



Research

Education

Patient Care

Outreach

Annual Report
2008 - 2009



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

Jules Stein Eye Institute Annual Report 2008–2009

director

Bartly J. Mondino, MD

faculty advisor

Debora B. Farber, PhD, DPhhc

managing editor

Gloria P. Jurisic

editors

Nancy M. Graydon
Sara V. Nguyen

photography

J. Charles Martin
Reed Hutchinson PhotoGraphics

design

Robin Weisz/Graphic Design

production

The Oak Company

printing

Colornet Press

©2009, by the Regents of the University of California.

All rights reserved.

This report covers the period July 1, 2008, through June 30, 2009.

Requests for additional copies of the publication

Jules Stein Eye Institute
Annual Report 2008–2009
may be sent to:

Office of the Managing Editor
Jules Stein Eye Institute
100 Stein Plaza, UCLA
Box 957000
Los Angeles, California 90095-7000
Phone: (310) 206-7178

For more information on the Institute, see our website: jsei.org

View the Annual Report online at: jsei.org/annual_report.htm

Printed on recycled paper using soy-based inks

On the cover (left to right):

Retinal fluorescein angiogram (recolorized black and white image) showing hypoxia of the retinal periphery in the eye of a premature infant

Fluorescent light micrograph of cells in the retina; the tissue has been tagged with fluorescent markers specific to certain proteins

Colored scanning electron micrograph (SEM) of the fiber-like cells that form the crystalline lens of the eye

Computer artwork of blood vessels in the retina

Contents

Introduction

Jules Stein	iii
Doris Stein	iii
Board of Trustees	iv
Executive Committee	v
Timeline	vi

Highlights

Honors	3
Research	7
Education	11
Philanthropy	15
Thank You	17
Community Outreach	18

Faculty

Programs

Patient Care Services	70
Research and Treatment Centers	71
Clinical Laboratories	75
Training Programs	77

Appendices

Volunteer and Consulting Faculty	84
Residents and Fellows	86
Endowed Professorships, Fellowships, and Other Funds	87
Educational Offerings	91
Research Contracts and Grants	93
Clinical Research Studies	102
Publications of the Full-Time Faculty	107
Giving Opportunities	114



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



Jules Stein

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

achievements as musician, physician, business leader, and humanitarian.

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

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

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

By his efforts, Research to Prevent Blindness was created, now recognized as the world's leading voluntary organization in support of studies of the eye and its diseases. Jules Stein was largely responsible for the passage of legislation to establish the National Eye Institute as a separate entity in the National Institutes of Health. Under his leadership, the Jules Stein Eye Institute was founded as a multidisciplinary center for vision science. Since its establishment, the Institute has become internationally identified as the focus for

coordinated programs of research in the sciences related to vision, ophthalmic education, and the care of patients with eye disease. Jules Stein died in 1981, leaving a legacy of hope to the world. Through his accomplishments and philanthropy, he created ever replenishing resources for eye research and the means to preserve and restore sight for future generations.



Doris Stein

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

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

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

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

Board of Trustees

The Jules Stein Eye Institute Board of Trustees was established in 1977 to ensure the Institute's orderly growth and development. The Board meets regularly during the year, with each Trustee providing his/her unique counsel. Collectively, their invaluable contributions have included fiscal planning for the Institute, adoption of measures to facilitate recruitment of the world's finest vision scientists, allocation of funds for the purchase of vision research equipment, and recommendations for facilities expansion programs.

Current Members

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



George A. Smith, Esq.

Consultant
1992–present

Gerald H. Oppenheimer

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



Katrina Vanden Heuvel

Publisher and Editor
The Nation Magazine
1984–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



Casey Wasserman

President and
Chief Executive Officer
The Wasserman Foundation
1998–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-Chairmen, UCLA Department of Ophthalmology
Sherwin J. Isenberg, MD
Arthur L. Rosenbaum, MD

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



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

Jules Stein Eye Institute

Leading Advances to Preserve Sight and Prevent Blindness for more than 40 Years

The Jules Stein Eye Institute is the fulfillment of a dream, shared by Jules Stein, MD, and his wife Doris Stein, of creating a world-renowned institute dedicated to the preservation of sight and the prevention of blindness. As we approach the groundbreaking and then construction of the Edie and Lew Wasserman Eye Research Center, which will enable the Institute to expand its existing programs, here is a look back at some milestones from the past 45 years.

1964

Groundbreaking for the Jules Stein Eye Institute; construction begins; Bradley R. Straatsma, MD, JD, is named Director



1966

Dedication of the Institute with founding members



1975

Inauguration of the UCLA Mobile Eye Clinic



1977

Board of Trustees formed



1977

The Edie and Lew Wasserman Chair in Ophthalmology, established to honor Dr. Jules Stein, becomes the first endowed chair



1982

Completion of the Institute's research laboratory expansion

1989

Dedication of the Doris Stein Eye Research Center



1994

Bartly J. Mondino, MD, named as Director of the Jules Stein Eye Institute and Chairman of the Department of Ophthalmology



1995

EyeSTAR residency and research training program initiated



2001

A third building—Edie and Lew Wasserman Eye Research Center—to expand the Jules Stein Eye Institute campus is approved. The Reflections Gala is held to honor Mr. and Mrs. Wasserman



2006

40th Anniversary is celebrated



2008

The Institute ranks for the 19th consecutive year as the best eye center in the Western United States



Looking Ahead!

Construction of the Edie and Lew Wasserman Eye Research Center

Highlights





Dear Friends,

I am pleased to share these highlights of the 2008–2009 academic year, which serve to strengthen our commitment to preserve sight and prevent blindness. This year we are proud to present a new faculty member, **Colin A. McCannel, MD**, who will contribute greatly to our retinal disorders and ophthalmic genetics activities. **Anthony C. Arnold, MD**, was appointed to the Jerome and Joan Snyder Chair in Ophthalmology, an endowment to support the activities of a distinguished faculty member who directs the UCLA Ophthalmology Residency Program.

During the year, faculty members were awarded special honors from a number of professional organizations, including the highly coveted Llura Liggett Gund Career Achievement Award from the Foundation Fighting Blindness. Important research grants were awarded and renewed by the National Institutes of Health and other funding organizations.

This has been an extraordinary year on many fronts and I want to take the opportunity to thank our donors and friends for their generosity and continued involvement. This year, more than 780 donors contributed to Jules Stein Eye Institute programs. In spite of the severe challenges of our economic situation, individuals, foundations, and corporations continued to support our sight-saving endeavors. This loyal commitment came at a critical time and will greatly help sustain our patient care, education, and research programs.

Please know that our faculty, staff, students, and volunteers continue to ensure that the Institute maintains its standing as one of the world's preeminent eye research centers that is available to all who need its services.

Sincerely,

A handwritten signature in cursive script, reading "Bartly J. Mondino".

Bartly J. Mondino, MD

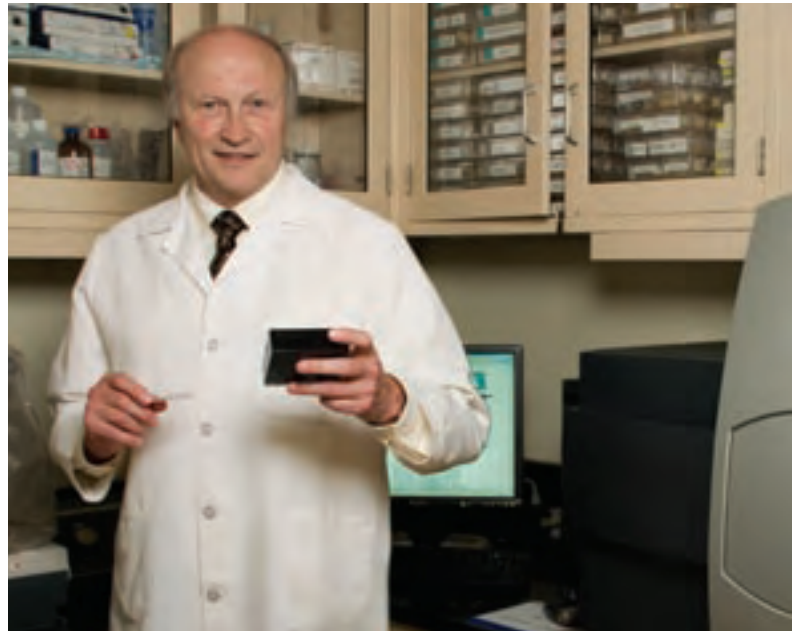
Bradley R. Straatsma Professor of Ophthalmology
Director, Jules Stein Eye Institute
Chairman, Department of Ophthalmology
David Geffen School of Medicine at UCLA

Honors

Each year, as part of their ongoing academic pursuits, faculty members achieve notable recognition 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. This year, a distinguished professorship acknowledged the contributions of a faculty member with long-standing ties to UCLA, new national and international awards recognized both individual and Institute achievements, and a number of faculty were appointed to leadership positions in professional ophthalmic organizations.

Dr. Dean Bok Receives Foundation Fighting Blindness Career Achievement Award

Dean Bok, PhD, Dolly Green Professor of Ophthalmology, received the Llura Liggett Gund Award, the top honor presented by the Foundation Fighting Blindness, on May 7, 2009. This highly-coveted award honors researchers for extraordinary career achievements that have significantly advanced the research



Dr. Dean Bok received the highly coveted Llura Liggett Gund Award from the Foundation Fighting Blindness.

and development of preventions, treatments, and cures for retinal degenerative diseases that affect more than 10 million Americans.

Gordon Gund, Chairman and Co-Founder of the Foundation Fighting Blindness, commented, “For more than four decades, Dr. Dean Bok’s superlative research contributions to understanding the causes of these diseases, his mentorship of and collaboration with others, and his dedicated commitment to the development and oversight of the Foundation’s strategic research plan highly qualify him for this singular recognition.”

Dr. Bok is a world-renowned expert in defining how vitamin A metabolism is essential to vision. His research led the way in establishing the gene defect in the vitamin A metabolic cycle that ultimately directed researchers toward recent successful gene therapy clinical trials for Leber congenital amaurosis, a severe, early onset form of retinitis pigmentosa. His research has also led to many industry projects focused on providing treatments for age-related macular degeneration, Stargardt disease (a childhood form of macular degeneration), and other inherited retinal degenerations.

Recipients of the Llura Liggett Gund Award are leading visionaries in the retinal research community. The award has previously been presented to only four researchers throughout the Foundation’s 38-year history.



From left, Chief Research Officer Dr. Steve Rose, Dr. Dean Bok, and Foundation Fighting Blindness President Ed Gollob



From left, Dr. Bartly Mondino, Jerome and Joan Snyder, and Dr. Anthony Arnold and his wife Dr. Laura Bonelli, celebrate the establishment of the Snyder Chair.

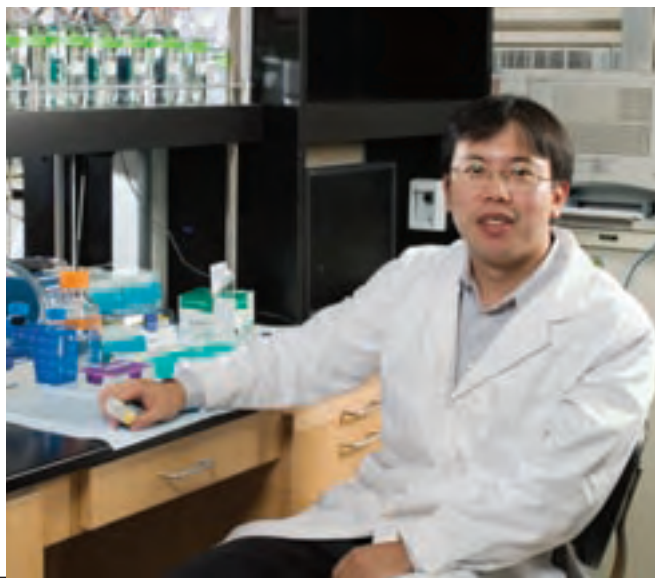
Jerome and Joan Snyder Chair in Ophthalmology

Anthony C. Arnold, MD, Chief of the Neuro-Ophthalmology Division at the Jules Stein Eye Institute, has been appointed to the Jerome and Joan Snyder Chair in Ophthalmology. He received his medical degree from UCLA and completed his residency and fellowship training at the Institute, joining its faculty in 1992. Dr. Arnold, whose clinical and research activities focus on diseases and disorders of the optic nerve, has a strong interest in improving the understanding of ischemic and inflammatory optic nerve diseases, and developing new modalities to assess and manage these conditions. He is committed to the education of young physicians and future leaders in ophthalmology. He directs a fellowship program in neuro-ophthalmology and has served as UCLA Ophthalmology Residency Program Director since 1995.

This endowment to support the activities of a distinguished faculty member who directs the UCLA Ophthalmology Residency Program was made possible by a generous contribution from **Joan and Jerome Snyder**.

Howard Hughes Medical Institute Early Career Scientist

Hui Sun, PhD, Assistant Professor of Physiology and Ophthalmology, was selected as a Howard Hughes Medical Institute Early Career Scientist. He is one of 50 scientists nationwide selected for the 2009 program. The competition recognizes outstanding scientists who have demonstrated originality and productivity during the earliest stage of their career and show exceptional promise for future research contributions. As an early career scientist, Dr. Sun has a six-year appointment to Howard Hughes Medical Institute and receives substantial financial support to advance his research in creative, new directions. More than 2,000 individuals applied for early career scientist appointments.



Dr. Hui Sun is a 2009 Howard Hughes Medical Institute Early Career Scientist.

2009 Dickson Emeritus Professorship Award

Leonard Apt, MD, Professor of Ophthalmology Emeritus, was among six UCLA emeriti professors to receive the 2009 Dickson Emeritus Professorship Award. Dr. Apt, the founder of academic pediatric ophthalmology and one of the original members of the Jules Stein Eye Institute, was honored for his many achievements following his 1981 retirement. These include establishing the UCLA Center to Prevent Childhood Blindness, the JSEI Affiliates preschool vision-screening program (for which he continues to serve as medical director) and collaborating on a



Dr. Leonard Apt, recipient of the 2009 Dickson Emeritus Professorship Award

series of clinical studies to prevent and treat eye infections in developing countries.



Dr. Wayne Hubbell had a professorship at the University of Wisconsin named in his honor.

Vision Scientist Honored with Named Professorship

A professorship at the University of Wisconsin was named in honor of **Wayne L. Hubbell, PhD**, Jules Stein Professor of Ophthalmology. Lloyd M. Smith, PhD, Professor of Chemistry received the prestigious Wisconsin Alumni Research Foundation Named Professorship. He chose to name it the “Wayne Hubbell Professor of Chemistry” in honor of his former teacher and mentor. Dr. Smith, who took Dr. Hubbell’s course and worked in his laboratory as an undergraduate at the University of California, Berkeley, in the 1970s, credits Dr. Hubbell with laying the foundation for all that has followed in his scientific career.

Association for Research in Vision and Ophthalmology Fellows

The Association for Research in Vision and Ophthalmology (ARVO) inducted seven full-time faculty from the Jules Stein Eye Institute into its 2009 class of distinguished fellows in honor of their accomplishments, leadership, and contributions to the association.

2009 ARVO Gold Fellows: **Dean Bok, PhD**, Dolly Green Professor of Ophthalmology; **Joseph Caprioli, MD**, David May II Professor of Ophthalmology; **Joseph L. Demer, MD, PhD**, Leonard Apt Professor of Pediatric Ophthalmology; and **Debora B. Farber, PhD, DPhhc**, Karl Kirchgessner Foundation Professor of Ophthalmology.

2009 ARVO Silver Fellows: **Michael B. Gorin, MD, PhD**, Harold and Pauline Price Professor of Ophthalmology; **Gary N. Holland, MD**, Vernon O. Underwood Family Professor of Ophthalmology; and **David S. Williams, PhD**, Professor of Ophthalmology and Research to Prevent Blindness Jules and Doris Stein Professor.

American Academy of Ophthalmology Awards

Anthony J. Aldave, MD, Associate Professor of Ophthalmology, and **David Sarraf, MD**, Associate Clinical Professor of Ophthalmology, received Secretariat Awards and **Colin A. McCannel, MD**, Associate Professor of Ophthalmology, received an Achievement Award from the American Academy of Ophthalmology. The Awards recognize ophthalmologists for special contributions to the Academy, its scientific and educational programs, and to ophthalmology.

Sports Vision Optometrist of the Year

The Sports Vision Section of the American Optometric Association presented its 2009 Optometrist of the Year award to **David Kirschen, OD, PhD**, in recognition of his outstanding contributions to the field of Sports Vision and the association. Dr. Kirschen, Professor Emeritus of Optometry and Visual Science at the Southern California College of Optometry, has provided binocular vision and orthoptic services at the Jules Stein Eye Institute for the past 27 years. He has been Team Optometrist for the LA Dodgers, Boston Red Sox, NY Mets, and LA Kings and accompanied the US Olympic team to the Summer Games in Beijing.



Graham Erickson, Chairman of the Sports Vision Section of the AOA, with award recipient Dr. David Kirschen (right).

International Glaucoma Awards

In recognition of her leadership in glaucoma research and clinical care, **Anne L. Coleman, MD, PhD**, Fran and Ray Stark Foundation Professor of Ophthalmology, was bestowed the Ronald Lowe Medal during the 2008 Annual Australian and New Zealand Interest Group Scientific meeting. She also received the gold Anagnostakis-Trantas Medal during the 15th International Glaucoma Congress of the Greek Glaucoma Society in Athens.

Professional Organization Appointments

Several faculty members were honored by appointments to leadership positions in professional organizations in their respective fields.

