturer

Mark S. Blumenkranz, MD
Professor and Chairman
Byers Eye Institute at Stanford
Department of Ophthalmology
Stanford University School of Medicine
Palo Alto, California

10th Bradley R. Straatsma Lecturer

Cesar T. Chavez, MD
Chavez Eye Care
El Centro, California

10th Thomas H. Pettit Lecturer

George M. Rajacich, MD
Associate Clinical Professor
of Ophthalmology
David Geffen School of Medicine
at UCLA
Los Angeles, California

Research Contracts and Grants Fiscal Year 2011–2012

Vision Science Grants

Total Award

Anthony J. Aldave, MD

Cloning/Gene/Posterior Corneal Dystrophy
National Eye Institute: ARRA Administrative Supplement
Duration: 9/1/09–3/29/12

\$997,435

Dean Bok, PhD

Identification and Cellular Localization of Gene Products that Affect
Photoreceptor Survival in Inherited Retinal Degeneration
Macula Vision Research Foundation
Duration: 4/1/08–3/31/13

\$250,000

Initiating Triggers for Age-Related Macular Degeneration and Complement
Regulator Gene Responses as a Function of Cultured RPE Complement Factor
Doheny Eye Institute
Duration: 7/1/11–6/30/12

\$100,000

Joseph Caprioli, MD

Comparing the Effectiveness of Treatment Strategies for
Primary Open-Angle Glaucoma
Outcome Sciences, Inc.
Duration: 4/29/11–4/28/13

\$115,962

A Novel Computer Algorithm to Predict Visual Field Function
Based on Structural Imaging in Glaucoma
Massachusetts Eye and Ear Infirmary
Duration: 7/15/10–7/15/11

\$2,560

Anne L. Coleman, MD, PhD

Immune Response Gene Polymorphisms and AMD: Examining HLA-KIR Epistasis
Outcome Sciences, Inc.
Duration: 7/1/2011–6/30/12

\$80,759

ARRA: Evidence Development for Topics Identified as National Priorities for
Comparative Effectiveness Research
Outcome Sciences, Inc.
Duration: 7/19/10–7/18/14

\$106,551

Latourette, Robin: Fixation Stability During Perimetry in Advanced Glaucoma
Fight For Sight, Inc. (Prevent Blindness America)
Duration: 1/1/12–12/31/12

\$2,100

Joseph L. Demer, MD, PhD

Biomechanical Analysis in Strabismus Surgery
National Eye Institute
Duration: 5/1/06–4/30/12

\$2,647,114

Walt and Lilly Disney Award for Amblyopia Research
Research to Prevent Blindness
Duration: 7/1/04–12/31/12

\$75,000

Genetic and Anatomic Basis of the Fibrosis Syndrome
NEI/Boston Children's Hospital
Duration: 12/1/08–11/30/11

\$102,153

Total awards for NIH, Clinical, and PI-Initiated Research include indirect cost.

Sophie X. Deng, MD, PhD

Regeneration of Functional Human Corneal Epithelial Progenitor Cells
California Institute for Regenerative Medicine
Duration: 3/1/12–2/28/13

\$1,621,019

Gordon L. Fain, PhD

Physiology of Photoreceptors
National Eye Institute
Duration: 8/1/08–7/31/12

\$1,000,000

Deborah B. Farber, PhD, DPhhc

Molecular Mechanisms in Retinal Degeneration
National Eye Institute
Duration: 7/1/06–11/30/12

\$1,864,094

Characterization of the Interaction between ZBED4, a Novel Retinal Protein, and SAFB1
Hope for Vision
Duration: 11/1/09–10/31/11

\$60,000

JoAnn A. Giaconi, MD

Evaluation of Evidence-Based Glaucoma Practices at the VA
American Glaucoma Society
Duration: 9/1/10–8/31/12

\$10,000

Lynn K. Gordon, MD, PhD

Novel Therapies to Prevent Blindness Caused by Proliferative Vitreoretinopathy
National Eye Institute
Duration: 4/1/10–3/31/15

\$1,420,140

Novel Therapies to Prevent Blindness Caused by Ocular Trauma
and Proliferative Vitreoretinopathy
A.P. Giannini Foundation
Duration: 4/1/09–3/31/12

\$129,000

Michael B. Gorin, MD, PhD

Genetics in Age-Related Maculopathy
National Eye Institute
Duration: 4/1/07–3/31/13

\$7,067,724

Genetics in Age-Related Maculopathy
National Eye Institute: ARRA Administrative Supplement
Duration: 9/30/09–9/29/11

\$730,926

UCLA Jules Stein Eye Institute Center Grant
Foundation Fighting Blindness
Duration: 7/1/10–6/30/13

\$419,308

Diabetic Retinopathy Diagnosis Device
Neuro Kinetics Inc.
Duration: 9/1/10–1/31/13

\$119,786

Gary N. Holland, MD

Studies of Ocular Complications of AIDS (SOCA)
National Eye Institute
Duration: 8/1/05–7/31/12

\$2,768,461

Total awards for NIH, Clinical, and PI-Initiated Research include indirect cost.

Longitudinal Studies of Ocular Complications of AIDS (LSOCA) National Eye Institute Duration: 8/1/03–7/31/10	\$1,017,221
Multicenter Uveitis Steroid Treatment (MUST) Trial National Eye Institute Duration: 12/1/10–11/30/17	\$983,080
International Consensus Meeting on CMV Retinitis amfAR Aids Research Duration: 8/1/10–7/31/11	\$25,000
UCLA/AUPO Introduction to Clinical Research Course National Eye Institute Duration: 3/01/11–4/30/12	\$43,744
Academic Research Organization for Research with Retinal Cells Derived from Stem Cells for Stargardt Macular Dystrophy Advanced Cell Technology Duration: 4/25/11–4/24/13	\$428,740
Academic Research Organization for Research with Retinal Cells Derived from Stem Cells for Age-Related Macular Degeneration Advanced Cell Technology Duration: 5/31/11–5/30/13	\$428,740
Wayne L. Hubbell, PhD	
Molecular Basis of Membrane Excitation National Eye Institute Duration: 5/1/10–4/30/13	\$2,795,834
Core Grant for Vision Research at the Jules Stein Eye Institute National Eye Institute Duration: 3/1/10–2/28/15	\$2,737,632
Core Grant for Vision Research at the Jules Stein Eye Institute National Eye Institute: ARRA Administrative Supplement Duration: 3/1/10–2/28/15	\$696,196
Ralph D. Levinson, MD	
Immunologic and Clinical Studies of Eye Disease at the Jules Stein Eye Institute MacDonald Family Foundation Duration: 12/1/08–12/01/13	\$250,000
Tara A. McCannel, MD, PhD	
High Resolution Cytogenetic Study of Archival Metastatic Choroidal Melanoma American Association for Cancer Research Duration: 7/1/08–12/31/11	\$100,000
Kevin M. Miller, MD	
Clinical Testing of the Tracking Adaptive-Optic Scanning Laser Ophthalmoscope Physical Optics Corp./NIH Duration: 1/15/11–9/29/12	\$55,751

Total awards for NIH, Clinical, and PI-Initiated Research include indirect cost.

Bartly J. Mondino, MD

RPB Unrestricted Grant
 Research to Prevent Blindness, Inc.
 Duration: 1/1/12–12/31/12 \$100,000

Kouros Nouri-Mahdavi, MD

To Establish an Electrophysiology Lab for Evaluating the Role of Pattern ERG in
 Functional Assessment of Glaucoma
 American Glaucoma Society
 Duration: 9/1/10–8/31/11 \$10,000

Optimizing Imaging of the Retinal Nerve Fiber Layer with Spectral-Domain
 Optical Coherence Tomography
 American Glaucoma Society
 Duration: 4/1/11–12/31/11 \$40,000

Steven Nusinowitz, PhD

Ocular SHV: Role of Virus and IL-2 Optic Neuritis
 Cedars-Sinai Burns and Allen Research Inst./NIH
 Duration: 9/30/06–8/31/11 \$32,000

Stacy L. Pineles, MD

A Randomized Clinical Trial of Observation vs. Occlusion Therapy for
 Intermittent Exotropia
 Jaeb Center for Health Research
 Duration: 2/28/11–12/31/13 \$27,296

Binocular Summation in Strabismus
 NIH/National Eye Institute
 Duration: 9/01/11–8/31/12 \$1,081,280

Sweep Visual Evoked Potential for
 Use in Diagnosing and Managing Vision Loss from Amblyopia
 Knights Templar Eye Foundation, Inc.
 Duration: 7/01/11–6/30/12 \$40,000

Natik I. Piri, PhD

The Neuroprotective Effect of HSP72 Induction in Experimental Glaucoma
 National Eye Institute
 Duration: 9/30/09–8/31/12 \$1,304,704

David Sarraf, MD

Ranibizumab (Lucentis) for Treating Submacular Vascularized PED
 Southern California Desert Retina Consultants
 Duration: 7/2/10–6/30/12 \$119,304

Gabriel H. Travis, MD

The Role of Muller Cells in Visual Pigment Regeneration
 National Eye Institute
 Duration: 3/1/08–2/28/13 \$1,882,958

Vision Science Training Grant to Researchers at the Jules Stein Eye Institute
 National Eye Institute
 Duration: 9/30/05–9/29/12 \$1,181,713

Total awards for NIH, Clinical, and PI-Initiated Research include indirect cost.