Anne L. Coleman, MD, PhD, UCLA Professor of Ophthalmology and Epidemiology, and Director of the Center for Eye Epidemiology at the Jules Stein Eye Institute, was appointed Chair of the National Eye Health Education Program (NEHEP) Planning Committee. As chair, she will lead the 14-member committee of eye health experts who oversee NEHEP's education programs and recommend new priorities.

Laraine and David Gerber Professor of Ophthalmology **Sherwin J. Isenberg, MD**, was honored by being named President-Elect of the Costenbader Pediatric Ophthalmology Society. Costenbader is the oldest pediatric ophthalmology society in the world and the second largest pediatric ophthalmology society in North America.

Bradley R. Straatsma, MD, JD, Founding Director and Professor of Ophthalmology Emeritus, was elected an Honorary Life Trustee of the International Council of Ophthalmology. He has served the council in several capacities and has been a board member since 1993.

Barry A. Weissman, OD, PhD, Professor of Ophthalmology and Director of the Contact Lens Service, was installed as Trustee of the California Optometric Association's Board of Trustees. A member of the association since 1972, he has held a number of committee appointments, serving as Chair of the Contact Lens Symposium Committee and a member of the Education Committee Employed Optometrists Task Force.

Institute Rankings and Recognition

The Jules Stein Eye Institute has been selected as one of the country's leading hospitals, and was ranked the third referral destination in the nation for extremely difficult eye care cases, in a major survey of physicians across the nation. The results of the survey, conducted by Consumers' Checkbook, a nonprofit research organization, appeared in the May-June 2009 issue of **AARP The Magazine**.



The Institute was ranked as the best eye care center in the Western United States and number five in the nation, according to a **U.S. News & World Report** survey of board-certified specialists from across the country. The annual guide to America's best hospitals was published in the magazine's July 21-28, 2008 edition.

The Institute offers one of the top ophthalmology programs in the United States. In the 2008 survey of Best Programs by **Ophthalmology Times**, published on October 15, 2008, it ranked fifth in the Best Overall Program category for outstanding work in teaching and developing residents, educating the public about eye care, and promoting continued research among professional staff.

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 to this effort each year. In 2008–2009, 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.

Gene Therapy for Usher Syndrome

David S. Williams, PhD, Professor of Ophthalmology and Research to Prevent Blindness Jules and Doris Stein Professor, received a Wynn-Gund Translational Research Acceleration Program Award from the National Neurovision Research Institute, a support organization of the Foundation Fighting Blindness, Inc. The five-year grant will be used to develop a gene therapy for the retinal degeneration in Usher syndrome type 1B.



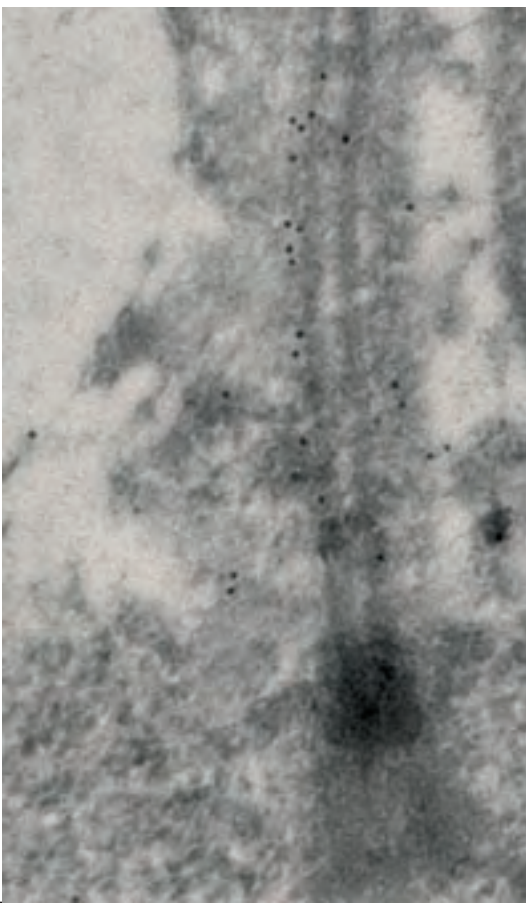
Dr. David Williams, Professor of Ophthalmology and Research to Prevent Blindness Jules and Doris Stein Professor, is conducting translational research to develop a gene therapy for the retinal degeneration in Usher syndrome type 1B.

Usher syndrome is a human hereditary condition characterized by hearing loss or deafness and progressive vision loss. The loss of vision is caused by an eye disease called retinitis pigmentosa, which results in night-blindness and a loss of peripheral vision through the progressive degeneration of the retina. Usher 1 is an especially disabling form of retinal degeneration, since it affects patients who already suffer from deafness.

Dr. Williams explains, “Usher 1B is caused by loss of function of the *MYO7A* (myosin VIIa) gene. In the retina, this gene is expressed in both the photoreceptor cells and the retinal pigment epithelium. The proposed approach involves the subretinal delivery of *MYO7A* cDNA in a viral vector to treat these two cell types.”

The grant will support studies to expand upon previous investigations by carrying out the necessary research, safety tests, and regulatory filings for a clinical trial, in collaboration with Samuel G. Jacobson, MD, PhD, at the University of Pennsylvania. The completion of these studies should lead to a Phase I clinical trial for gene replacement therapy of Usher 1B from *MYO7A* mutations.

MYO7A (black dots) expression in the photoreceptor from a genetically altered mouse retina that is a model for Usher 1B indicates that a virus carrying human *MYO7A* has been successfully introduced into the cell.



Physiology of Photoreceptors

A National Eye Institute grant was awarded to **Gordon L. Fain, PhD**, Distinguished Professor of Physiological Science, Ophthalmology, and Neuroscience to study the physiology of photoreceptors, the cells in the eye which convert light into an electrical signal. A vertebrate photoreceptor uses a G-protein receptor (rhodopsin) and a G-protein cascade to produce the electrical response that signals a change in light intensity. To understand the working of this cascade, Dr. Fain's research team is using the powerful new techniques of suction-electrode recording and laser spot microscopy with fluorescent indicator dyes on single, isolated rods in mice that have been genetically engineered either to lack certain transduction proteins or to contain transduction proteins of modified structure. The study seeks to understand the basic mechanisms of photoreceptor function, with a view to explaining why vision is abnormal in hereditary night blindness and certain forms of inherited retinal degeneration. Understanding why photoreceptors behave abnormally in these diseases may contribute to the development of treatments to cure them and restore normal vision.



Dr. Gordon Fain, Distinguished Professor of Physiological Science, Ophthalmology, and Neuroscience, is studying the physiology of photoreceptors to understand why vision is abnormal in hereditary night blindness and certain forms of inherited retinal degeneration.



Dr. Debra Farber, Karl Kirchgessner Foundation Professor of Ophthalmology, is investigating the characterization of cone genes and embryonic stem cell microvesicles.

Characterization of Cone Genes and Embryonic Stem Cell Microvesicles

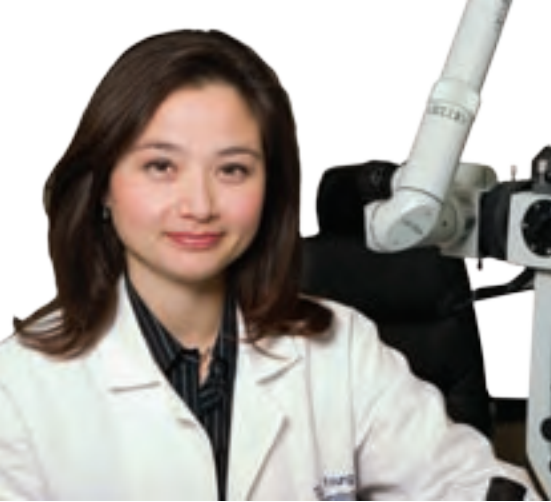
This year, **Debora B. Farber, PhD, DPhhc**, Karl Kirchgessner Foundation Professor of Ophthalmology, received Hope for Vision grants to support her research into the characterization of cone genes and embryonic stem cell microvesicles. Her research group recently identified a novel gene, ZBED4, expressed in cone receptors and glial Muller cells, and found a mutation in ZBED4 in the DNA of patients with cone dystrophies. Dr. Farber, along with postdoctoral fellow **Veena Theendakara, PhD**, is conducting research to characterize this gene and to establish a clinical phenotype that can be used for screening patients for early detection. Her laboratory is also conducting research to better understand the communication role of microvesicles—plasma-membrane particles that contain microRNAs, which regulate gene expression. Further elucidation of the communication role of microvesicles within stem cell niches may reveal ways for microvesicles to guide stem cell differentiation into specific cell types, namely rod and cone photoreceptors, and promote retinal repair.

Immunogenetics of Ocular Inflammation Disease

Associate Clinical Professor of Ophthalmology **Ralph D. Levinson, MD**, was the recipient of a grant from the MacDonald Family Foundation to support continuing research in both the clinical aspects of uveitis and the immunogenetics of ocular inflammation. Current projects include an international, collaborative longitudinal study of a chronic inflammatory disease, birdshot chorioretinopathy. The study focuses on the interrelationship of disease factors, as well as the course of disease and response to treatment. Dr. Levinson is also collaborating on studies of the genetic components of several forms of ocular inflammation. His research group has shown that certain receptors, called killer immunoglobulin receptors, play a role in uveitis. The finding was the first association with this set of genes in any ocular disease.

Associate Clinical Professor of Ophthalmology Dr. Ralph Levinson is studying the clinical aspects of uveitis and the immunogenetics of ocular inflammation.





Dr. Tara McCannel, Assistant Professor of Ophthalmology and Director of the Ophthalmic Oncology Center, is engaged in research to identify candidate genes that may be relevant in the molecular biology of choroidal melanoma metastasis.

High-Resolution Cytogenetic Study of Archival Metastatic Choroidal Melanoma

Tara A. McCannel, MD, PhD, Assistant Professor of Ophthalmology and Director of the Ophthalmic Oncology Center, received a grant from the American Association for Cancer Research to identify candidate genes that may be relevant in the molecular biology of choroidal melanoma metastasis. Her research group is integrating data from high-resolution DNA and RNA microarray analyses on archival primary choroidal melanoma tissue from patients of known metastatic outcome, with extensive existing microarray information from patient biopsies for which metastatic outcome is not yet known. Cluster analysis with respect to specific genetic markers and clinical metastatic outcome will be performed to identify key over- and under-expressed genes that can accurately predict metastatic risk. Such information will not only be valuable for future molecular studies and therapeutic trials, but may also contribute to the development of targeted therapies for metastasis.

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease

The Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease Program provides seed grants to support research into the discovery of agents and methods to prevent ophthalmic diseases. Areas of study include genetic and environmental factors that may cause eye disease, and pharmacological and natural agents to treat eye problems before they happen.



From left, Dr. Leonard Rome, Senior Associate Dean of Research, David Geffen School of Medicine at UCLA, Gail and Gerald Oppenheimer, and Dean Gerald Levey

Projects funded in 2008–2009:

Anthony J. Aldave, MD, Associate Professor of Ophthalmology
Large Scale Sequencing of the Common Posterior Polymorphous Corneal Dystrophy Candidate Gene Interval

Nicholas Brecha, PhD, Professor of Neurobiology and Medicine
Selective Targeting of Horizontal Cells: An Experimental Approach for Studying Normal Retinal Function and Retinal Pathologies

Sophie X. Deng, MD, PhD, Assistant Professor of Ophthalmology
Regeneration of Limbal Stem Cells from Epidermal Stem Cells and Induced Pluripotent Stem Cells

Michael B. Gorin, MD, PhD, Harold and Pauline Price Professor of Ophthalmology
Behavioral and Molecular Mechanisms of Photophobia: Investigating the Role of Retinal Ganglion Cells and TRPV1

David Rex Hamilton, MD, FACS, Assistant Professor of Ophthalmology
Development of Diagnostic Techniques for Detection of Corneal Biomechanical Abnormalities

Natik I. Piri, PhD, Assistant Professor of Ophthalmology
The Retinal Ganglion Cell Protective Role of Alpha Crystallins against Glaucomatous Neurodegeneration

Veena Theendakara, PhD, and Debora B. Farber, PhD, DPhc (mentor), Karl Kirchgessner Foundation Professor of Ophthalmology
Studies on Novel Gene ZBED4 that may be Associated with Disease in Patients with Cone Dystrophy

David S. Williams, PhD, Professor of Ophthalmology and Jules and Doris Stein RPB Professor
Can the Progression of Retinal Degeneration be retarded by Mechanisms that Extend Lifespan?

Clinical Studies

This year, new clinical studies were added to the more than 50 clinical research trials underway at the Jules Stein Eye Institute.

Microplasmin for the Non-Surgical Treatment of Vitreomacular Adhesion

Building upon a previous study, the Retina Division is participating in a randomized, masked placebo-controlled, multicenter trial to investigate the effectiveness of microplasmin in treating vitreomacular adhesion. Microplasmin is an enzyme that causes separation of the vitreous from the retina, or a posterior vitreous detachment. The drug can be injected intravitreally to relieve the tension between the vitreous and the retina in patients with vitreomacular traction or macular hole, offering a much less invasive option than surgery to treating complications related to vitreomacular adhesion. Study subjects are treated with microplasmin and followed to determine if injection of the drug resolves vitreomacular adhesion without surgery.

Long-Term Follow-Up for GenVec, Inc. Gene Transfer Product Candidates in Clinical Development

Steven D. Schwartz, MD, Ahmanson Professor of Ophthalmology and Chief of the Retina Division, received funding to study subjects who, in a prior clinical trial, received a GenVec, Inc., gene construct that produces a protein which can inhibit the blood vessel growth responsible for age-related macular degeneration. The current study will monitor long-term risks and outcomes of the gene transfer therapy in these patients. Subjects will be followed for 15 years during which time they will receive physical exams and plasma testing for the gene transfer product.



Ahmanson Professor of Ophthalmology Dr. Steven Schwartz, along with members of the Retina Division, is conducting clinical trials into treatment options for disorders of the macula, retina, and vitreous.

Education

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

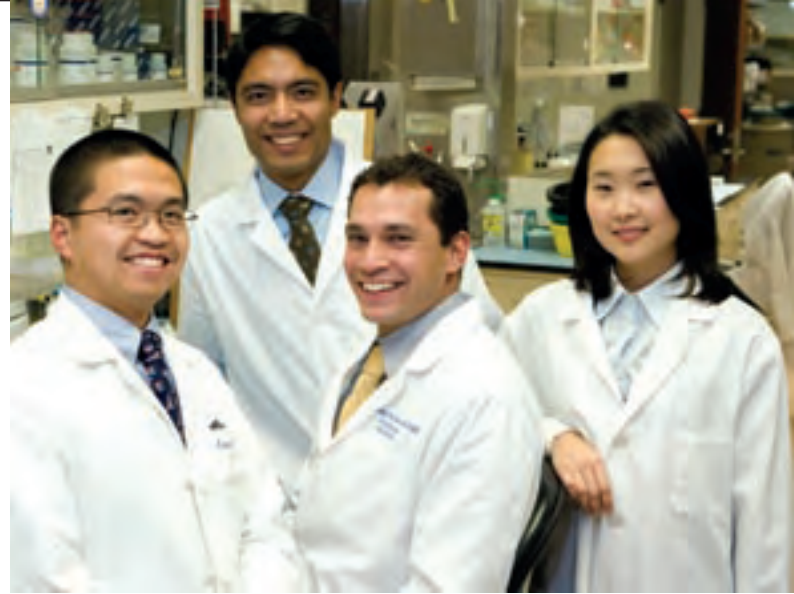
EyeSTAR: Bridging Research and Clinical Care

For physicians who are interested in academic careers and professional leadership as clinician-scientists, the Jules Stein Eye Institute's Ophthalmology Residency Training Program offers EyeSTAR (Specialty Training and Advanced Research), a six-year curriculum combining vision science training with an ophthalmology residency. Working with research mentors throughout UCLA, EyeSTAR residents commit three years to a vision science research program to obtain a PhD, or for those who already hold a doctorate, two to three years for a postdoctoral fellowship in a basic science discipline.

Joseph L. Demer, MD, PhD, Director of the EyeSTAR Program since its inception in 1995, believes that the program gives a real advantage to ophthalmologists who want to work in academic centers. "Young academicians starting in today's competitive environment need rigorous scientific training to succeed. EyeSTAR generates leaders in ophthalmology who are investigators as well as clinicians. Our graduates are as comfortable at the laboratory bench as in the examining or operating rooms," he says.

EyeSTAR Graduates

EyeSTAR's success is already being realized by producing graduates who are highly trained academic ophthalmologists, combining clinical responsibilities with



From left, current EyeSTAR residents Drs. Alex Yuan, Shaheen Karim, Nathaniel Roybal, and Helen Lee

productive research. The Institute heard from its EyeSTAR graduates during the 2008–2009 fiscal year.

Leonid E. Lerner, MD, PhD

Assistant Professor of Ophthalmology
The Gavin Herbert Eye Institute
University of California, Irvine (UCI)

"EyeSTAR enabled me to obtain my current position of Assistant Professor by providing me with the high-quality clinical and research training necessary to combine both clinical and research responsibilities of an academic ophthalmologist in the highly competitive environment of today's academia."

Vinit B. Mahajan, MD, PhD

Assistant Professor of Ophthalmology
Department of Ophthalmology & Visual Sciences
University of Iowa Hospitals and Clinics (UIHC)

"I have my dream job. Each week I am in the clinic, in the operating room and in my own laboratory. I am thankful to every JSEI faculty member who trained me, and my accomplishments are a direct result of their dedication and excellence."