Biochemical and Genetic Analysis of the Visual Cycle
 National Eye Institute
 Duration: 9/9/05–7/31/11 \$1,888,105

Development of a Stem Cell-Based Transplantation Strategy for Treating
 Age-Related Macular Degeneration
 California Institute for Regenerative Medicine
 Duration: 11/01/09–10/31/12 \$5,492,964

Bruce Ford and Anne Smith Bundy Foundation Grant
 Bruce Ford and Anne Smith Bundy Foundation
 Duration: 8/16/11–8/15/12 \$95,821

Federico G. Velez, MD

Development of an Electrical-Stimulation Device to Prevent Strabismic Amblyopia
 Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
 Duration: 1/1/10–12/31/10 \$30,000

David S. Williams, PhD

Doris and Jules Stein Research to Prevent Blindness Professorship
 Research to Prevent Blindness
 Duration: 1/1/08–12/21/12 \$570,380

MY07A Gene Therapy for Usher 1B-UCLA
 National Neurovision Research Institute
 Foundation Fighting Blindness, Inc.
 Wynn-Gund Translational Research Acceleration Program Award
 Duration: 7/1/08–6/30/13 \$1,325,415

Retinal Cell Biology of Myosin VIIA
 National Eye Institute
 Duration: 7/1/09–6/30/14 \$1,863,862

Kinesin in Photoreceptor Cells
 National Eye Institute: ARRA Administrative Supplement
 Duration: 9/30/09–9/29/12 \$770,000

Xian-Jie Yang, PhD

Hedgehog Signaling in Photoreceptor Differentiation and Maintenance
 National Eye Institute
 Duration: 12/1/09–11/30/12 \$1,509,200

Postdoctoral Fellow Grants

Shawn Morales, PhD

Lynn K. Gordon, MD, PhD (Mentor)

Novel Therapies to Prevent Blindness Caused by Ocular Trauma and
 Proliferative Vitreoretinopathy
 A.P. Giannini Foundation
 Duration: 4/1/09–3/31/12 \$129,000

Total awards for NIH, Clinical, and PI-Initiated Research include indirect cost.

Alejandra Young, PhD

Debora B. Farber, PhD, DPhhc (Mentor)

Interactions of the Melanosomal G-Protein-Coupled Receptor
OA1 and Gai Proteins in the Retinal Pigment Epithelium
Vision of Children Foundation
Duration: 6/1/10–5/31/12

\$222,757

EyeSTAR Graduate Student Grants

Diana Katsman, MD, and Debora B. Farber, PhD, DPhhc

Activation of Retinal Regenerative Potential by
Embryonic Stem Cell-Derived Microvesicles
Hope for Vision
Duration: 1/15/10–1/14/12

\$150,000

Clinical Trials

Lynn Gordon, M.D., Ph.D.

A Multicenter, Double-Blind, Randomized, Placebo-Controlled Study of Weight-Reduction
and/or Low Sodium Diet Plus Acetazolamide vs. Diet Plus Placebo I
St. Luke's College of Health Sciences
Duration: 4/8/2010–1/31/12

\$137,091

A Phase 1 Open Label, Dose Escalation Trial of QPI-1007 Delivered by a Single Intravitreal
Injection to Patients with Optic Nerve Atrophy
Quark Pharmaceuticals
Duration: 3/17/10–3/16/15

\$248,024

Case-Crossover Study of PDE5 Inhibitor Exposure as a Potential "Trigger Factor"
for Acute NAION
ICON Clinical Research, Inc.
Duration: 6/24/09–11/15/12

\$43,580

Jean-Pierre Hubschman, MD

A Phase III, Multicenter, Randomized, Double-Masked Study Comparing
the Efficacy and Safety of 0.5 mg and 2.0 mg of Ranibizumab
Genentech
Duration: 10/13/09–3/1/13

\$845,625

Steven D. Schwartz, MD

Research with Retinal Cells Derived from Stem Cells for
Stargardt Macular Dystrophy
Advanced Cell Technology
Duration: 3/23/11–3/22/13

\$762,184

Research with Retinal Cells Derived from Stem Cells for
Age-Related Macular Degeneration
Advanced Cell Technology
Duration: 4/5/11–4/5/13

\$835,693

Applicator System in the Treatment of Patients with Diabetic Macular Edema
Allergan Sales, LLC
Duration: 8/25/05–12/31/13

\$1,604,947

Total awards for NIH, Clinical, and PI-Initiated Research include indirect cost.

Age-Related Eye Disease Study II Emmes Corp. Duration: 1/1/06–12/31/12	\$249,007
Ranibizumab Injection Genentech, Inc. Duration: 10/5/07–8/31/12	\$553,500
Gene Transfer Product Candidates in Clinical Development Gen Vec, Inc. Duration: 2/27/09–2/26/24	\$39,537
A Natural History Study of Macular Telangiectasia Lowy Medical Research Institute/NEI Duration: 9/1/05–8/31/10	\$185,695
Resolution of Vitreomacular Adhesion Associated with Neovascular Age-Related Macular Degeneration with Intravitreal Microplasmin ThromboGenics, Inc. Duration: 6/30/09–6/29/11	\$42,495

Total awards for NIH, Clinical, and PI-Initiated Research include indirect cost.