Stephen Tsang, MD, PhD

Assistant Professor of Clinical Ophthalmology
Edward S. Harkness Eye Institute
Columbia University

"EyeSTAR provides immense opportunities to work with talented and diverse pioneers in applying scientific discoveries to incurable retinal diseases. And, the mentoring continues. I correspond regularly with several members of the faculty, who have been invaluable in guiding me through the grant application process."

New Faculty

Colin A. McCannel, MD, is Associate Professor of Ophthalmology in the Retinal Disorders and Ophthalmic Genetics Division. Dr. McCannel received his medical training from the Mayo Medical School in Rochester, Minnesota. He completed his ophthalmology residency training and two-year vitreoretinal surgery fellowship at the Jules Stein Eye Institute. His fellowship was followed by more than 10 years of service as a consultant and staff vitreoretinal surgeon in the Department of Ophthalmology at the Mayo Clinic. Prior to his recruitment to UCLA, he held the academic title of Associate Professor of Ophthalmology at the Mayo Medical School. Dr. McCannel's clinical focus is management of vitreoretinal surgical conditions, particularly complex retinal detachments, complications of diabetic retinopathy, macular holes and epimacular membranes, and age-related macular degeneration. He is leading an initiative to implement surgical simulation technology to improve the surgical training of ophthalmology residents and fellows. As part of his teaching commitment, he has been named retina chief at Harbor-UCLA Medical Center. His other research interests include surgical techniques, epidemiologic studies, and outcomes research.

*Dr. Colin McCannel,
Associate Professor of
Ophthalmology*



Annual Clinical and Research Seminar

The Institute's most prestigious academic event, the Clinical and Research Seminar, was held on June 12, 2009. 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 7th Bradley R. Straatsma Lecture and the 7th Thomas H. Pettit Lecture.

7th Bradley R. Straatsma Lecturer

Gregory S. Hageman, PhD
Professor of Ophthalmology and Visual Sciences
University of Iowa

7th Thomas H. Pettit Lecturer

David B. Glasser, MD
Assistant Professor of Ophthalmology
Johns Hopkins University School of Medicine
Clinical Associate Professor of Ophthalmology
University of Maryland School of Medicine

Volunteer and clinical faculty received awards of distinction. **Alan L. Shabo, MD**, received the S. Rodman Irvine Prize, which recognizes excellence among Department of Ophthalmology faculty. Senior Honor Awards were given to **Malvin D. Anders, MD; Doreen T. Fazio, MD; Ronald L. Morton, MD; Yossi Sidikaro, MD, PhD**, for volunteer service to the teaching programs of UCLA and affiliated hospitals. **Federico G. Velez, MD**, received the Faculty Teaching Award for his contribution to residency education.



Dr. Alan Shabo (right), recipient of the S. Rodman Irvine Prize, with Jules Stein Eye Institute Director, Dr. Bartly Mondino



Thomas H. Pettit Lecturer, Dr. David Glasser (center) with Drs. Bartly Mondino (left) and Gary Holland, Chief of the Cornea and Uveitis Division



Bradley R. Straatsma Lecturer, Dr. Gregory Hageman (left) with Institute vision scientist Dr. Dean Bok (center) and Founding Director Dr. Bradley Straatsma

Joint Symposium on Cataract and Refractive Surgery and 40th Jules Stein Lecture

Participants from across the nation attended the Jules Stein Eye Institute and American Society of Cataract and Refractive Surgery Joint Symposium on Cataract and Refractive Surgery, on February 5–8, 2009. Program Chair **Kevin M. Miller, MD**, Kolokotronis Professor of Ophthalmology, designed the course to focus on core clinical matters related to refractive cataract surgery, with the goal of improving the evaluation and management of patients with disorders of the anterior segment of the eye. The centerpiece of the symposium was the Jules Stein Honored Lecture, “Clinical Update on Intraoperative Floppy Iris Syndrome Prevention and Management.” The symposium also offered continuing medical education courses for nurses, technicians, and administrators, providing information critical to their role in the care of patients undergoing cataract and/or refractive surgery.

40th Jules Stein Lecturer
David F. Chang, MD
Clinical Professor
of Ophthalmology
University of California,
San Francisco



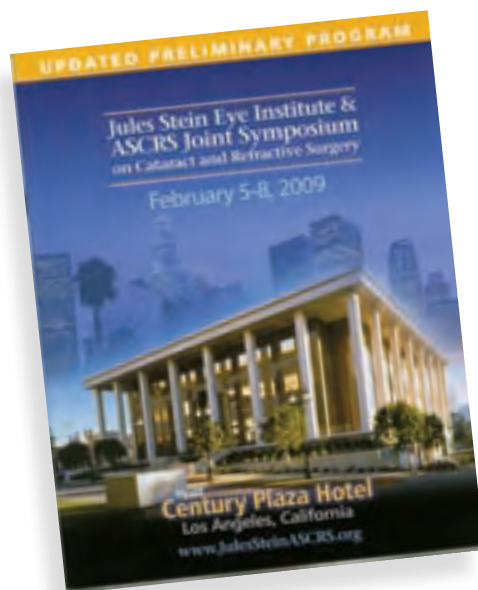
Jules Stein Lecturer
Dr. David Chang



The UCLA/AUPO Introduction to Clinical Research Course attracted ophthalmology residents, fellows, and faculty nationwide.

Introduction to Clinical Research Course

Faculty members **Gary N. Holland, MD**, and **Bartly J. Mondino, MD**, organized the course, “Introduction to Clinical Research,” which was held at UCLA on March 13–15, 2009. The course was co-sponsored by the Association of University Professors of Ophthalmology, and endorsed by the Association for Research in Vision and Ophthalmology. Attended by ophthalmology residents, clinical fellows, and faculty from across the nation, the course provided a comprehensive overview of research methods, interpretation of statistical tests, regulatory issues, and manuscript preparation. It was designed to assist new investigators who are beginning their academic careers, and to help physicians read and interpret scientific literature more critically.



Thanking Volunteer Clinical Faculty

UCLA Department of Ophthalmology volunteer clinical faculty play an essential role in fulfilling the Jules Stein Eye Institute's mission and sustaining its programs, especially the Residency Training Program. On March 12, 2009, a dinner meeting was held at the UCLA Faculty Center to thank faculty who supervise ophthalmology residents at the Veterans Affairs Greater Los Angeles Healthcare System. In addition to showing appreciation for supporting the Institute and its educational programs, the event provided an opportunity for faculty to engage in dialogue about the programs and how they may be improved.



The JSEI & Volunteer Faculty Task Force hosted the appreciation dinner for the clinical faculty volunteers. Task Force members (second from left to right): Drs. Bartly Mondino, Howard Krauss, Alan Shabo, Kevin Miller, George Rajacich and Robert Goldberg, with Task Force administrator Gloria Jurisic (left); Task Force members not shown: Drs. Joseph Caprioli, Donald Goldstein, David Katzin, and Arthur Rosenbaum



From left, Dr. Robert Goldberg, who serves on the Task Force that hosted the event, with volunteer clinical faculty members Drs. Sadiqa Stelzner and Alpa Patel

Prestigious Named Lectures

Joseph Caprioli, MD, David May II Professor of Ophthalmology, presented the Julius Silver Lecture at the New York Glaucoma Society in New York. He also was the Distinguished Keynote Speaker at the Annual Meeting of the Russian Academy of Medical Sciences, State Institute of Eye Diseases, in Moscow, Russia.

Leonard Apt Professor of Pediatric Ophthalmology, **Joseph L. Demer, MD, PhD**, presented the Gunter K. von Noorden Lecture at the Cullen Eye Institute, Baylor College of Medicine in Houston, Texas.

Sherwin J. Isenberg, MD, Laraine and David Gerber Professor of Ophthalmology, presented the Leonard Apt Lecture at the Annual Meeting of the American Association for Pediatric Ophthalmology and Strabismus in San Francisco, California. Dr. Leonard Apt is professor emeritus of Ophthalmology at the Jules Stein Eye Institute and the founder of academic Pediatric Ophthalmology.

Bradley R. Straatsma Professor of Ophthalmology and Director of the Jules Stein Eye Institute, **Bartly J. Mondino, MD**, presented the Gostin Memorial Lecture at University of Texas Southwestern Medical Center in Dallas, Texas.

Arthur L. Rosenbaum, MD, Brindell and Milton Gottlieb Professor of Ophthalmology, presented the Angeline Parks Lecture at Children's Hospital in Washington, D.C.

Philanthropy

“A very important part of the joy of living,
is the joy of giving”

—William Buck

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

More than 780 donors contributed this year to allow this important work to continue. Significant bequests from **The Mary E. Plummer Trust** and the **Arna Saphier Trust** were received, as well as generous gifts from **Bobbe Frankenberg**, **The Louis and Harold Price Foundation**, **Ruth and George E. Moss**, **Theo and Wendy Kolokotronis**, and many others.

Gifts to Advance Educational Programs

Training the next generation of ophthalmologists and vision scientists remains a high priority for the Jules Stein Eye Institute. Faculty members provide a comprehensive and rigorous training program for medical students, residents, and clinical and research fellows. Philanthropic support is critical, and the Institute has been most fortunate to receive several gifts this past year to support its educational programs.

The Carl & Roberta Deutsch Foundation made a generous gift to support research funding for two international cataract research fellows within the Comprehensive Ophthalmology Division. **Qiong-yan Tang, MD**, from the People’s Republic of China and **Young Keun Han, MD, PhD**, from South Korea, participated in both clinical and research activities with a particular emphasis on cataract, under the direction of **Kevin M. Miller, MD**, Kolokotronis Professor of Ophthalmology. The international fellowship program promotes and encourages research and educational interactions with ophthalmology programs around the world. The fellows take their advanced skills, procedures, and insights back to their home countries.



Generous philanthropic support is key to Jules Stein Eye Institute’s outstanding education and training programs, which provide students with the expert knowledge and skills they will apply in clinics nationally and worldwide.

The A.P. Giannini Foundation made a three-year commitment to support **Shawn Morales, PhD**, a postdoctoral student working with **Lynn K. Gordon, MD, PhD**, Associate Professor of Ophthalmology. Dr. Morales’s investigation will explore novel therapies to prevent blindness caused by ocular trauma and proliferative vitreoretinopathy. **A. P. Giannini**, the founder of Bank of America, established the Foundation in 1945 to bring to fruition his long-held dream to promote the study, discovery, and treatment of diseases that impair the human body. This fellowship program supports innovative medical research in the basic sciences and applied fields conducted by promising post-doctoral investigators in the early stages of their careers.

Jerome “Jerry” R. Klein, MD, FACS, Assistant Clinical Professor of Ophthalmology at JSEI, made an additional contribution through the Irving and Estelle Levy Foundation to support the Jerome Comet Klein, MD, Fellowship. Dr. Klein initiated this fellowship to honor his late father, **Jerome Comet Klein, MD, FACS**, a leading international facial plastic surgeon in New York City. This contribution supported the work of **Catherine Hwang, MD**, the 2008–2009 Jerome Comet Klein, MD, Fellow within the Division of Orbital and Ophthalmic Plastic Surgery.



Dr. Jerome R. Klein with Dr. Catherine Hwang, the 2008–2009 Jerome Comet Klein, MD, Fellow

Additional gifts were received from members of the May family to enhance the David May II Fellowship Fund. **David May II** (1912–1992), a founding member of the Jules Stein Eye Institute Board of Trustees, was Vice-Chairman of the Board and Treasurer of the May Company Department Stores. This endowed fund continues to support several fellows each year.

Such strong philanthropic commitments from our donors and friends assure that ophthalmic education is maintained as a priority amid the imperatives of patient care and research.

**Bobbe Frankenberg—
A Community Treasure**

The Jules Stein Eye Institute was thrilled to receive a \$100,000 gift of appreciated securities from **Ms. Bobbe Frankenberg** to support the research of **Joseph Caprioli, MD**, David May II Professor of Ophthalmology and Chief of the Glaucoma Division.

Born in Bisbee, Arizona, Bobbe moved with her family to Southern California and attended Beverly Hills High School, UCLA (BA 1939), and UC Berkeley, studying European History. She served as a docent at the Natural History Museum, where she also donated her father's extensive mineral collection, and did public relations for S. Mark Taper, the visionary developer of Lakewood, California. She enjoyed skiing, fishing, and lawn tennis for many years and was active in the Los Angeles community. In addition to her philanthropy to the Institute, she recently supported the American Red Cross in response to Southern California's 2008 fires and is a loyal donor to the Braille Institute in



Ms. Bobbe Frankenberg

Los Angeles and UC Berkeley. She credits her parents, who always encouraged her to give back.

Dr. Caprioli remarked, "I am incredibly grateful for Bobbe's generosity. Her contribution will be instrumental in furthering the work of my team in the Glaucoma Division. She is a very humble and kind woman and a true treasure in our community."

In Memoriam—Herbert L. Hutner

Long-time Jules Stein Eye Institute supporter, **Herbert L. Hutner**, passed away on December 7, 2008, just a few weeks prior to his 100th birthday.

A native of New York City, Mr. Hutner attended Columbia University for his undergraduate and law degrees. He was admitted to the New York state bar in 1932 and then began his career on Wall Street as a partner with Lester Osterman. Over the next 20 years, Mr. Hutner served as chairman of the board of several leading manufacturing, engineering, and insurance firms. He moved to Los Angeles in the 1960s where he met and married Juli Reding, a former actress. From 1982 to 1990, Mr. Hutner chaired the President's Advisory Committee on the Arts during the Ronald Reagan and George H. W. Bush administrations. He was a devoted supporter of the Young Musicians Foundation and a founder of the Music Center of Los Angeles.

Mr. Hutner is survived by Juli, his son Jeffrey J. Hutner and daughter Lynn M. Collwell, and stepson Christopher D. Taylor, as well as grandchildren and great-grandchildren.



The Jules Stein Eye Institute is most grateful for Mr. and Mrs. Hutner's generosity, which spans more than 40 years.

Close friend and Jules Stein Eye Institute Board of Trustees member **Gerald H. Oppenheimer** noted, "Herb was an extraordinary man of many talents—a man of the arts, a successful business executive, a songwriter, a generous philanthropist. Most of all, he was a gentleman who loved and respected Juli and was always available for his family." Director of the Institute and Chair of the Department of Ophthalmology **Bartly J. Mondino, MD**, adds, "His long-standing involvement with the Jules Stein Eye Institute began with his friendship with Dr. Jules Stein and continued for more than 40 years. He is truly missed, but his kindness and good humor are carried by everyone who knew him."

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 \$20,000

Alcon Laboratories, Inc.
Alcon Research Institute
Allergan, Inc.
American Association for
Cancer Research
American Geriatrics Society, Inc.
American Health Assistance
Foundation
Henry R. and Beatrice H.
Blanchard Living Trust
Bruce Ford and Anne Smith Bundy
Foundation
Children's Hospital Corporation
The Carl & Roberta Deutsch
Foundation
The Foundation Fighting Blindness
Bobbe Frankenberg Trust
Friends of the Congressional
Glaucoma Caucus Foundation,
Inc.
Laraine and David Gerber
A.P. Giannini Foundation
Carol and Timothy W.
Hannemann
Hope for Vision
Jules and Doris Stein
UCLA Support Group
The Karl Kirchgessner Foundation
Theo and Wendy Kolokotronis
Irving & Estelle Levy Foundation
courtesy of
Dr. and Mrs. Jerome Klein
MacDonald Family Foundation
Macula Vision Research
Foundation

Ruth and George E. Moss
Gerald Oppenheimer Family
Foundation
Oxford BioMedica (UK) Limited
Mary E. Plummer Family Trust
The Louis and Harold Price
Foundation, Inc.
Ronald C. and Joan S. Prisk
Research to Prevent Blindness, Inc.
Arna Saphier Trust
Drs. Daljit S. and Elaine Sarkaria
Beth and David Shaw
The Skirball Foundation
Jerome and Joan Snyder
The Fran and Ray Stark
Foundation
Stotter Revocable Trust
Vision of Children, Sam and
Vivian Hardage, Co-Founders
Pat and Joe Yzurdiaga
Plus numerous anonymous
contributors

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

IN HONOR OF...

Leonard Apt, MD
Allan and Paula Bernstein
Joseph Caprioli, MD
L. Scott Feiler, MD
Devin Freeman
John D. Hofbauer, MD
Lynn K. Gordon, MD, PhD
Sherwin J. Isenberg, MD
Arnold Kushner, MD
Barbara Levin
Richard Nelson Matthews
Kevin M. Miller, MD
Walter Mirisch
Bartly J. Mondino, MD
Arthur L. Rosenbaum, MD
Dallas Spellman
Bradley R. Straatsma, MD, JD

IN MEMORY OF...

Linda Braun
Fermin Campos
Miriam Chinn
Seymour Fleischer
Joseph Giacone
Peggy Giambrocco
Louise K. Gordon
Emanuel and Shirley Green
Ivan L. Green
David Hunt
Herbert L. Hutner
Aldy A. Johnston
Mr. Kairey
Betty Richmond Keefe
Jerome Comet Klein, MD
Edward Klosterman
Bob Kuhn, DDS
Vera Lowell
Walter N. Marks, Jr.
Carroll "Smitty" Smith Mason
Helen Katherine Gorman Reed
Evelyn Ries
Russell A. Torrey, Jr.
James Tutor
Larry Udell

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 for those in underserved communities. Members of the Institute's family: JSEI 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.

UCLA Mobile Eye Clinic: Jules Stein Eye Institute's Community Commitment

The UCLA Mobile Eye Clinic has provided general eye care to adults and children throughout Southern California since 1975. A 39-foot-long bus specially equipped with eye examination equipment travels to schools, shelters, community health and senior citizen centers, health fairs, and organizations that assist homeless and low-income families.

Founding Director of the Jules Stein Eye Institute **Bradley R. Straatsma, MD, JD**, stated that the Mobile Eye Clinic is an important illustration of UCLA's community commitment. He credits two people for its development: an anonymous benefactor and long-time business associate and friend of Dr. Jules Stein's, known to us as **Mr. K.**, and **Robert E. Christensen, MD**, the Founding Chief of the Glaucoma Division. According to Dr. Straatsma, "Mr. K. made the Mobile Eye Clinic possible through his philanthropy; Dr. Christensen made it a reality through his remarkable devotion and leadership."



The UCLA Mobile Eye Clinic has provided complimentary vision screening to the underserved throughout Southern California since 1975.

Mr. K.'s tradition of giving dates back to 1963, when he first began making donations to the Institute. To support the Mobile Eye Clinic, Mr. K., who remains anonymous to this day, established the Uncle Claude Fund. In 1979, Mr. K. and **Martin H. Webster**, his attorney and friend, began the process of creating a new charitable entity known as The Karl Kirchgessner Foundation to provide vision care principally to disadvantaged persons such as the young, the elderly, and the handicapped.

The Karl Kirchgessner Foundation celebrated its 30th anniversary in 2009. With an endowment fund and current use grants from the Foundation to underwrite annual operations, the Jules Stein Eye Institute is able to extend its reach to thousands of underprivileged and at-risk members of our community. This past year, under the direction of **Anne L. Coleman, MD, PhD**, more than 4,000 patients from the age of 2 to 93 years old were seen by the Mobile Eye Clinic staff and ophthalmic personnel. **Bartly J. Mondino, MD**, the Institute's Director, stated, "The Karl Kirchgessner Foundation's magnificent support over the past three decades has been instrumental in this essential and expanding outreach endeavor."



JSEI Affiliates Programs— A Year in Review

The JSEI Affiliates is a broad-based volunteer network established in 1990 to support the Jules Stein Eye 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.

This year, the **Preschool Vision Screening** program celebrated its tenth anniversary. 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 four retired optometrists, volunteers visited 18 local preschools during the 2008–2009 school year to screen more than 450 children for simple refractive errors and eye muscle problems.



Volunteer optometrist Dr. Louis Rosenberg examines a preschool student's eyes at a recent vision screening.



Dr. Roxanna Radu, Associate Research Ophthalmologist at the Jules Stein Eye Institute, volunteers for the Vision IN-School program.

The **Shared Vision Program** continues to collect and recycle donated eyeglasses for those in need. Glasses are distributed by clinic missions conducted by non-profit groups in Africa, Central America, and other developing nations. Faculty and staff involved in international outreach activities also assist with distributing glasses to new patients.

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

Vision IN-School 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. Volunteers visited 13 different schools this past year, presenting the curriculum to about 550 students.

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** program. This initiative provides plush Dr. Teddy bears to comfort each pediatric patient undergoing eye surgery at the Institute.

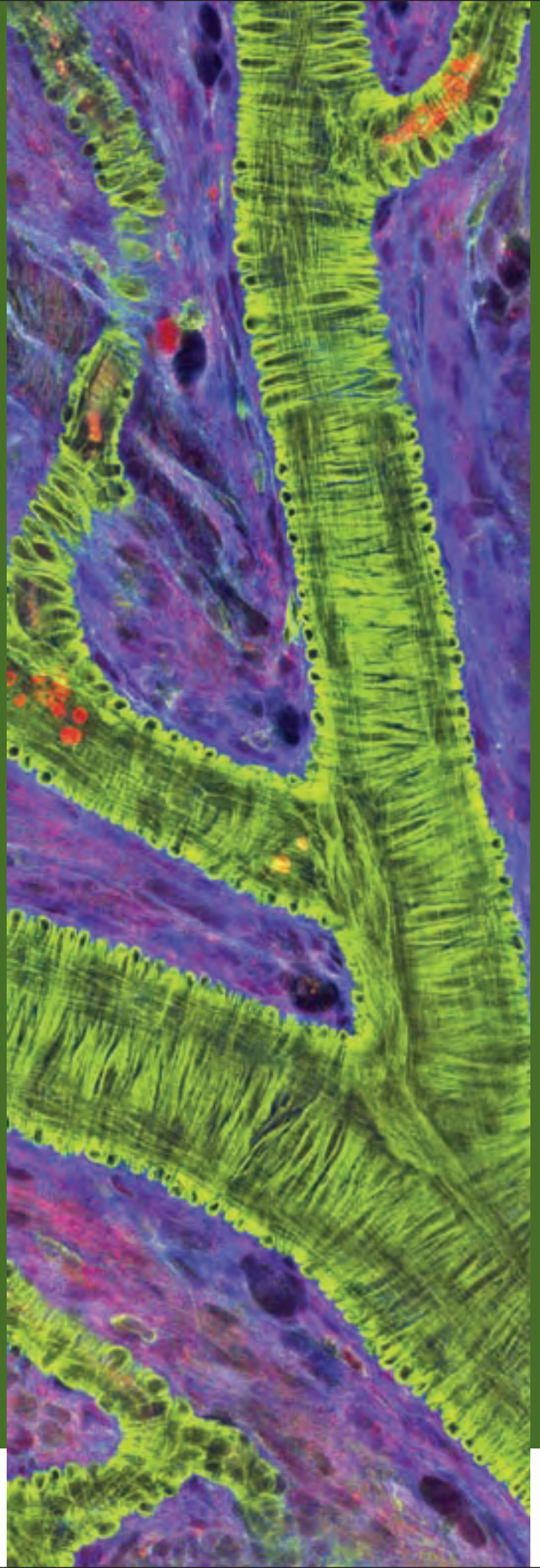
Once again, the JSEI Affiliates participated in the Foundation Fighting Blindness's annual **VisionWalk** to raise awareness and vital support to advance retinal eye disease research.



JSEI Affiliates volunteers participated in the Foundation Fighting Blindness's annual VisionWalk.



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

Public Service

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

Member, American Academy of Ophthalmology Subspecialty Day Committee

Member, American Academy of Ophthalmology Ethics Committee

Associate Examiner, American Board of Ophthalmology

Reviewer for many scientific journals

Honors

Recipient of the Secretariat Award from the American Academy of Ophthalmology

Keynote Speaker at the 67th Annual All India Ophthalmological Society Meeting in Jaipur, India

Visiting Professor at the King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia

Invited Lecturer at the Dallas Spring Ophthalmology Symposium, the Chicago Ophthalmology Society, and the New England Ophthalmological Society



Research Grants

NEI/NIH: Cloning the Gene for Posterior Polymorphous Corneal Dystrophy, 9/30/05–8/31/10

Case Western University/NIH: A Multicenter Study to Map Genes for Fuchs Dystrophy, 2/1/06–8/31/08

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease Program: RNA Interference Targeting of the TGFBI Gene Transcript in Human Corneal Epithelial Cells as a Method to Inhibit Pathologic TGFBI Protein Deposition in the Corneal Dystrophies, 2/15/08–2/14/09

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease Program: Large Scale Sequencing of the Common Posterior Polymorphous Corneal Dystrophy Candidate Gene Interval, 1/01/09–12/31/09

Anthony C. Arnold, MD

Jerome and Joan Snyder Professor
of 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 consultant for an international multicenter study of risk factors for nonarteritic anterior ischemic optic neuropathy.

Ongoing additional research studies include clinical characteristics of ischemic optic neuropathy in young patients; improved differentiation of arteritic from nonarteritic anterior ischemic optic neuropathy; identification of ischemic aspects of other rare optic neuropathies, such as diabetic papillopathy, uremic optic neuropathy, and chemotherapy-induced optic neuropathy after bone marrow transplantation; and classification of unusual optic neuropathies, such as ethambutol-induced optic neuropathy and focal congenital optic nerve hypoplasia. A study of differentiation of optic disc drusen from papilledema has recently been completed.

Public Service

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

Faculty, Lancaster Course in Ophthalmology, Colby College

President, North American Neuro-Ophthalmology Society

Board of Directors Member, American Board
of Ophthalmology

Councilor, American Academy of Ophthalmology,
North American Neuro-Ophthalmology Society

Reviewer for many scientific journals

Honors

International Neuro-Ophthalmology Program Chair,
Asia-Pacific Academy of Ophthalmology in Bali, Indonesia

Invited Guest Lecturer in Neuro-Ophthalmology,
Asia-Pacific Academy of Ophthalmology in Bali, Indonesia

Invited Faculty, International Council of Ophthalmology
Residency Program Director Courses in Florianopolis, Brazil,
and Bali, Indonesia

Invited Guest Lecturer in Neuro-Ophthalmology,
British Columbia Eye Society in Vancouver, British Columbia



Richard S. Baker, MD

Associate Professor of Ophthalmology

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

Associate Dean of the David Geffen
School of Medicine at UCLA

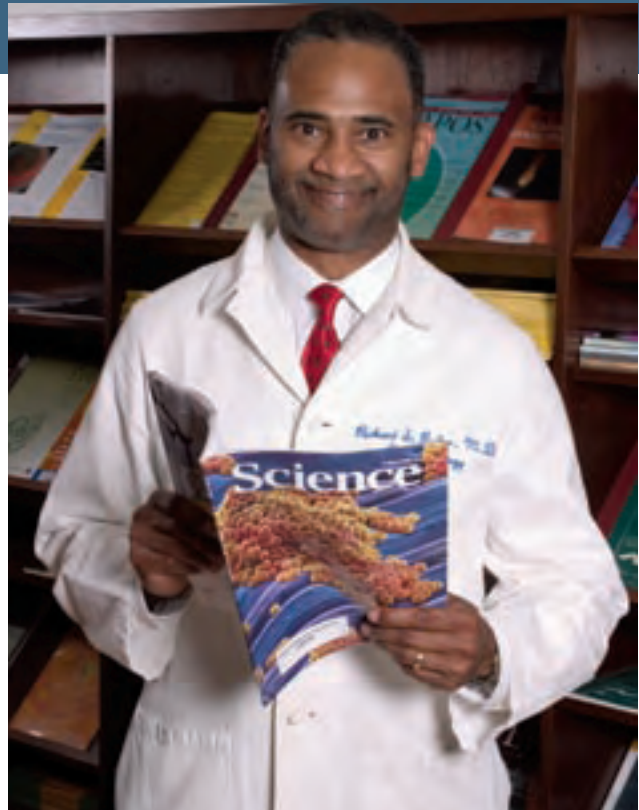
Member of the Jules Stein Eye Institute

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 state-wide 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, Los Angeles County Medical Association

Board Member, Association of Minority
Health Professions Schools

Co-Founder and Board Member, Los Angeles Eye Institute

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

Member, South Los Angeles Health Care
Leadership Roundtable

Reviewer for multiple NIH and AHRQ
Special Emphasis Panels

Reviewer for many scientific journals

Research Grants

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

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

Suraj P. Bhat, PhD

Associate Professor of Ophthalmology
Member of the Jules Stein Eye Institute

Research Summary

Molecular Biology of Vision

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

Two areas of research are currently under investigation that will provide insight into molecular mechanisms that developmentally predispose the eye to hereditary dysfunctions such as myopia, cataracts, and retinal diseases including age-related macular degeneration (AMD). One area of study is the developmental and tissue-specific control of the heat shock promoter of the α B-crystallin gene and the biological function of its gene product in the ocular lens and in non-transparent tissues such as the retina, the retinal pigment epithelium (RPE), and the brain. Studies on the regulation of the expression of α B-crystallin are focused on heat-shock transcription factor 4 (HSF4), which Dr. Bhat's laboratory reported to be the only heat shock transcription factor of the developing ocular lens. Studies on the protein involve investigations on the functional status of α B-crystallin in the lens and the RPE (in particular its relation to AMD). Another area of study is control of the growth of the eye globe with special emphasis on neurogenesis (generation of neurons) in the retina.

Public Service

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

Member, University of California, Council on Research

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

Executive Editor, *Experimental Eye Research*

Editor, *Molecular Vision*

Editorial Board, *Developmental Neuroscience*

Reviewer for many scientific journals

Research Grants

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



Dean Bok, PhD

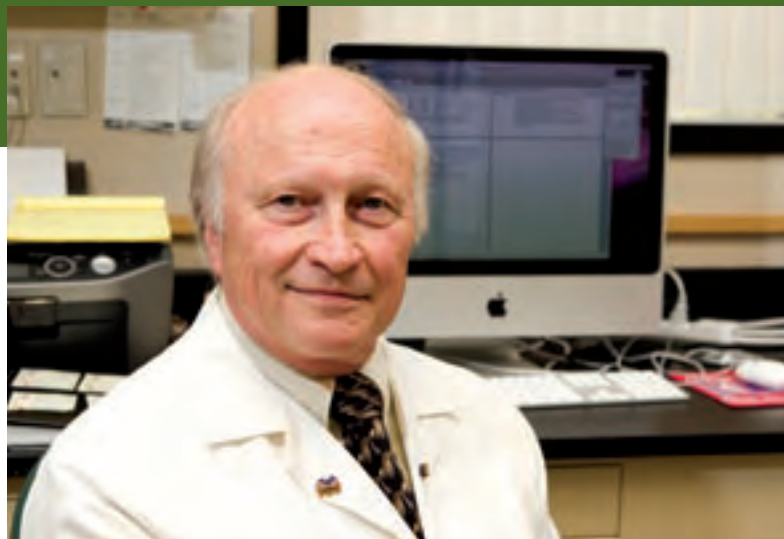
Dolly Green Professor of Ophthalmology
Distinguished Professor of Neurobiology
Member of the Jules Stein Eye Institute
Member of the Brain Research Institute

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

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

External Advisory Board, 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

Honors

2009 ARVO Gold Fellow, Association for Research in Vision and Ophthalmology

Recipient of the Llura Liggett Gund Award, Foundation Fighting Blindness

Research Grants

Macula Vision Research Foundation: Identification and Cellular Localization of Gene Products that Affect Photoreceptor Survival in Inherited Retinal Degeneration, 4/1/08–3/31/10

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

Daljit S. and Elaine Sarkaria Stargardt Macular Dystrophy Research Fund: Clinical Studies of Stargardt Disease and Development of a New Mouse Model of Stargardt Disease (Principal Investigator: Steven Nusinowitz, PhD, with other investigators), 7/1/07–6/30/11

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

Joseph Caprioli, MD

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

Research Summary

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

Evaluation of Methods to Measure Rates of Glaucomatous Optic Nerve Damage

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

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

Basic science research under Dr. Caprioli's direction involves the mechanisms of glaucomatous optic nerve damage. The stress protein response in a glaucoma model is being intensively studied. An important goal in this research is to identify neuroprotective drugs that prevent the death of retinal ganglion cells in mammalian models of glaucoma, and to apply these findings to clinical trials of human glaucoma.



Public Service

Chair, American Academy of Ophthalmology, Committee on Practice Improvement Task Force

Clinical Volunteer, Venice Family Clinic

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

Reviewer for many ophthalmic journals

Honors

2009 ARVO Gold Fellow, Association for Research in Vision and Ophthalmology

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

Presented the Julius Silver Lecture at the New York Glaucoma Society in New York, New York

Presented the Clinician-Scientist Lecture at the Annual Glaucoma Society Meeting in San Diego, California

Research Grants

Pfizer: Measurement and Prediction of Progression Rates in Early and Moderately Advanced Glaucoma, 9/19/07–3/31/10

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

Richard Casey, MD

Associate Clinical Professor of Ophthalmology

Faculty of Charles Drew University of
Medicine and Science

Member of the Jules Stein Eye Institute



Research Summary

Cornea External Disease

Dr. Casey's research is focused on improving treatment for patients with corneal disease. He is collaborating on clinical research projects to understand the nature of co-morbid conditions, such as glaucoma, on the long-term success of various corneal transplantation procedures. He is also engaged in research to evaluate the ocular surface of patients undergoing corneal transplantation surgery, and intends to establish previously undescribed clinical-pathologic correlation with dry eye disease and epithelial defects. The goal of these efforts is to improve the success of corneal transplantation and long-term transplant survival.

Health Services/Health Access

Dr. Casey has elected to dedicate a significant portion of his professional career to improving access to health care in underserved communities of Los Angeles, assessing unmet needs in vision health, and developing innovative strategies to meet these deficits. He participated in the establishment of the Los Angeles Ophthalmology Medical Group to provide comprehensive eye care services for the Martin Luther King, Jr. Multi-Service Ambulatory Care Center. He continues to work on the establishment of the Los Angeles Eye Institute to increase access to care for members of the local community who are not patients in the Los Angeles County Department of Health Services system.

Public Service

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

Co-Founder and Chairman, The Los Angeles Eye Institute

President, Willowbrook Medical Center Project

President, The Los Angeles Ophthalmology Medical Group

Anne L. Coleman, MD, PhD

Fran and Ray Stark Foundation 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

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 (AMD), including the study of lifestyle limitations imposed on patients with these kinds of eye diseases. Clinical projects include studies on dietary vitamin intake and open angle glaucoma, the effects of yoga on glaucoma, and glaucomatous visual field and optic nerve progression.