Clinical Research Studies

Cornea and External Eye

Analysis of the Corneal and Limbal Epithelial Changes in Limbal Stem Cell Deficiency using In Vivo Confocal Microscopy

Investigators are working to establish a system for diagnosing limbal stem cell deficiency at a cellular level by correlating the information from impression cytology tests, confocal microscopy pictures, and medical records. Investigators: Sophie X. Deng, MD, PhD; and Anthony J. Aldave, MD

Genetic Basis of Posterior Polymorphous Corneal Dystrophy

Funded by the National Eye Institute, this study seeks 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. Investigators: Anthony J. Aldave, MD; and Gary N. Holland, MD

Identifying Novel Genes for Fuchs Corneal Endothelial Dystrophy

In this multicenter study, investigators are working to identify the gene(s) responsible for Fuchs corneal endothelial dystrophy, an inherited disorder that may result in irreversible corneal swelling and loss of vision. Investigators: Anthony J. Aldave, MD; Gary N. Holland, MD; and Bartly J. Mondino, MD

Keratoprosthesis Implantation in Patients with Corneal Opacification

This study aims to determine the success rate of keratoprosthesis (artificial corneal) transplantation for visual rehabilitation in patients with corneal opacification. Investigators: Anthony J. Aldave, MD; and Gary N. Holland, MD

Effect of Corneal Preservation Time on Long-Term Graft Success

The purpose of this study is to evaluate the effect of preservation time on corneal transplants. It will compare the preservation time up to the FDA limit of 14 days and hopes to determine that longer preservation time does not adversely impact graft success and endothelial cell density. Investigators: Anthony J. Aldave, MD; and Sophie X. Deng, MD, PhD

Eye Infections and Inflammations

Corneal Endothelial Cell Changes in Patients with Uveitis

The purpose of this study is to analyze the involvement of the corneal endothelium in uveitis and the effect of various types of keratic precipitates on the corneal endothelium. Investigators: Gary N. Holland, MD; Anthony J. Aldave, MD; Joseph Caprioli, 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. 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

Longitudinal Studies of the Ocular Complications of AIDS (LSOCA)

LSOCA is a multicenter, National Eye Institute supported, epidemiological study designed to investigate the nature of HIV-related eye diseases since the introduction of potent anti-retroviral therapies. More than 2,000 people with AIDS are being followed nationwide. Investigator: Gary N. Holland, MD

Multicenter Uveitis Steroid Treatment (MUST)

Investigators are comparing two currently available treatments for uveitis. Systemic treatment utilizing medications taken orally, by injection, or by intravenous infusion is being compared to treatment with an intraocular implant containing corticosteroid. Investigators: Gary N. Holland, MD; Jean-Pierre Hubschman, MD; and Ralph D. Levinson, MD

Natural Killer Cell Receptor Genes and AIDS-Related CMV Retinitis

Institute faculty members are studying why some people with AIDS develop CMV retinitis, an infection of the retina, while others do not. This study aims to determine whether KIR genes, which control natural killer cell activities and other immune functions, differ between HIV-infected individuals who develop CMV retinitis and those who do not, despite similar risk factors. Investigators: Gary N. Holland, MD; and Ralph D. Levinson, MD

A Comprehensive Analysis of Visual Function in Patients Diagnosed with HIV

The main goal of this study is to determine the sequence of events that lead to visual disturbances in HIV-infected patients. Investigators will obtain measures of visual function with a series of established clinical electrophysiological and psychophysical tests commonly used to evaluate the function at different sites within the retina. Results of this study may enable better understanding and measurements of how vision is affected in subjects diagnosed with HIV. Investigators: Steven Nusinowitz, PhD; and Gary N. Holland, MD

Corneal Endothelial Cell Changes in Children with Uveitis

This is a prospective study to evaluate the cornea, specifically endothelial cells, in children with uveitis. Uveitis is a general term meaning inflammation inside the eye. Investigators will be comparing these changes for children with anterior uveitis who have received a glaucoma drainage tube and those who have not. Investigators: Gary N. Holland, MD; Joseph Caprioli, MD; JoAnn Giaconi, MD; Simon K. Law, MD, PharmD; and Ralph D. Levinson, MD

A Comprehensive Analysis of Visual Function in Patients Diagnosed with Birdshot Chorioretinopathy

The main goal in this study is to investigate the relationship between vision dysfunction (eg, symptoms, visual field changes, contrast sensitivity, and color vision changes) experienced by patients diagnosed with birdshot chorioretinopathy and the location of defects in the retina as identified by electrophysiological testing. Investigators: Gary N. Holland, MD; Ralph D. Levinson, MD; and Steven Nusinowitz, PhD

General Ophthalmology

Clinical Testing of the Tracking Adaptive Scanning Laser Ophthalmoscope (TASLO)

This clinical study evaluates the capabilities of the TASLO in eye health and disease. This may lead to earlier detection of eye disease and a better understanding of anatomy and abnormal conditions of the eye. Investigators: Kevin M. Miller, MD; Michael B. Gorin, MD, PhD; and Michael B. Olson, OD, PhD

Glaucoma and Optic Nerve

Clinical Measurements of the Optic Nerve in Glaucoma

The goal of this study is 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

Earlier Intraocular Pressure Control after Ahmed Glaucoma Valve Implantation

The purpose of this study is to evaluate the occurrence rate of the high pressure phase and the final pressure outcomes between subjects treated with glaucoma medications prior to the onset of the high pressure phase and subjects who start glaucoma medications at the onset of the high pressure phase. Investigators: Simon K. Law, MD, PharmD; Joseph Caprioli, MD; Anne L. Coleman, MD, PhD; and JoAnn Giaconi, MD