Public Service

Chair, Planning Committee, National Eye Health Education Program (NEHEP), National Eye Institute

Secretary for Quality Care, American Academy of Ophthalmology

Consultant, Ophthalmic Devices Panel,
Food and Drug Administration

Chair, Nominating Committee, American Glaucoma Society

President, Women in Ophthalmology

Executive Editor, *American Journal of Ophthalmology*

Honors

Recipient of the Ronald Lowe Medal at the Annual Australian and New Zealand Interest Group Scientific Meeting in San Diego, California

Recipient of the gold Anagnostakis-Trantas Medal at the 15th International Glaucoma Congress of the Greek Glaucoma Society in Athens, Greece

Research Grants

National Eye Institute: Ocular Hypertension Treatment Study (OHTS), 1/1/00–12/31/09

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

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

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

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

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease: Dietary Vitamin Intake and Open Angle Glaucoma, A Case-Control Study, 2/15/08–2/14/09



Joseph L. Demer, MD, PhD

Leonard Apt Professor of Pediatric Ophthalmology
Professor of Neurology
Chief of the Comprehensive Ophthalmology 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 in the development of binocular coordination disorders, such as strabismus, and is developing new technologies for magnetic resonance imaging of extraocular muscles and nerves. This research has contributed to the knowledge of the functional anatomy of extraocular muscles and connective tissues, allowing development of new types of surgeries. The project also involves the study of an animal model of strabismus expressing genes which cause binocular misalignment in humans.

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



Public Service

Editorial Board Member, *Investigative Ophthalmology and Visual Science*

Editorial Board Member, *Strabismus*

Grant Reviewer, United States Public Health Service

Reviewer for many scientific journals

Honors

2009 ARVO Gold Fellow, Association for Research in Vision and Ophthalmology

Invited Speaker at the French Neuro-Ophthalmological Society in Nantes, France

Presented the Gunter K. von Noorden Lecture at the Cullen Eye Institute, Baylor College of Medicine in Houston, Texas

Keynote Speaker at the American Academy of Ophthalmology Pediatric Subspecialty Day in Atlanta, Georgia

Keynote Speaker at the Portuguese Ophthalmological Society in Oporto, Portugal

Research Grants

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

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

Research to Prevent Blindness: Walt and Lilly Disney Award for Amblyopia Research, 7/1/04–12/31/09

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

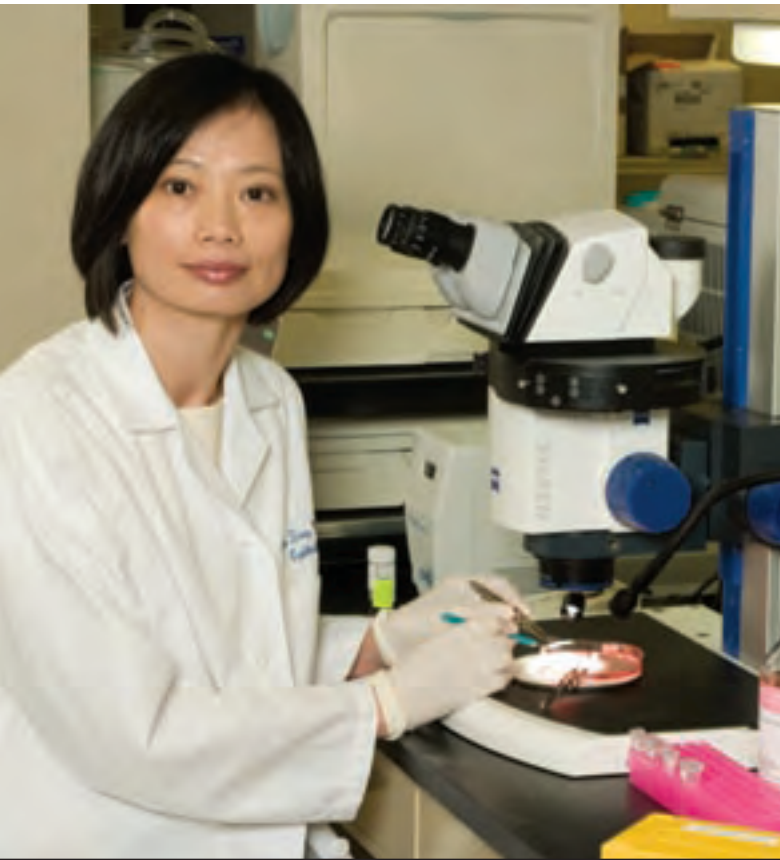
Limbal Stem Cell Deficiency

Dr. Deng's research is focused on improving the current treatment for patients with limbal stem cell deficiency. To achieve this goal, her laboratory takes two different approaches. The first approach is to study the micro-environment/niche of the limbal stem cells to elucidate those factors that govern the fate of limbal stem cells. Unique gene expression in the limbus using an oligo-nucleotide microarray technique has revealed potential molecular components of the limbal stem cell niche. The functions of the genes in the corneal epithelial cells are being investigated in human limbal cell cultures. A transgenic mouse model is being used to study the homeostasis of the corneal epithelial cells in normal and wound healing conditions. Also under investigation is the role of Wnt signaling in the differentiation and proliferation of limbal stem cells. Recent

study in her laboratory reveals that activation of the Wnt/ β -catenin with lithium promotes self-renewal of limbal stem cells. Use of small molecules to modulate Wnt signaling is being investigated to increase the *ex vivo* expansion of limbal stem cells for transplantation. The second approach is to achieve patient specific therapy by regenerating autologous limbal stem cells from various types of multipotent stem cells through *ex vivo* transdifferentiation.

Research Grants

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease: Regeneration of Limbal Stem Cells from Epidermal Epithelial Stem Cells and Induced Pluriopotential Stem Cells, 1/1/09–12/31/09



Raymond S. Douglas, MD, PhD

Associate Professor of Ophthalmology
Member of the Jules Stein Eye Institute

Research Summary

Characterizing the Molecular Events Occurring in Graves Disease

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

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

Honors

Received the Young Investigator Award for Excellence in Translational Research, Harbor-UCLA LA BioMed

Research Grants

Research to Prevent Blindness: RPB Career Development Award, 7/1/07–6/30/09

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

Los Angeles BioMedical Research Institute/NIH: Immune Activation of Fibroblasts, 9/1/06–6/30/09

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



Gordon L. Fain, PhD

Distinguished Professor of Physiological Science,
Ophthalmology, and Neuroscience

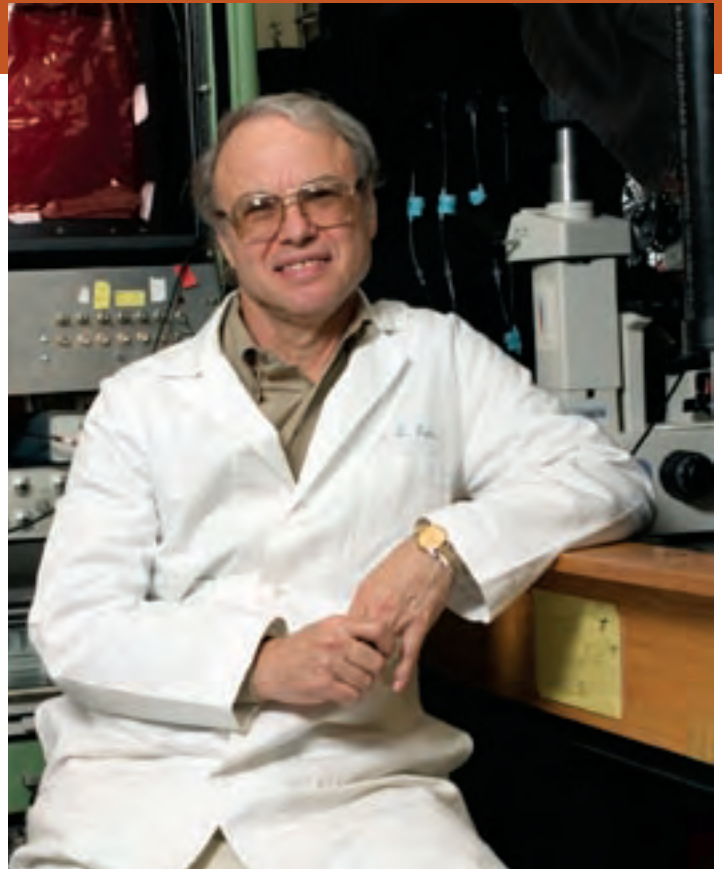
Member of the Jules Stein Eye Institute

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 G-protein receptor (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 every protein involved in the cascade in a photoreceptor, from the pigment molecule rhodopsin to the G-protein and channels, but also including a large number of control proteins, is 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.



Honors

Fellow, Helen R. Whiteley Center at Friday Harbor
Marine Laboratory, University of Washington

Research Grants

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

Debora B. Farber, PhD, DPhhc

Karl Kirchgessner Foundation 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 retinosis (*Xlrs1*).

Dr. Farber's group is also working on the mechanisms that regulate transcription and expression of retinal genes. They found that the transcription factor SP4 controls the activity of the β -PDE promoter and that 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*; *The Journal of Ocular Biology, Diseases, and Informatics*; and *Stem Cells and Cloning Advances and Applications*

Honors

2009 ARVO Gold Fellow, Association for Research in Vision and Ophthalmology

Research Grants

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

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

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

Vision of Children Foundation: Does a Constitutively Active G α i3 Protein Rescue the Oa1 $-/-$ Mouse Phenotype?, 4/1/08–3/31/10

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

Hope for Vision: Characterization of Micro RNAs in Embryonic Stem Cell Microvesicles, 1/1/09–12/31/09

JoAnn A. Giaconi, MD

Assistant Clinical Professor of Ophthalmology

Member of the Jules Stein Eye Institute

Research Summary

Glaucoma

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

Public Service

Member, California Glaucoma Diagnosis and Treatment Advisory Committee, California Department of Consumer Affairs

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

Member, Women in Ophthalmology Board of Directors

Program Chair, Los Angeles Society of Ophthalmology

Member, Liaisons Committee, American Academy of Ophthalmology

Volunteer, Eye Care America

Reviewer for many scientific journals

Honors

Selected for the 2009 Leadership Development Program of the American Academy of Ophthalmology

Research

American Glaucoma Society: Nutritional Associations with Glaucoma/African American Women, 2/1/06–12/31/10



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.

Public Service

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

Reviewer for many scientific journals

Research Grants

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

Robert Alan Goldberg, MD

Karen and Frank Dabby Professor of Ophthalmology

Chief of the Orbital and Ophthalmic
Plastic Surgery Division

Director of the UCLA Orbital Disease Center

Co-Director of the UCLA Aesthetic Center

Member of the Jules Stein Eye Institute

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 better understand the natural history and response to treatment of this multifaceted disease, which is a cause of significant visual loss and discomfort. Dr. Goldberg and Raymond S. Douglas MD, PhD, are also investigating the underlying causes of thyroid-related orbitopathy in collaborative research with Terry J. Smith, MD, in the Division of Molecular Medicine at Harbor-UCLA Medical Center. The goal of this research is to develop better tests to monitor disease activity, as well as new treatments to address the basic cause of the disease.

Research into orbital and eyelid anatomy, currently in progress, is resulting in improved techniques and approaches to deep orbital disease. Included is the use of high-resolution magnetic resonance imaging 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 the hydrogel lacrimal stent, are being developed and studied.

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



Public Service

Assistant Vice President Professional Education,
California Academy of Ophthalmology

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

Fellowship Program Director, American Academy of
Cosmetic Surgery

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

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

Honors

Featured Invited Speaker at the North African
Ophthalmologic Society in Tunis, Tunisia

Featured Invited Speaker at the Chilean
Ophthalmology Update in Santiago, Chile

Research Grants

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

Lynn K. Gordon, MD, PhD

Associate Professor of Ophthalmology

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

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

Member of the Jules Stein Eye Institute

Research Summary

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*.

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.



Public Service

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

Member, Scientific Review Committee, Fight for Sight

Graduate, Executive Leadership Program for Women in
Academic Medicine

Chair, Neuro-Ophthalmology Research Committee,
North American Neuro-Ophthalmology Society

Councilor, American Academy of Ophthalmology,
Representing Women in Ophthalmology

Treasurer and Executive Board Member,
Women in Ophthalmology

Honors

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

Research Grants

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

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

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

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

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

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



Public Service

Editorial Board Member and former Co-Editor,
Current Eye Research

Member, Association of University Professors of
Ophthalmology, Consortium of Medical Education Directors

Member, Special National Institutes of Health Study Sections
for the National Eye Institute, National Institute on Aging
(Claude Pepper Grants), National Human Genome Research
(GEI), Center for Inherited Disease Research

Scientific Advisory Committee Member: the American
Health Assistance Foundation and the Knights Templar
Eye Research Foundation; Interim Member of the Scientific
Advisory Committee for Research to Prevent Blindness

Member, Data Safety Monitoring Committee for
Retinitis Pigmentosa Clinical Trial; Founding Member of
the VHL (von Hippel Lindau) Center of Excellence at
UCLA Medical Center

Reviewer for many scientific journals

Honors

2009 ARVO Silver Fellow, Association for Research in
Vision and Ophthalmology

Research Grants

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

American Health Assistance Foundation: Linkage and
Association Studies for Macular Degeneration, 4/1/06–3/31/10

Neuro Kinetics/NIH-NEI: Diabetic Retinopathy Diagnosis
Device, 9/1/07–2/28/09

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

Daljit S. and Elaine Sarkaria Stargardt Macular Dystrophy
Research Fund: Clinical Studies of Stargardt Disease and
Development of a New Mouse Model of Stargardt Disease
(Principal Investigator: Steven Nusinowitz, PhD, with other
investigators), 7/1/07–6/30/11

Gerald Oppenheimer Family Foundation Center for
the Prevention of Eye Disease: Behavioral and
Molecular Mechanisms of Photophobia, Investigating the
Role of Retinal Ganglion Cells and TPRV1, 1/1/09–12/31/09

David Rex Hamilton, MD, FACS

Assistant Professor of Ophthalmology

Director of the UCLA Laser Refractive Center

Member of the Jules Stein Eye Institute



Research Summary

Corneal and Intraocular Refractive Surgery

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

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

Public Service

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

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

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

Research Grants

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease: Development of Diagnostic Techniques for Detection of Corneal Biomechanical Abnormalities, 1/1/09–12/31/09

Gary N. Holland, MD

Vernon O. Underwood Family Professor of Ophthalmology

Chief of the Cornea and Uveitis Division

Director of the Ocular Inflammatory Disease Center

Director of the Jules Stein Eye Institute
Clinical Research Center

Member of the Jules Stein Eye Institute

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. This infection, caused by the parasite *Toxoplasma gondii*, occurs worldwide, and can lead to severe vision loss. Dr. Holland is conducting epidemiological and laboratory investigations in collaboration with investigators at the National Institutes of Health, the US Centers for Disease Control and Prevention, and other universities to understand the sources of infection, course of disease, response to treatment, and disease outcomes. Studies are being conducted to identify host and parasite factors that are related to disease severity. This information may lead to better strategies for treatment of active infections and possibly for prevention of eye involvement altogether.

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



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

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

Public Service

Associate Editor, *American Journal of Ophthalmology*

Executive Committee Member, American Uveitis Society

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

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

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

International Council Member, International Ocular Inflammation Society

Honors

2009 ARVO Silver Fellow, Association for Research in Vision and Ophthalmology

Research Grants

National Eye Institute/Johns Hopkins University: Studies of the Ocular Complications of AIDS (SOCA), 8/1/05–7/31/09

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

Joseph Horwitz, PhD

Oppenheimer Brothers 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 eye lens α -crystallin, a protein that plays an important role in keeping the eye lens clear during normal aging. Alpha-crystallin is also involved in age-related macular degeneration, as well as in many other neurodegenerative diseases.

Public Service

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

Reviewer for many scientific journals

Research Grants

National Eye Institute: Alpha-Crystallin & Cataractogenesis,
8/1/04–7/31/10



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
Member of the Molecular Biology Institute
Member of the Brain Research Institute

Research Summary

Retinal Photoreceptor Membrane Structure and Function

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

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

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



Public Service

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

Honors

Named Professorship, Wayne Hubbell Professor of Chemistry at the University of Wisconsin
Plenary Speaker, Institute of Physics BRSG: Magnetic Resonance Group Meeting on the Frontiers of Magnetic Resonance in Warwick, United Kingdom
Plenary Lecture, German Biophysics Society Yearly Congress in Berlin-Dahlem, Germany
Plenary Lecture, Southeast Magnetic Resonance Conference in Tallahassee, Florida
Keynote Lecture, Royal Society of Chemistry-ESR Group in Norwich, United Kingdom

Research Grants

National Eye Institute: Molecular Basis of Membrane Excitation, 5/1/05–4/30/10
National Eye Institute: Core Grant for Vision Research at the Jules Stein Eye Institute (Principal Investigator), 3/1/04–2/28/10

Sherwin J. Isenberg, MD

Laraine and David Gerber Professor
of 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, is being conducted 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

Honors

Named President-Elect, Costenbader Pediatric
Ophthalmology Society

Presented the Leonard Apt Lecture at the Annual Meeting of
the American Association for Pediatric Ophthalmology and
Strabismus in San Francisco, California

Research Grants

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

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

Allan E. Kreiger, MD

Professor of Ophthalmology Emeritus (Active Recall)

Member of the Jules Stein Eye Institute



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

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

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

Public Service

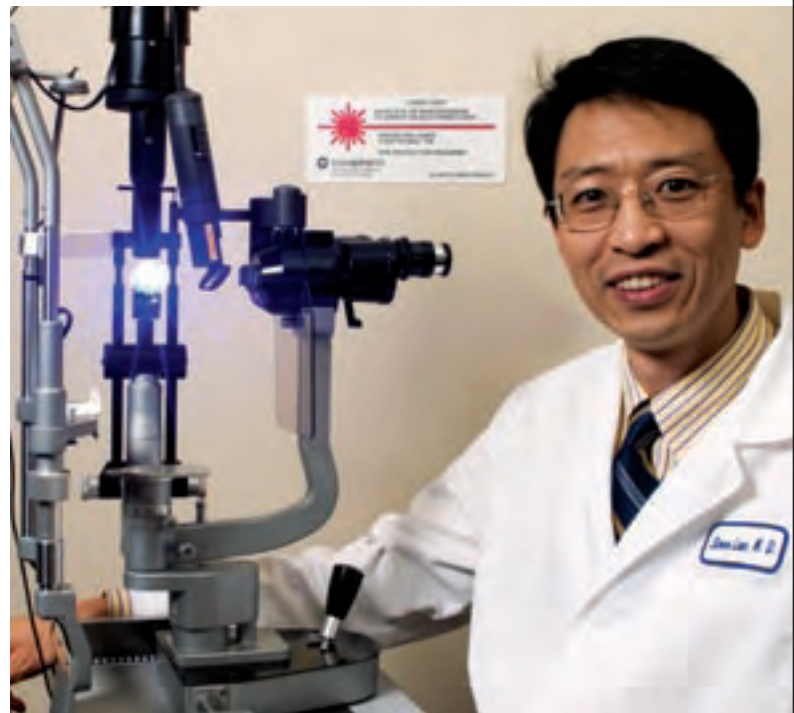
Expert Reviewer, Medical Board of California
Pharmacy Editor, eMedicine online Ophthalmology Journal
Reviewer for many scientific journals

Honors

Recipient of the Dennis W. Jahnigen Career Development Scholars Award

Research Grants

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



Ralph D. Levinson, MD

Associate 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 immunogenetics of ocular inflammation. Current projects include a collaborative longitudinal study of a chronic inflammatory disease, birdshot chorioretinopathy, with investigators in France. The study focuses on the interrelationship of disease factors, as well as the course of disease and response to treatment. Dr. Levinson is also studying the genetic components of the several forms of ocular inflammation in collaboration with investigators in the United States, France, Mexico, and Japan.