Effect of Yoga on Glaucoma

The purpose of this study is to examine the practice of yoga and its ability to improve a patient's vision by relieving stress and reducing eye pressure. Investigator: Anne L. Coleman, MD, PhD

Glaucoma Drainage Devices and Filtering Surgery with Antimetabolites

This study looks at the effect of two surgical procedures—glaucoma implant surgery and filtering surgery with antimetabolites—on the corneal endothelium. It evaluates the possibility of surgical damage to the corneal endothelium, which may result in loss of corneal clarity. Investigators: Anne L. Coleman, MD, PhD; Joseph Caprioli, MD; JoAnn Giaconi, MD; and Simon K. Law, MD, PharmD

Glaucomatous Cupping and Visual Field Abnormalities in Chinese Young Adults

The glaucoma-like syndrome is a condition where patients appear to have signs of glaucoma but are actually normal. This glaucoma-like syndrome is unusually common in young adult Chinese patients who normally would not be expected to show signs of eye disease. The purpose of the study is to determine the prevalence and characteristics of the glaucoma-like syndrome in Chinese young adults. Investigator: Simon K. Law, MD, PharmD

Ocular Hypertension Treatment Study

Since topical hypotensive medications are safe and effective in delaying or preventing primary open angle glaucoma, this study is examining whether other forms of treatment can be deferred with little or no penalty. Investigator: Anne L. Coleman, MD, PhD

Optic Nerve Appearance in Age-Related Macular Degeneration

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

Vision-Related Quality of Life and Ocular Dominance

This study is designed to evaluate how quality of life is impacted by glaucoma in relation to eye dominance. It aims to determine whether quality of life is affected more by glaucoma if it primarily affects the dominant eye. Investigators: Simon K. Law, MD, PharmD; Joseph Caprioli, MD; Anne L. Coleman, MD, PhD; and JoAnn Giaconi, MD

Ocular Biometric Measurements in Angle-Closure Glaucoma

The purpose of this study is to determine the potential contributing factors in angle closure patients of different ethnicities and to determine predictive factors for this type of glaucoma. Investigators: Kouros Nouri-Mahdavi, MD; Naveed Nilforushan, MD; Joseph Caprioli, MD; Anne L. Coleman, MD, PhD; and Simon K. Law, MD, PharmD

Glaucoma Imaging Study

This study is evaluating different imaging techniques and their use in improving open-angle glaucoma detection. Investigators: Kouros Nouri-Mahdavi, MD; and Joseph Caprioli, MD

Role of Pattern Electroretinogram (PERG) in Glaucoma

This study is researching an electrophysiological test called pattern electroretinogram (PERG). The goal is to determine the role of PERG in estimating the risk of future glaucoma progression and the reversibility of glaucomatous damage after treatment. The latter could help clinicians better determine to what extent eye pressure needs to be lowered to prevent disease progression. Investigators: Kouros Nouri-Mahdavi, MD; Joseph Caprioli, MD; Anne L. Coleman, MD, PhD; JoAnn Giaconi, MD; and Simon K. Law, MD, PharmD

Lens and Cataract

Post-Approval Study of ACRYSOF® IQ Toric High Cylinder Power Intraocular Lens

This is a post-approval study of an intraocular lens. The primary objective of this study is to evaluate an FDA-approved intraocular lens (**Models SN6AT6-SN6AT9**) for patients with corneal astigmatism. Investigators: Kevin M. Miller, MD; and D. Rex Hamilton, MD

Morcher Iris Diaphragm

After obtaining 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, the Institute is now evaluating its preliminary effectiveness. The implant is designed to limit the amount of light coming into the eye, similar to a natural iris, reducing symptoms of light sensitivity and glare. Investigators: Kevin M. Miller, MD; and Michael B. Olson, OD, PhD

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 related to the absence of a portion of, or the entire, human iris. Investigators: Kevin M. Miller, MD; and Michael B. Olson, OD, PhD

Safety and Effectiveness of the Calhoun Vision Light Adjustable Lens for Treating Postoperative Sphere and Cylinder

This is a prospective, randomized controlled multicenter clinical study to evaluate the safety and effectiveness of Light Adjustable Lens in subjects with preoperative corneal astigmatism. Investigators: Kevin M. Miller, MD; Anthony J. Aldave, MD; and D. Rex Hamilton, MD

Macula, Retina, and Vitreous

Air, Perfluoropropane, and Sulfur Hexafluoride Gas Disappearance Variability after Vitrectomy

The purpose of this study is to evaluate different gases used in vitrectomy surgeries and to understand why there is variability in the time that the different gases remain in the eye after vitrectomy surgery. Investigators: Jean-Pierre Hubschman, MD; and Steven D. Schwartz, MD

BLOCK Retinopathy of Prematurity Study

Investigators are studying the safety of complete blockage of vascular endothelial growth factor, a factor that stimulates blood vessel growth in the body, to decrease abnormal blood vessel activity for the treatment of retinopathy of prematurity. Investigators: Steven D. Schwartz, MD; and Jean-Pierre Hubschman, MD

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

Investigators are 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. They are performing molecular genetic testing to confirm the Stargardt diagnosis and better understand the diversity of the condition. Investigators: Michael B. Gorin, MD, PhD; Debora B. Farber, PhD, DPhhc; Steven Nusinowitz, PhD; and Maria Carolina Ortube, MD

Dexamethasone Injections in the Treatment of Diabetic Macular Edema

Faculty members are participating in a study to assess the safety and efficacy of 70 mg and 350 mg dexamethasone posterior segment drug delivery systems in the treatment of patients with diabetic macular edema. Investigators: Steven D. Schwartz, MD; Allan E. Kreiger, MD; and Tara A. McCannel, MD, PhD

Genetics of Age-Related Maculopathy (GARM I)

In this multicenter study with the University of Pittsburgh, investigators are evaluating 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. Investigators: Michael B. Gorin, MD, PhD; and Maria Carolina Ortube, MD

Genetics of Age-Related Maculopathy (GARM II)

The purpose of this study is to identify the hereditary and exposure risk factors that lead to the development of age-related maculopathy (ARM) in a cohort with a family history of the disease. The study is intended for individuals (49 and older) who have at least one parent with this condition, the spouses or partners of these individuals, and the parents themselves. Investigators: Michael B. Gorin, MD, PhD; and Maria Carolina Ortube, MD

Heavy Metals in Surgically Removed Human Ocular Tissue

Faculty members are examining the concentration of heavy metals in ocular tissue compared to blood concentrations. High volumes of specific heavy metals in the vitreous have been found to cause toxicity in the retina. Information about the concentrations of heavy metals in common vitreoretinal diseases could lead to a new physiopathological approach. Investigators: Jean-Pierre Hubschman, MD; and Steven D. Schwartz, MD

Incidence of Late Macular Degeneration in Older Women

The goal of this research is to determine the incidence of late age-related macular degeneration (AMD), the rate of progression of AMD, and the association of specific risk factors such as diabetes mellitus and prior cataract surgery with late AMD and its progression in older women. Investigator: Anne L. Coleman, MD, PhD

Investigational Drug for Treatment of Vascular Pigment Epithelial Detachment (vPED)

The purpose of this study is to see if the treatment of a vPED, a complication of macular degeneration, with ranibizumab is safe and effective with the regular dose (0.5 mg) or the high dose (2.0 mg). Investigators: David Sarraf, MD; and Colin A. McCannel, MD

Natural History Study of Macular Telangiectasia

Investigators are collecting data about macular telangiectasia with the goal of acquiring more knowledge of and developing a treatment for this rare retinal disease. Investigators: Steven D. Schwartz, MD; Michael B. Gorin, MD, PhD; Jean-Pierre Hubschman, MD; Allan E. Kreiger, MD; Tara A. McCannel, MD, PhD; and David Sarraf, MD

Ocular Hazards from Currently Available Light Curing Units

The purpose of this study is to assess the potential of currently available curing lights to cause retinal damage to dental personnel, to evaluate the amount of exposure to curing lights by dental personnel, and to assess current levels of retinal degenerative changes in dental workers that are possibly induced by curing lights. Investigators: Jean-Pierre Hubschman, MD; and Steven D. Schwartz, MD

P200CAF Autofluorescence Ultra-Widefield Scanning Laser Ophthalmoscope in Subjects with Vitreoretinal Disease

This study utilizes an ultra-widefield scanning laser ophthalmoscope with autofluorescence (SLO-AF) to take pictures of the retina in a noninvasive way. Images acquired with the SLO-AF are compared with those from other currently available instruments to evaluate the potentially improved resolution for diagnosis of retinal eye diseases. Investigators: Steven D. Schwartz, MD; Jean-Pierre Hubschman, MD; Allan E. Kreiger, MD; and Tara A. McCannel, MD, PhD

Pars Plana Vitrectomy with and without ILM Peel

This study is evaluating and comparing possible differences in the vision, as well as the thickness and shape of the back of the eye, following pars plana vitrectomy surgery with and without internal limiting membrane peeling in patients with complications of diabetic retinopathy. Investigator: Jean-Pierre Hubschman, MD

Rapid, Noninvasive, Regional Functional Imaging of the Retina

In this study funded by the NIH, Institute investigators are monitoring 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. Investigators: Michael B. Gorin, MD, PhD; and Maria Carolina Ortube, MD

Resolution of Vitreomacular Adhesion Associated with Neovascular Age-Related Macular Degeneration with Intravitreal Microplasmin

Faculty members are evaluating the safety and efficacy of intravitreal injection of microplasmin on age-related macular degeneration (AMD) with focal vitreomacular adhesion (VMA). Previous research has shown that intravitreal microplasmin may offer physicians a safe agent for resolution of focal VMA in AMD patients without surgery. Investigators: Steven D. Schwartz, MD; and Jean-Pierre Hubschman, MD