Public Service

Reviewer for many scientific journals

Research Grants

MacDonald Family Foundation: Studies in Immunogenetics of Ocular Inflammatory Disease, 5/1/02–6/30/10

MacDonald Family Foundation: Immunologic and Clinical Studies of Eye Disease at the Jules Stein Eye Institute, 12/01/08–1/31/11

Allergan Pharmaceutical Corporation: An 8-Week, Phase III, Multicenter, Masked, Randomized Trial, 4/1/06–12/31/09

Colin A. McCannel, MD

Associate Professor of 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 tracking surgical outcomes to ensure that the new techniques benefit patients. Currently, he is investigating the utility of virtual reality surgery simulation in teaching ophthalmic surgery. He plans to initiate several protocols that assess various aspects of the potential benefit of virtual reality surgical teaching.

Public Service

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

Reviewer for many scientific journals

Honors

Recipient of the Achievement Award from the American Academy of Ophthalmology

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

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

Surgical Approaches to Vitreoretinal Disease and Cancer

Dr. 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 the wide range of surgical prognostic and therapeutic expertise she brings to the Jules Stein Eye Institute.

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 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 that predict psychological adjustment to cancer.

Public Service

Reviewer for many scientific journals

Research Grants

American Association of Cancer Research:
Career Development Award, 7/1/08–6/30/09



Kevin M. Miller, MD

Kolokotronis Professor of Ophthalmology
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, ophthalmic optics, ophthalmic devices, and surgical outcomes. He performs much of his research in collaboration with Michael D. Olson, OD, PhD, residents and fellows at the Institute, and medical students at UCLA.

Dr. Miller's clinical practice focuses primarily on refractive cataract surgery and the surgical correction of presbyopia with premium technology intraocular lenses. He developed an Astigmatism Management Service for treating corneal astigmatism at the time of cataract surgery that optimizes uncorrected visual acuity following surgery. He developed a nomogram for peripheral corneal relaxing incisions, and participated in the clinical testing of the world's most popular toric intraocular lens. He continues to study the aggregate analysis of astigmatism and methods for comparing treatment groups.

The need for cataract surgery is expected to reach epidemic proportions in the United States over the next 10 to 20 years as baby boomers reach the age in which they will develop cataracts. Dr. Miller is actively working to establish a named Cataract Center within the Edie and Lew Wasserman building at UCLA, seeking gifts of all sizes to endow and fund facilities, research projects, equipment purchases, and fellowships.

Currently, Dr. Miller's most active clinical research projects involve the surgical correction of acquired and congenital iris defects. The iris is the tissue that gives the eye its color and contains the pupil, which is the aperture that lets light enter. Traumatic aniridia is a condition in which all or part of the iris is damaged in an eye injury. Dr. Miller obtained an individual device exemption from the FDA to study Morcher GmbH implants. He is also an investigator of the Ophtec USA model 311 iris reconstruction lens. These artificial iris implants are having a positive impact on the lives of patients who suffer from iris defects.

Public Service

Chairman, American Academy of Ophthalmology,
Anterior Segment COMPASS Committee

Recent Past Chairman, American Academy of
Ophthalmology Basic and Clinical Science Course
Committee on Clinical Optics

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

International Editorial Board, *Oftalmologia Em Foco*



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 is studying the role of lymphocytes and the complement system in the immunopathogenesis of anterior segment diseases. In addition, a model of staphylococcal hypersensitivity lesions of the cornea is being explored as well as the immune response to staphylococcal endophthalmitis. Other research interests include corneal dystrophies, peripheral corneal ulcers, bullous diseases of the skin and mucous membranes, collagen shields, and contact lens-related corneal ulcers.

Public Service

Medical Advisory Board Member of Board of Directors, 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

Presented the Gostin Memorial Lecture at University of Texas Southwestern Medical Center in Dallas, Texas

Research Grants

Research to Prevent Blindness: Departmental Unrestricted Grant Award (annual), 2008–2009

Bruce Ford and Anne Smith Bundy Foundation: Grant Award (annual), 2008–2009



Steven Nusinowitz, PhD

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



Public Service

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

Research Grants

Foundation Fighting Blindness: Center Grant (Center Director: Dean Bok, PhD, with other investigators), 7/1/05–6/30/10
Sirion Therapeutics: A Phase II Study of the Safety and Efficacy of Fenretinide, 9/1/07–8/31/09
Daljit S. and Elaine Sarkaria Stargardt Macular Dystrophy Research Fund: Clinical Studies of Stargardt Disease and Development of a New Mouse Model of Stargardt Disease (Principal Investigator, with other investigators), 7/1/07–6/30/11
The Vision of Children: Photoreceptor and Retinal Pigment Epithelial Function in X-linked Ocular Albinism, 4/3/06–6/30/09
Cedars-Sinai Burns & Allen Research Institute/NIH: Ocular SHV: Role of Virus & IL-2 Optic Neuritis, 9/30/06–8/31/11

Natik Piri, PhD

Assistant Professor of Ophthalmology
Member of the Jules Stein Eye Institute

Research Summary

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

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.

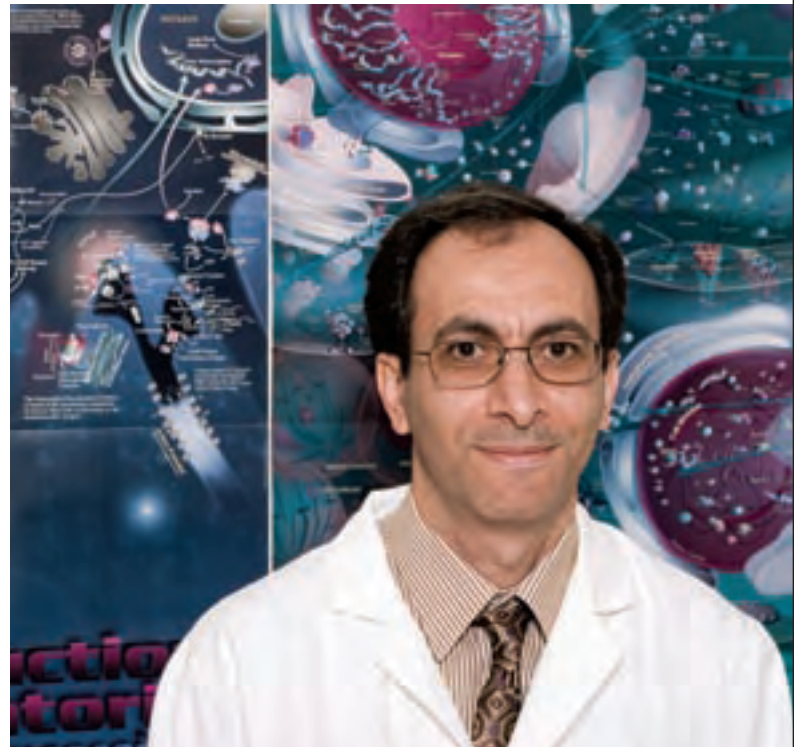
Another area of investigation focuses on understanding the degeneration of RGCs and their axons, which is a hallmark of glaucoma. Dr. Piri's laboratory is analyzing retinal gene expression profiles from the glaucoma model with the aim of identifying factors involved in the initiation and execution of 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

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease: The Retinal Ganglion Cell Protective Role of Alpha Crystallins against Glaucomatous Neurodegeneration, 1/1/09–12/31/09



Arthur L. Rosenbaum, MD

Brindell and Milton Gottlieb Professor of
Pediatric Ophthalmology

Chief of the Pediatric Ophthalmology and
Strabismus Division

Vice-Chairman of the UCLA
Department of Ophthalmology

Member of the Jules Stein Eye Institute

Research Summary

Pediatric Ophthalmology, Strabismus, Retinal Disease, and Ophthalmic Surgery

Dr. Rosenbaum's research emphasis is in the field of childhood and adult strabismus (misalignment of the eyes). He is one of the original investigators in the use of botulinum toxin injection into the extraocular muscles for the treatment of strabismus and facial spastic disorders. He has been involved in advising new surgical approaches for paralytic strabismus and Duane syndrome, in which specific muscles of the eyes are not functioning normally due to paralysis or innervational disorders, and has coauthored a major textbook on strabismus.

Dr. Rosenbaum recently completed studies describing specific eye muscle disorder problems associated with common ophthalmic surgical procedures, such as cataract extraction, glaucoma surgery, and pterygium surgery. He also collaborated on a project to stimulate a paretic eye muscle artificially, using modern bioengineering principles.



Public Service

Vice-President, International Strabismological Association

Board of Directors, Smith-Kettlewell Eye Research Center

Honors

Presented the Angeline Parks Lecture at Children's Hospital in Washington, D.C.

Research Grants

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

Research to Prevent Blindness: Physician-Scientist Award, 1/1/04–12/31/09

David Sarraf, MD

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

Research Summary

Age-Related Macular Degeneration and Diabetic Retinopathy

Dr. Sarraf's research activity has focused on two major diseases: age-related macular degeneration and diabetic retinopathy. Dr. Sarraf has studied complications of the revolutionary new anti-VEGF therapies. He has determined the incidence of retinal pigment epithelial tears associated with intraocular anti-VEGF therapy and has determined the imaging (including fluorescein angiography and optical coherence tomography) risk factors for development of this event, improving the ability of retinologists to predict this complication and inform their patients. Future studies will aim to better classify this complication and to develop therapies to decrease the incidence of this visually debilitating event.

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

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

Public Service

Director, Annual JSEI and DEI Comprehensive Ophthalmology Review Course

Director, Lasers in Ophthalmology Course

Co-Director, Los Angeles Imaging Conference for Retinal Specialists

Interspecialty Committee Member, American Academy of Ophthalmology

Reviewer for many scientific journals

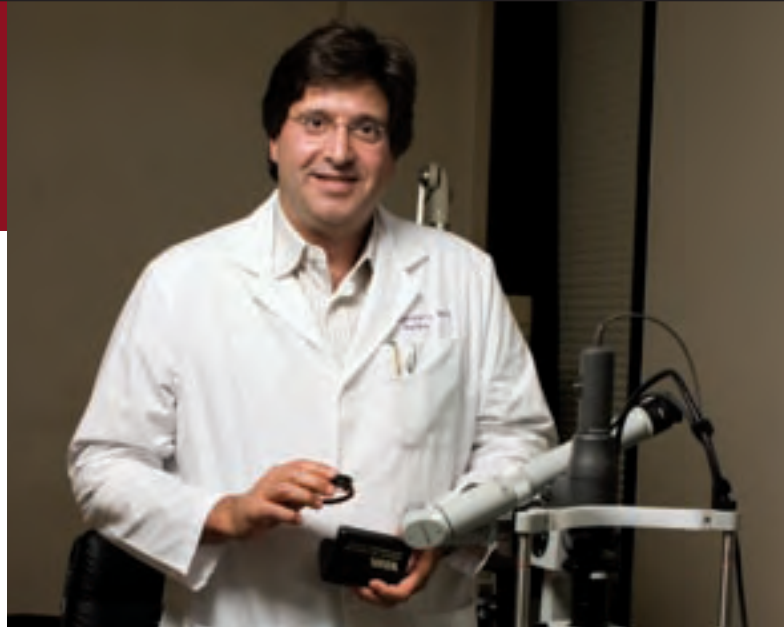
Honors

Inducted into the Retina Society



Steven D. Schwartz, MD

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



Research Summary

Retinal Diseases

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

Dr. Schwartz also has a strong interest in improving both the quality of and access to specialized ophthalmology care through innovative teleophthalmological approaches to screening for eye diseases, specifically diabetic retinopathy and ROP. Currently, a collaborative program with the Gonda Diabetes Center and the Venice Family Clinic is underway, in which screening for diabetic retinopathy is conducted with a non-mydriatic 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

Research Grants

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

Allergan Sales, LLC: Dexamethasone Posterior Segment Drug Delivery System, 8/16/04–1/31/09; and DEX PS DDS Applicator System in the Treatment of Patients with Diabetic Macular Edema, 8/25/05–12/31/09

Chiltern Int.: A Multicenter, Randomized, Placebo-Controlled, Double-Masked, Parallel Group, Dose Ranging Clinical Trial, 4/1/07–3/31/09; and TG-MV-006: A Randomized, Placebo-Controlled, Masked, Multicenter Trial of MicroplasmIn Intravitreal Injection for Non-Surgical Treatment of Focal Vitreomacular Adhesion, 3/3/09–9/3/10

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

Genentech, Inc.: Ranibizumab with CNV, 3/1/06–2/28/09; and Ranibizumab Injection, 10/5/07–8/31/12

Lowy Medical Research Institute/NEI: Macular Telangiectasia, 9/1/05–8/31/10

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

University of Pennsylvania: Comparison of AMD Treatment Trials (Coordinating Center), 9/1/07–7/31/09

Gen Vec, Inc.: ADGVPEDF.11.D: Neovascular Age-Related Macular Degeneration, 1/31/03–12/31/09; and GV-000.000: Gene Transfer Product Candidates in Clinical Development, 2/27/09–2/26/24

Research to Prevent Blindness: Mrs. Merrill Park Award, 6/15/01–12/31/09

Hui Sun, PhD

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

Research Summary

Molecular Mechanism of Vitamin A Transport; Macular Degeneration

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

Using a novel strategy, Dr. Sun's laboratory identified the long-sought RBP receptor as a multi-transmembrane protein of previously unknown function. It was found to function simultaneously as a membrane receptor and a membrane transporter. The RBP/RBP receptor system represents a rare example in eukaryotic cells of a small molecule delivery system that involves an extracellular carrier protein but does not depend on endocytosis.

Recent human genetic studies found that the RBP receptor is essential for the formation of human eyes, consistent with the critical role of vitamin A in eye development. Dr. Sun's laboratory is using a variety of techniques to study this new membrane transport system. To elucidate the etiology of macular degeneration, his group is studying both the pathogenic and protective mechanisms of this puzzling disease. The long-term goal of these studies is to reveal the fundamental causes of the disease so that more effective and efficient therapies can be developed.