Understanding the Genetics of Inherited Eye Disorders

The Institute is participating in a study to search for the gene(s) responsible for inherited disorders that are either specific to the eye or 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. Investigators: Anthony J. Aldave, MD; Michael B. Gorin, MD, PhD; and Maria Carolina Ortube, MD

Vitamin Supplementation as Treatment for Dry Age-Related Macular Degeneration

This study explores the effects of oral supplementation 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 and vision loss. Investigators: Steven D. Schwartz, MD; Michael B. Gorin, MD, PhD; Jean-Pierre Hubschman, MD; Allan E. Kreiger, MD; Tara A. McCannel, MD, PhD; and David Sarraf, MD

Research with Retinal Cells Derived from Stem Cells for Dry Age-Related Macular Degeneration (AMD)

This study is evaluating the safety of surgical procedures used to implant MA09-hRPE cells, assessing the number of cells to be transplanted in future studies, and evaluating measures for determining the effectiveness of future stem cell therapy for AMD. Investigators: Steven D. Schwartz, MD; Jean-Pierre Hubschman, MD; and Allan E. Kreiger, MD

Research with Retinal Cells Derived from Stem Cells for Stargardt Macular Dystrophy

This study is evaluating the safety of surgical procedures used to implant MA09-hRPE cells, assessing the number of cells to be transplanted in future studies, and evaluating measures for determining the effectiveness of future stem cell therapy for Stargardt macular dystrophy. Investigators: Steven D. Schwartz, MD; Jean-Pierre Hubschman, MD; and Allan E. Kreiger, MD

A Safety and Tolerability Trial of CNTF in Patients with MacTel Type 2

This study is assessing the safety of the NT-501 implant in patients with macular telangiectasia type 2. The device, an implant, is a small capsule of cells that is placed inside the eye. This allows a controlled, sustained release of CNTF directly to the retina. Investigators: Steven D. Schwartz, MD; Jean-Pierre Hubschman, MD; and Allan E. Kreiger, MD

Microcystic Maculopathy Associated with Tamoxifen, Paclitaxel, and Docetaxel Therapy Using Spectral-Domain Optical Coherence Tomography Imaging

We are evaluating chemotherapeutics used in the treatment of breast, lung, stomach, and prostate cancer for eye complications. They are given via injection and work by preventing microtubule function thus arresting mitotic division. These drugs have been associated with microcystic maculopathy. These findings have only been noted in sporadic case reports and this will be a prospective cohort study to define this complication. Investigators: David Sarraf, MD

Neuro-Ophthalmology

Different Dose Levels of an Injected Drug for Acute Nonarteritic Anterior Ischemic Optic Neuropathy

This study will test whether an experimental drug is safe for humans when it is injected into the eye and will determine the highest dose that can be safely injected. Investigators: Lynn K. Gordon, MD, PhD; and Colin A. McCannel, MD

Exposure as a Potential “Trigger Factor” for Acute NAION

The objective for this study is to examine whether the use of PDE5 inhibitors trigger the onset of acute nonarteritic anterior ischemic optic neuropathy (NAION), a rare visual disorder believed to be a consequence of disruption in optic nerve perfusion, presenting as partial loss of vision. Investigators: Lynn K. Gordon, MD, PhD; Gary N. Holland, MD; and Ralph D. Levinson, MD

Idiopathic Intracranial Hypertension (IIH) with Mild Visual Loss

Several treatments are used to treat IIH, including medication, a supervised dietary program, and surgery. Because these treatments have never been systematically studied, it is not known which are truly effective. This study will test the effectiveness of two treatments of IIH: a supervised dietary program with acetazolamide and a dietary program with a placebo. Investigators: Stacy L. Pineles, MD; Lynn K. Gordon, MD, PhD; and Laura Bonelli, MD

Ocular Melanoma

Molecular and Cytogenetic Studies of Ocular Melanoma

The goal of this research is to study ocular melanoma tumor tissue and to identify key molecular and genetic features that could help predict those patients who may be at high risk for metastasis. Investigators: Tara A. McCannel, MD, PhD; Lynn K. Gordon, 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

In this study, 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 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: Tara A. McCannel, MD, PhD; and Bradley R. Straatsma, MD, JD

PET/CT Imaging for Early Detection of Ocular Melanoma

This research involves the use of combined positron emission tomography (PET)/computed tomography (CT) scans in subjects with ocular melanoma. It 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. McCannel, MD, PhD; and Bradley R. Straatsma, MD, JD

Orbital and Ophthalmic Plastic Surgery

Volumetric Analysis of Orbital Images (CT and MRI Sequences) with Mimics Image Processing Software

This study is evaluating the volumetric changes of orbital tissues using a validated 3D image processing software. Orbital diseases such as thyroid eye disease, myositis, inflammatory and neoplastic conditions are characterized by significant soft tissue changes. Their assessment with Mimics software is helpful in understanding the clinical course of these diseases, as well as defining the etiologic and pathogenetic mechanisms involved. Investigator: Robert A. Goldberg, MD

Ultrasound Study of Eyelid Mobility Before and After Blepharoplasty and Injectable Fillers