Public Service

Ad hoc Reviewer, National Science Foundation, National Institutes of Health

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

Reviewer for many scientific journals

Honors

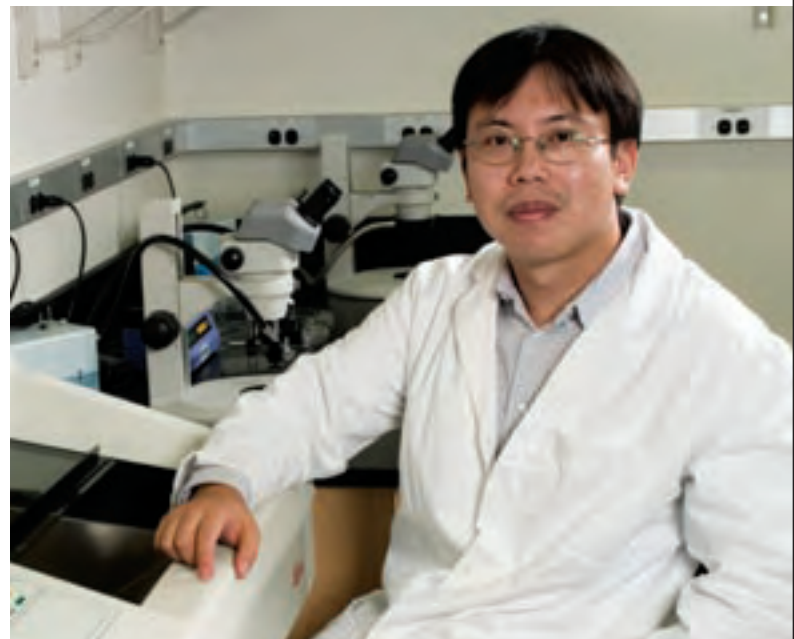
Early Career Scientist Appointment, Howard Hughes Medical Institute

Research Grants

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

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

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



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

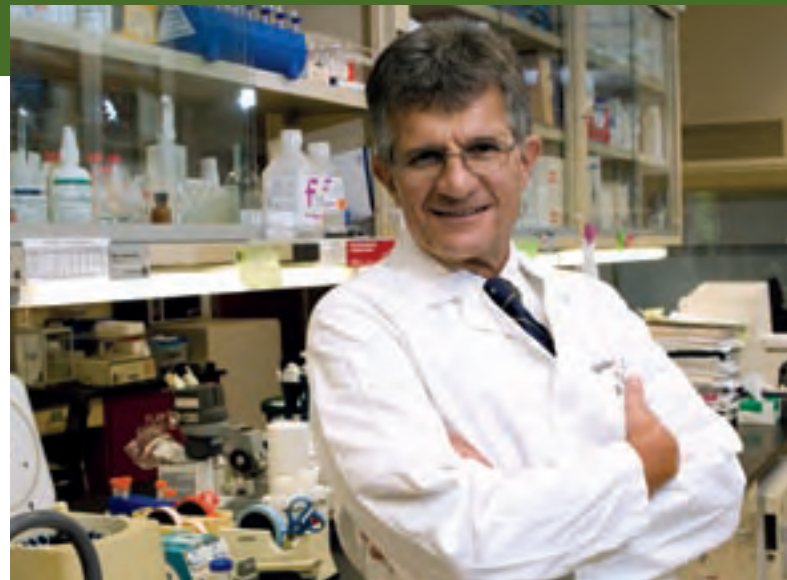
Research Summary

Biochemistry of Vertebrate Photoreceptors and Mechanisms of Retinal Degeneration

Dr. Travis's 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's 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's 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's 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's 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's 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, NIH: The Biology and Diseases of the Posterior Eye (BDPE) Study Section

Reviewer, Howard Hughes Medical Institute (HHMI) investigators

Reviewer for many scientific journals

Research Grants

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

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

National Eye Institute: Vision Science Training Grant for the Jules Stein Eye Institute (Principal Investigator), 9/30/05–9/29/10

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

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

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

Public Service

Board Member and Past-President, Los Angeles County Optometric Society

Board of Trustees Member, California Optometric Association



David S. Williams, PhD

Research to Prevent Blindness Jules and Doris Stein
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's laboratory focuses on the cell biology of photoreceptor and RPE cells. His group is especially interested in the proteins that underlie Usher syndrome, and one area of his research involves gene therapy experiments aimed at preventing the blindness that ensues from Usher syndrome type 1B. Past studies have elucidated transport roles for the Usher 1B protein, myosin VIIa, in the retina. Preclinical studies on a virus-based approach for gene therapy of Usher 1B are being carried out. In more basic studies, his laboratory is investigating how proteins and organelles are moved around within the photoreceptor and RPE cells.

Public Service

S10 Study Section Member, National Institutes of Health

Scientific Advisory Board Member,
Foundation Fighting Blindness

Executive Board Member, Sustainability Council of
New Zealand

Founding Committee Member, International Society for
Ocular Cell Biology, and Chair of Local Organizing Committee
for ISOCB meeting

Associate Editor, *Visual Neuroscience*

Honors

Recipient of Research to Prevent Blindness
Jules and Doris Stein Professorship

Research Grants

National Eye Institute: R01 grant, Retinal Cell Biology of
Usher 1 Proteins, 12/1/07–11/30/09

National Neurovision Research Institute, Foundation
Fighting Blindness: Wynn-Gund Translational Research
Acceleration Program Award: MYO7A Gene Therapy for
Usher 1B, 7/01/08–6/30/13

Gerald Oppenheimer Family Foundation Center for the
Prevention of Eye Disease: Progression of Retinal Degeneration,
1/1/09–12/31/09



Xian-Jie Yang, PhD

Associate 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 a variety of retinal degenerative diseases. Her research will enhance researchers' capabilities to manipulate retinal progenitor and stem cells, thereby contributing to the effort to combat retinal degenerative diseases.

Public Service

Ad hoc Reviewer, Foundation Fighting Blindness; National Science Foundation, Developmental System Cluster; and National Institute of Health, Biology and Disease of Posterior Eye Study Section

External Grant Reviewer, Medical Research Council and Wellcome Trust in the United Kingdom; and The Research Grant Council of Hong Kong in China

Editorial Board Member, Visual Neuroscience

Ad hoc Academic Editor, PLoS Biology

Reviewer for many scientific journals

Honors

Invited Chair, International Congress of Eye Research, Retinal Cell Biology/Development Session in Beijing, China

Research Grants

National Eye Institute: Cytokine Signal Transduction in Retinal Development, 9/30/05–7/31/10

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



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

Chair of the David Geffen School of Medicine at UCLA Faculty Executive Committee

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 cellular and neurochemical organization of the outer and inner retina. Morphological studies have defined cell types and classes, and neurochemical studies have investigated the modulatory action of neurotransmitters and neuroactive peptides. Experimental work has clarified the functional role of neuropeptides in the retina and provides evidence for the current hypothesis that neuropeptides are modulators of retinal neurons and circuitry that influence light and dark adaptation. Other experimental work has investigated the photoreceptor synaptic triad, which is a specialized synaptic complex of great importance; physiologically, this is the site of initial transfer of visual information from photoreceptors, and the fidelity of information transfer 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. These investigations are fundamental steps in establishing the retina's functional organization and provide the basis for understanding the pathophysiology of retinal dysfunction.

Michael Danciger, PhD

Research Ophthalmologist

Professor of Biology at Loyola-Marymount University, Los Angeles

Member of the Jules Stein Eye Institute

Research Summary

Genetic Factors Influencing Retinal Degenerations

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

Dario L. Ringach, PhD

Professor of Neurobiology and Psychology, Biomedical Engineering Program

Member of the Jules Stein Eye Institute

Research Summary

Visual Perception, Eye Movement, and Sensorimotor Integration

Dr. Ringach's research focuses on the relationship between eye movements and visual perception, as well as how motor planning and execution, such as reaching, grasping, navigating and adjusting body posture, is influenced by visual information. Using virtual reality environments, he and his colleagues are studying how human subjects interact with visual stimuli that can be controlled in real time depending on the individual's eye, head, and limb movements. They are examining

how visual feedback is used to guide motor actions as well as how the brain adapts to novel situations, such as simulated increases in the total feedback delay.

Terry J. Smith, MD

Professor of Medicine

Milly and Steve Liu Scholar

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

Member of the Jules Stein Eye Institute

Research Summary

Orbital Connective Tissue and its Involvement in Graves Disease

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

Guido A. Zampighi, PhD

Professor of Neurobiology

Member of the Jules Stein Eye Institute

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 which form them. The chemical synapse is composed of a pre-synaptic neuron filled with small diameter vesicles that contain high concentration of neurotransmitters and a postsynaptic neuron with receptors. He is studying the mechanisms by which the synaptic vesicles attach ("dock") to the presynaptic membrane. He uses structural (electron microscopy), biochemical, and electrophysiological techniques in an attempt to identify, purify, and characterize the channels and transporters of both junctions in an effort to increase understanding of the mechanisms mediating cell communication.

Novrouz Akhmedov, PhD

Associate Research Ophthalmologist

Research Summary

Molecular Biology of the Retina

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

Christian Altenbach, PhD

Research Ophthalmologist

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

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

Minghao Jin, PhD

Associate Research Ophthalmologist

Research Summary

Molecular Biology and Biochemistry of the Visual Cycle and Retinal Degeneration

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

Jacky M.K. Kwong, PhD

Assistant Research Ophthalmologist

Research Summary

Degeneration of Retinal Ganglion Cells and Neuroprotection

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

Anna Matynia, PhD

Assistant Research Ophthalmologist

Research Summary

Neural and Molecular Basis of Light-Associated Allodynia

Dr. Matynia is investigating the mechanisms of light-associated allodynia (LAA), a condition in which normal levels of light produce ocular pain. Using a combination of behavioral, molecular, and cellular approaches in genetic mouse models, the goal is to identify the site of light-pain association and determine how and where the pain signal is propagated. 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 and the surgical correction of refractive errors. He is currently investigating the Ophtec Reconstruction Lens for the treatment of partial or complete aniridia. With Kevin M. Miller, MD, he obtained a humanitarian device exemption from the U.S. Food and Drug administration (FDA) for Morcher GmbH aniridia

implants to treat eyes with congenital and acquired iris defects. This investigation was expanded to include additional Morcher devices, and patients with compromised corneas. In collaboration with Dr. Miller, he is also working with Physical Optics Corporation to develop an adaptive optic eye-tracking scanning laser ophthalmoscope (TASLO) that will allow visualization of retinal details not previously seen by imaging techniques. Other research includes surgical and visual performance outcomes of functionally monocular patients, efficacy and safety of minus power intraocular lens (IOL) implantation in highly myopic eyes having cataract surgery, and the evaluation of Pentacam vs. standard corneal topography for IOL power calculation following keratorefractive surgery.

Maria Carolina Ortube, MD

Assistant Research Ophthalmologist

Clinical Director of Research Studies

Research Summary

Ocular Genetics

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

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

John D. Bartlett, MD

Assistant Clinical Professor of Ophthalmology

Research Summary

Cataract Surgery

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

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 sub-specialties clinical rotation. She is also 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.

Melissa W. Chun, OD

Associate Clinical Professor of Ophthalmology

Director of the UCLA Vision Rehabilitation Center

Research Summary

Vision Rehabilitation

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

Noa Ela-Dalman, MD

Clinical Instructor of Ophthalmology

Research Summary

Pediatric Ophthalmology and Strabismus

Dr. Ela-Dalman provides clinical supervision and instruction to resident physicians and pediatric ophthalmology fellows. She is participating in several clinical research studies related to strabismus, binocular vision, and pediatric ophthalmology.

Jean-Pierre Hubschman, MD

Clinical Instructor of Ophthalmology

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 recent publications include research papers as well as a book chapter about the feasibility of robotic surgery in ophthalmology.

Ronald Mancini, MD

Associate Physician Diplomat

Research Summary

Orbital Diseases and Ophthalmic Plastic Surgery

Dr. Mancini's research interests include fat transfer and grafting techniques for which he is funded by the Cosmetic Surgery Foundation, small incision and minimally invasive facial surgical techniques, and face lift surgery techniques. Dr. Mancini has published over 60 abstracts and peer-reviewed publications. He is the 2008 recipient of the American Academy of Cosmetic Surgery Webster Paper Award.

Susan S. Ransome, MD

Clinical Instructor of Ophthalmology

Research Summary

Cytomegalovirus (CMV) Retinitis

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

Meryl L. Shapiro-Tuchin, MD

Assistant Clinical Professor of Ophthalmology

Director of the Ophthalmology
Inpatient Consultation Service

Research Summary

Comprehensive Ophthalmology

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

Federico G. Velez, MD

Clinical Instructor of Ophthalmology

Research Summary

New Approaches to Strabismus

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

EMERITUS FACULTY

Leonard Apt, MD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Chief of the Division of
Pediatric Ophthalmology and Strabismus

Member of the Jules Stein Eye Institute

Michael O. Hall, PhD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Member of the Jules Stein Eye Institute

Robert S. Hepler, MD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Chief of the Neuro-Ophthalmology Division

Member of the Jules Stein Eye Institute

Bradley R. Straatsma, MD, JD

Professor of Ophthalmology Emeritus (Active Recall)

Founding Chairman of the
Department of Ophthalmology

Founding Director of the Jules Stein Eye Institute

Richard W. Young, PhD

Professor of Neurobiology Emeritus

Member of the Jules Stein Eye Institute

Lecturers

Kathleen L. Boldy, V. MD

Lecturer in Ophthalmology

Samuel M. Genensky, PhD

Lecturer in Ophthalmology

Programs



Patient Care Services

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

Faculty Consultation Service

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

University Ophthalmology Associates

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

Inpatient Services

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 and surgical inpatient services. Led by **Dr. Meryl L. Shapiro-Tuchin**, 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 perform surgical procedures according to their specific ophthalmic specialty. They are joined by other medical specialists, including anesthesiologists, nurses, and technicians, to ensure the highest quality pre- and post-operative care.

UCLA Mobile Eye Clinic

The UCLA Mobile Eye Clinic, a 39-foot-long bus specially outfitted with eye examination equipment, 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.

Eye and Tissue Bank and Donor Eye Program

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

Summary of Patient Care Statistics

	2007–2008	2008–2009
Faculty Consultation Service		
Patient visits	63,058	63,711
University Ophthalmology Associates		
Patient visits	20,819	17,683
Inpatient Consultation Service		
Patient evaluations	335	262
Clinical Laboratories		
Procedures	25,699	27,372
Surgery Services		
Procedures	9,204	8,950
Mobile Eye Clinic		
Patients seen	3,655	4,089
Ocular abnormalities	40%	45%
Trips	179	191

Research and Treatment Centers

The Ophthalmology Treatment Centers provide sub-specialty care from faculty physicians who are actively involved in related research, enabling emerging and experimental treatment options to be developed for a gamut of eye disorders. In addition to comprehensive treatment, the centers provide both patients and physicians expert diagnostic and consultation services for diseases that are difficult to identify and treat. Ophthalmology faculty work closely with other specialists, both within the Jules Stein Eye Institute and 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. 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, and 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.



Dr. Anthony Aldave (standing) and laboratory director Joel Moral prepare to perform an ultrasonography exam on a patient.

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 is underway to evaluate the solution's effectiveness in treating fungal infections, a major cause of pediatric blindness in tropical countries.

Clinical Research Center

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

Institute faculty are currently conducting more than 50 clinical research studies (listed in the Appendices). Patients can volunteer to participate in studies that contribute to a better understanding of ocular disorders or that evaluate new, potentially better treatments for various diseases of the eye.

Contact Lens Center

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

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

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 will expand the standard of treatment, such as new lasers and laser strategies, refinement of microsurgical techniques specific to diabetic eye diseases, and non-traditional treatment approaches.

The Center's treatment philosophy is based upon the systemic nature of diabetes. 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 latter includes lifestyle modification, nutrition, vitamins, herbs, acupuncture, and massage.

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

Laser Refractive Center

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

The Laser Refractive Center provides patients with all standard refractive procedures, including custom LASIK and LASEK/PRK; astigmatic keratotomy (AK); conductive keratoplasty (CK); and presbyopia-correcting intraocular lens, phakic intraocular lens, and intracorneal ring (INTACS) implantation; and offers emerging therapies as they become available. Patients referred to the Center undergo a complete ocular examination that includes advanced corneal topographic maps to analyze corneal shape and identify conditions that may interfere with surgical correction. Candidates for laser 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, is 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 research between clinicians and basic science researchers into the cause of macular disease.

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

Ocular Inflammatory Disease Center

The Ocular Inflammatory Disease Center, under the direction of **Dr. Gary N. Holland**, was established in 1985 to provide patients with coordinated multi-specialty care for a broad spectrum of inflammatory eye disorders including uveitis, corneal ulcers, endophthalmitis, autoimmune diseases of the cornea and ocular surface, and ophthalmic manifestations of AIDS. 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 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. Another area of focus is the research and treatment of uveitis. The Center offers a Corneal Ulcer Service and an HIV Ocular Disease Service to facilitate the integration of care with other medical specialties. If indicated, diagnostic testing ranging from cultures to biopsies to special ultrasound biomicroscopic examinations; complex medical treatments including immunosuppression and investigational drugs; and surgical intervention such as corneal, glaucoma, and retinovitreal procedures are available.

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 its treatment, and played an important role in the Collaborative Ocular Melanoma Study (COMS), sponsored by the National Eye Institute.

The Center's central 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. Research leading to molecular discoveries in cancer metastasis is a major thrust of the Ocular Melanoma Laboratory. Patients can participate in these investigations by contributing tumor material obtained via needle biopsy at the time of their cancer surgery.

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 Rehabilitation Center

The Vision Rehabilitation Center is under the direction of **Dr. Melissa W. Chun**, with **Dr. Steven D. Schwartz** as Medical Advisor. The Center was established to provide rehabilitation for patients with low vision, defined as best corrected vision of 20/70 or worse in the better eye, and maximize their visual function and quality of life.

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

Dr. Jennie Kageyama, an optometrist in the Vision Rehabilitation Center, has a patient try a magnification device from the Center's lending library.

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 NIDEK EC-9000 and Bausch and Lomb Orbscan topographers, and imaging of the corneal endothelium for assessment of corneal endothelial cell morphology and density using the KONAN non-contact 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 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.





The Ophthalmic Photography Laboratory provides a wide array of clinical examination techniques to aid in the diagnosis and management of complex eye conditions.

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

Ocular Motility Clinical and Basic Science Laboratory

The Ocular Motility Clinical and Basic Science Laboratory, under the direction of **Dr. Joseph L. Demer**, records and quantitatively analyzes eye movement abnormalities resulting from ocular and neurological disorders, such as ocular myasthenia gravis. 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.

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 **Drs. Ralph D. Levinson** and **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 lens calculation examinations are also performed in the Laboratory. Biometry measures the axial eye length, anterior chamber depth, and lens thickness; lens calculations are performed to determine the power of the lens implant for cataract patients.

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 possibilities. Electrophysiological tests, including the electroretinogram (ERG), electro-oculogram (EOG), and visually evoked potential test (VEP), record electrical signals from different layers of the visual system, much like an electrocardiogram (ECG) records electrical signals of the heart. Psychophysical tests, such as reading an eye chart, require the participation of the patient in specific tasks to evaluate visual functions like color blindness and contrast sensitivity. In many cases, both electrophysical and psychophysical tests are performed together in order to obtain the optimum amount of information for diagnosis.