This study uses a high-resolution ultrasound machine to capture real-time films of the tissues immediately surrounding the eye. Patients in each of the following three arms are being studied: pre/post botulinum toxin injection, pre/post synthetic filler injection, and pre/post periocular cosmetic surgery, including fat repositioning or fat transfer. Data gathered is being used to study the dispersion of filler injections, to gain more detailed and accurate insight into this cosmetic field. Investigator: Robert A. Goldberg, MD

Studies on Tissue in Autoimmune Diseases

This study aims to determine the cause of eye problems in Graves disease and other autoimmune diseases. Examination is being done of material removed from orbits during surgical therapy for Graves disease or other problems requiring surgery on the tissue surrounding the eyes; of thyroid tissue removed during the course of surgical therapy; or of blood drawn for laboratory tests. Investigator: Robert A. Goldberg, MD

Quality of Life Study in Patients with Graves Disease

This study is assessing the quality of life in patients with Graves disease orbitopathy before and after medical treatment or medical procedures. Investigator: Robert A. Goldberg, MD

Pediatrics and Strabismus

Biomechanical Analysis in Strabismus Surgery

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 of the extraocular muscles, are being performed in the Institute's Clinical and Basic Science Ocular Motility Laboratory before and after strabismus surgery. To date, this research has fundamentally contributed to the knowledge of the functional anatomy of the extraocular muscles and connective tissues, and allowed discovery of causes of common strabismus and development of new types of surgeries. Investigator: Joseph L. Demer, MD, PhD

Contact Lens Study

The purpose of this study is to identify rates of complications and correlations to modality of wear, care system, hygiene, or other factors associated with contact lens complications. Investigators: Vivian Phan, OD; Sharon Y. Lee, OD; Bartly J. Mondino, MD; and Barry A. Weissman, OD, PhD

Genetic and Anatomic Studies of Eye Movement Disorders

This collaborative National Eye Institute-funded study is conducting magnetic resonance imaging of the extraocular muscles. This procedure clarifies the phenotypes and mechanisms of congenital cranial dysinnervation syndromes whose hereditary properties have been characterized using modern molecular genetics. Patients with these syndromes have severe forms of strabismus. Investigator: Joseph L. Demer, MD, PhD

Optic Nerve in Amblyopia

Amblyopia is a major cause of childhood visual loss. This study uses high resolution, surface-coil magnetic resonance imaging to study optic nerve size in amblyopia. It 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

A Randomized Clinical Trial of Observation Versus Occlusion Therapy for Intermittent Exotropia

Although occlusion treatment, or patching of the eye, is a widely used treatment for intermittent exotropia (IXT), there have been no randomized clinical trials evaluating its effectiveness. This study is being conducted to assess the natural history of IXT and to establish the effectiveness of patching in its treatment. Investigators: Stacey L. Pineles, MD; and Federico G. Velez, MD

Sweep Visual Evoked Potential for Use in Amblyopia and Pediatric Optic Nerve Disorders

Using a new technique, investigators are measuring vision in preverbal children to diagnose and follow optic nerve diseases. Currently, treatment decisions are based on clinical examinations that are insensitive and reveal vision loss well after permanent damage has taken place. This technique allows more accurate examinations, leading to provision of treatments at the first signs of vision loss, thereby decreasing the risk of permanent damage. Investigators: Stacey L. Pineles, MD; Joseph L. Demer, MD, PhD; Sherwin Isenberg, MD; and Federico G. Velez, MD

Prospective Study to Determine the Proportion of Patients with Isolated Third, Fourth, and Sixth Nerve Palsies of Microvascular Versus Nonmicrovascular Etiology

Currently, magnetic resonance imaging scanning is only recommended in atypical cases (ie, young age, no vascular risk factors). The purpose of this multicenter study is to determine whether central nervous system abnormalities are detected in patients who otherwise would not have neuroimaging. Investigator: Stacey L. Pineles, MD

Optical Coherence Tomography in the Newborn Eye

The purpose of this study is to better characterize the retina and optic nerve in newborns using spectral-domain optical coherence tomography (SD-OCT). SD-OCT has been used by doctors for more than five years to help diagnose and treat adults with eye diseases, but it has never been studied in newborns, where it could potentially help in the diagnoses of glaucoma, optic nerve hypoplasia, foveal hypoplasia, and colobomata, among many other disorders. Investigator: Sherwin J. Isenberg, MD

Prevention of Visual Impairment In School-Age Children

In this community-based participatory intervention to promote the use of eyeglasses in schools, first- and second-grade students with refractive errors receive two pairs of eyeglasses, with one pair staying at home and the other in the classroom. School nurses collaborate with teachers in monitoring the use of eyeglasses in the classroom, and parents receive eye care education. Investigators: Gergana Kodjebacheva, PhD; and Anne L. Coleman, MD, PhD

A Randomized Trial of Levodopa as Treatment for Residual Amblyopia (ATS17)

The objective of this study is to compare the efficacy and safety of oral levodopa and patching versus oral placebo and patching in children 7 to <13 years for residual amblyopia. Investigators: Stacy L. Pineles, MD; and Federico G. Velez, MD

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