Dr. David Sarraf (right) reviews photographs of a patient's retina with third-year resident Dr. Sumit Shah

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. Pre- and post-doctoral research fellows particularly benefit from the wealth of new and unfolding research generated by vision scientists at the Institute.



UCLA Medical Student Program

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

All second-year medical students participate in a four-day program that encompasses the ophthalmology portion of Fundamentals of Clinical Medicine. 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.

UCLA Ophthalmology Residency Program

The Department of Ophthalmology conducts an accredited three-year residency program for 24 residents; eight 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 and Clinical Sciences Course. These lectures are followed by Grand Rounds, consisting of presentation and discussion of specific patient cases, and faculty lectures on clinical topics related to ophthalmic subspecialties. Throughout the week, clinical conferences in ophthalmic subspecialties are held, where problems are presented and discussed.

Surgery Training

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

Research

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

EyeSTAR Program

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

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

From left, graduating residents Drs. Ahmad Mansury, Barbara Yates, Allen Hu, Tanvi Shah, Allen Chiang, Tania Tai, Pradeep Prasad, and Sumit Shah

UCLA Ophthalmology and Vision Science Fellowship Programs

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

Clinical fellowship training combines outpatient, inpatient, and surgical experience in an ophthalmic subspecialty. The fellow assumes increasing responsibility for patient care, under the supervision of faculty members responsible for the program. In addition to receiving instruction from faculty, the fellow instructs medical students and residents. Research is considered an important aspect of specialty training and a major prerequisite for assimilating future developments in ophthalmology. Clinical fellows are expected to undertake independent investigation or to participate in one of the ongoing research projects in a basic or clinical 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, or over a wide range of topics. Trainees work under the supervision of Institute faculty members who are engaged in basic science research and have active laboratories. They may work on individual projects or contribute to faculty projects. The scope and nature of each vision science fellowship is developed by the trainee and his/her faculty mentor.



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

Fellowship in Comprehensive Ophthalmology

The Comprehensive Ophthalmology Division offers a one-year fellowship under the direction of **Dr. Kevin M. Miller**. The fellowship prepares 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 at 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 required to present the results of a study at one of the meetings.

Fellowship in Contact Lens Practice

The one-year fellowship under the direction of **Drs. Barry A. Weissman** and **Melissa W. Chun**, offers optometrists and ophthalmologists advanced training in contact lens practice. 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 excellent training opportunities for routine and specialized contact lens and comprehensive ophthalmology services in a multidisciplinary setting. Specialized services include complicated contact lens fittings for all types of astigmatism, adult and pediatric aphakia, presbyopia, post surgical 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 Jules Stein Eye 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**, and **Simon K. Law**, the one- 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 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 neuro-radiology. 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 neuroradiology 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**, the fellowship provides preparation for an academic career in ophthalmic pathology. One-, two-, and three-year training programs are available depending on the background of the applicant. Training encompasses many aspects of ophthalmic pathology. 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, Raymond S. Douglas, 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 or 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 direction of **Drs. Arthur L. Rosenbaum, 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.



Dr. Sherwin Isenberg, one of the directors of the fellowship training program in Pediatric Ophthalmology and Strabismus, examines a young patient.

Fellowship in Uveitis and Inflammatory Eye Diseases

The 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 and uveitis clinics of two Los Angeles County 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- 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

The fellowship in vitreoretinal diseases and surgery is designed to provide an opportunity for appropriate clinical training and for clinical or vision science research related to retinal disease, over a two-year period. Special training includes the prevention, diagnosis, and treatment of retinal, choroidal, vitreous, and related ocular diseases. Under the direction of **Drs. Steven D. Schwartz, Michael B. Gorin, Allan E. Kreiger, Jean-Pierre Hubschman, Colin A. McCannel, Tara A. McCannel, David Sarraf, and Bradley R. Straatsma**, the fellowship consists of the following major components: diabetic retinopathy, diseases of the macula and retina, fluorescein angiography and retinal photography, hereditary retinal degenerations, ocular trauma, ophthalmic oncology, rhegmatogenous retinal disease and vitreoretinal surgery, and ultrasonography.

Fellowships in Vision Science

Predocutorial 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**.

Predocutorial 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 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- to two-year fellowships under the supervision of specific Institute faculty. Candidates for these international fellowships are nominated by prestigious institutions outside the United States, and often hold academic positions within their own countries. Fellows participate in the clinical and research activities of ophthalmic-subspecialties according to their training needs.

Vision scientist Dr. Xian-Jie Yang (center) with postdoctoral fellow Dr. Kiyo Sakagami (left) and staff researcher Dr. Takao Hashimoto



Appendices



Volunteer and Consulting Faculty

Volunteer Faculty in Ophthalmology

Clinical Professor of Ophthalmology

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

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

Associate Clinical Professor of Ophthalmology

Reginald G. Ariyasu, MD, PhD
Charles R. Barnes, MD
Gerald J. Barron, MD
Arnold L. Barton, MD
Louis Bernstein, MD
W. Benton Boone, MD
Andrew E. Choy, MD
Melissa W. Chun, OD
Peter J. Cornell, MD
Bernard S. Davidorf, MD
Uday Devgan, MD
Paul B. Donzis, MD
Robert E. Engstrom, Jr., MD
Donald S. Fong, MD, MPH
Donald I. Goldstein, MD
Michael J. Groth, MD
Thomas A. Hanscom, MD
Andrew Henrick, MD
Edwin P. Hill, MD
Eugene F. Hoffman, Jr., MD
David F. Kamin, MD
Stanley M. Kopelow, MD
Joseph N. Lambert, MD
Brian L. Lee, MD
Jonathan I. Macy, MD
M. Gene Matzkin, MD
Joan E. McFarland, MD
James W. McKinzie, MD
Alan L. Norton, MD
John F. Paschal, MD
Gene J. Pawlowski, MD
Sidney W. Penn, MD
Michael Reynard, MD
David S. Robbin, MD
David E. Savar, MD
Timothy V. Scott, MD
James F. Sharp, MD
Albert Sheffer, MD
James D. Shuler, MD
Yossi Sidikaro, MD, PhD
Matthew Sloan, MD
Ronald J. Smith, MD
Alfred Solish, MD, MS
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
Arthur A. Astorino, MD
John D. Bartlett, MD
Mark A. Baskin, MD
J. Kevin Belville, MD
Arthur Benjamin, MD
Katherine L. Bergwerk, MD
Betsy E. Blechman, MD
Cynthia A. Boxrud, MD
Amarpreet S. Brar, MD
Harvey A. Brown, MD
Almira W. Cann, MD, PhD
Arnett Carraby, MD
Andrew M. Chang, MD
Thomas B-H. Choi, MD
Milton W. Chu, MD
Robert A. Clark, MD
Charles A. Cooper, MD
Yadavinder P. Dang, MD
Jonathan M. Davidorf, MD
John L. Davidson, MD
Sanford S. Davidson, MD
Louise Cooley Davis, MD
Farid Eghbali, OD
Troy R. Elander, MD
Naomi L. Ellenhorn, MD
Calvin T. Eng, MD
Joseph M. Faust, MD
Doreen T. Fazio, MD
Sanford G. Feldman, MD
David R. Fett, MD
Laura E. Fox, MD
Ron P. Gallemore, MD
George H. Garcia, MD
Kathryn M. Gardner, MD
Leslie C. Garland, MD
W. James Gealy, Jr., MD
Lawrence H. Green, MD
Man M. Singh Hayreh, MD
Matthew L. Hecht, MD
Jonathan A. Hoenig, MD
Jeffrey Hong, MD
Morton P. Israel, MD
Steven J. Jacobson, MD
Véronique H. Jotterand, MD
J. David Karlin, MD
David S. Katzin, MD
James F. Kleckner, MD
Jerome R. Klein, MD
Craig H. Kliger, MD
Howard E. Lazerson, MD
Steven Leibowitz, MD

Robert T. Lin, MD
 Joanne E. Low, MD
 Bryant J. Lum, MD
 Michael C. Lynch, MD
 M. Polly McKinstry, MD
 Ashish M. Mehta, MD
 George L. Miller, MD
 Kenneth J. Miller, MD
 David R. Milstein, MD
 Ronald L. Morton, MD
 Lee T. Nordan, MD
 Roger L. Novack, MD, PhD
 James H. Peace, MD
 Gilbert S. Perlman, MD
 Cheryl J. Powell, MD
 John R. Privett, MD
 Firas Rahhal, MD
 George M. Rajacich, MD
 Jay J. Richlin, MD
 Laurence N. Roer, MD
 Gerald S. Sanders, MD
 Barry S. Seibel, MD
 Meryl Shapiro-Tuchin, MD
 David M. Shultz, MD
 Eliot B. Siegel, MD
 Lance M. Siegel, MD
 John D. Slaney, MD
 Robert J. Smyth-Medina, MD
 Kenneth O. Sparks, MD
 Sadiqa Stelzner, MD
 Robert C. Tarter, MD
 Debra G. Tennen, MD
 Teddy Y. Tong, MD
 Sterling M. Trenberth, MD
 Robert C. Tudor, MD
 Henry E. Ullman, MD
 Nancy S. Wang, MD
 Tay J. Weinman, MD
 Irwin S. Weiss, MD
 Sidney J. Weiss, MD
 Scott Whitcup, MD
 David L. Williams, MD
 Jeffrey V. Winston, MD
 David L. Wirta, MD
 Barry J. Wolstan, MD
 Wilson C. Wu, MD, PhD
 Michael C. Yang, MD
 Richard H. Yook, MD
 Peter D. Zeegen, MD

Clinical Instructor in Ophthalmology

Eduardo Besser, MD
 Maria Braun, MD
 Neil D. Brouman, MD
 Stephen S. Bylsma, MD
 Joseph H. Chang, MD
 John J. Darin, MD
 Paul J. Dougherty, MD
 Daniel Ebroon, MD
 Brad S. Elkins, MD
 Satvinder Gujral, MD
 Lawrence M. Hopp, MD, MS
 John A. Hovanesian, MD
 Batool Jafri, MD
 Aarchan Joshi, MD
 Anisha J. Judge, MD
 Rajesh Khanna, MD
 Julie A. King, MD
 Mark H. Kramar, MD
 Daniel Krivoy, MD
 Laurie C. McCall, MD
 David Paikal, MD
 Alpa A.S. Patel, MD
 Jayantkumar Patel, MD
 Susan Ransome, MD
 Steven H. Rauchman, MD
 Robert A. Schwarcz, MD
 Kayar Shah, MD
 Mark Silverberg, MD
 Sharon N. Spooner-Dailey, MD
 Dana P. Tannenbaum, MD
 William L. Trotter, MD
 Mathew Wang, MD
 Peter H. Win, MD
 Patrick Yeh, MD

Consulting Members of the Jules Stein Eye Institute

Robert W. Baloh, MD
 Professor of Neurology and Surgery
 (Head and Neck)
 Ferdinand V. Coroniti, PhD
 Professor, Department of Physics
 and Astronomy
 David Eisenberg, DPhil
 Investigator, Howard Hughes
 Medical Institute
 Director, UCLA-DOE Institute
 for Genomics and Proteomics
 Professor, Departments of
 Chemistry & Biochemistry and
 Biological Chemistry Molecular
 Biology Institute
 Alan M. Fogelman, MD
 Castera Professor and
 Executive Chair, Department
 of Medicine
 Alan D. Grinnell, PhD
 Professor of Physiology and
 Physiological Science
 Director, Jerry Lewis Neuromuscular
 Research Center
 Director, Ahmanson Laboratory
 of Neurobiology
 Vicente Honrubia, MD, DMSc
 Professor Emeritus of Surgery,
 Division of Head and Neck Surgery
 Director, Victor Goodhill Ear Center
 Sherman M. Mellinkoff, MD
 Professor Emeritus of Medicine
 Former Dean, UCLA School
 of Medicine
 C. Kumar Patel, PhD
 Professor, Department of
 Physics and Astronomy
 Leonard H. Rome, PhD
 Senior Associate Dean for Research
 Professor of Biological Chemistry
 Peter C. Whybrow, MD
 Judson Braun Professor and
 Executive Chair, Department
 of Psychiatry and
 Biobehavioral Sciences
 Director, Neuropsychiatric Institute
 Physician in Chief,
 Neuropsychiatric Hospital

Residents and Fellows

Residents

Third-Year Residents 2006–2009

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

Second-Year Residents 2007–2010

Vicki K. Chan, MD
Heather S. Chang, MD
Seongmu Lee, MD
Monica Ralli, MD
Gina L. Yoo, MD
Le Yu, MD
Alex Yuan, MD, PhD (EyeSTAR)

First-Year Residents 2008–2011

Darin Goldman, MD
Jennifer S. Huang, MD
Roger Duncan Johnson Jr., MD
Annie K. Lim, MD
Vicky C. Pai, MD
Louis Savar, MD
Amelia C. Sheh, MD

EyeSTAR Trainees

Shaheen P. Karim, MD
Helen Lee, MD
C. Nathaniel Roybal, MD, PhD
Alex Yuan, MD, PhD

Clinical Fellows

Comprehensive Ophthalmology

Eric Amesbury, MD

Corneal and External Ocular Diseases and Refractive Surgery

Jesse B. Biebesheimer, MD
Marvin L. Hsiao, MD

Glaucoma

Juliet E. Chung, MD
Priya V. Desai, MD
Lucy Q. Shen, MD

Orbital and Ophthalmic Plastic Surgery

Catherine J. Hwang, MD, MPH
Mehryar (Ray) Taban, MD

Pediatric Ophthalmology and Strabismus

Hee-Jung Park, MD, MPH
Stacy L. Pineles, MD

Uveitis and Inflammatory Eye Disease

Peter J. Kappel, MD

Vitreoretinal Diseases and Surgery

Robert E. Coffee, MD
Atul Jain, MD
Shantanu Reddy, MD
Irena Tsui, MD

Specialized Clinical Fellow

Ellin Chen, OD (Contact Lens)

International Fellows

Comprehensive Ophthalmology

Young-Keun Han, MD, PhD
Seoul, Korea

Cornea-External Ocular Disease

Christopher Wiaux, MD
Geneva, Switzerland

Glaucoma

Elena Bitrian, MD
Barcelona, Spain

Neuro-Ophthalmology

Roberta M. Costa, MD
Sao Paulo, Brazil
Oana Dumitrascu, MD
Prahova, Romania

Orbital and Ophthalmic Plastic Surgery

Kam-Lung Chong, MD
Hong Kong, China
Helen Lew, MD
Seoul, Korea

Pediatric Ophthalmology

Abubaker Affan, MD
Derna, Libya

Uveitis and Refractive Surgery

Narumon Keorochana, MD
Bangkok, Thailand

Vitreoretinal Diseases and Surgery

Jean-Louis Bourges, MD, PhD
Clermont-Ferrand, France
Andrew Kaines, MD
Adelaide, Australia

Postdoctoral Research Fellows

Frederic Bury, PhD
Chang-Sheng Chang, PhD
Emilie Colin, PhD
Tanja Diemer, PhD
Jamison Engle, MD
Maren Englehardt, PhD
Oluwatoyin Fafowara, MD, MPH
Mark Fleissner, PhD
Rajendra Kumar Gangalum, PhD
Zhe Jing, PhD
Riki Kawaguchi, PhD
Joanna Kaylor, PhD
Miyeon Kim, PhD
Vanda Lopes, PhD
Maryam Mokhtarzadeh, MD
Shawn Morales, PhD
Kun Do Rhee, PhD
Kiyoko Sakagami, PhD
Veena Theendakara, PhD
Amy Tien, PhD
Chinatsu Toshia, PhD
Deepti Trivedi, PhD
Thu Thuy Truong, PhD
Ned Van Eps, PhD
Jiamei Yu, MD, PhD
Quan Yuan, PhD

Predocctoral Research Fellows

Michael Bridges
Kelly Cadenas
Robert Kent Fanter
Helene Garneau
Jun Isobe
Gergana Kodjebacheva
Carlos Lopez
Sheryll Mangahas
John McCoy
Anita Narasimhan
Caroline Sham
Dora Toledo Warshaviak
Jang (Lawrence) Yoo
Alejandra Young

Endowed Professorships, Fellowships, and Other Funds

Endowed Professorships

Ahmanson Chair in Ophthalmology

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

Steven D. Schwartz, MD
2007–Present

Leonard Apt Endowed Chair in Pediatric Ophthalmology

Established in 2003 by Dr. Leonard Apt, Professor Emeritus of Ophthalmology and Founding Director of the Division of Pediatric Ophthalmology and Strabismus, with a gift from the trust of Frederic G. Rappaport, Dr. Apt's nephew

Joseph L. Demer, MD, PhD
2005–Present

Karen and Frank Dabby Endowed Chair in Ophthalmology

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

Robert A. Goldberg, MD
2008–Present

Charles Kenneth Feldman Chair in Ophthalmology

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

Robert D. Yee, MD
Professor 1984–1987

Hilel Lewis, MD
Scholar 1989–1993

Gabriel H. Travis, MD
2001–Present

Laraine and David Gerber Chair in Ophthalmology

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

Joseph L. Demer, MD, PhD
2000–2004

Sherwin J. Isenberg, MD
2004–Present

Brindell and Milton Gottlieb Chair in Pediatric Ophthalmology

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

Arthur L. Rosenbaum, MD
2008–Present

Dolly Green Chair of Ophthalmology

Established in 1980 by Dorothy (Dolly) Green

Dean Bok, PhD
1984–Present

Ernest G. Herman Endowed Chair in Ophthalmology

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

Karl Kirchgessner Foundation Chair in Vision Science

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

Debora B. Farber, PhD, DPhhc
2001–Present

Kolokotronis Chair in Ophthalmology

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

Kevin M. Miller, MD
2005–Present

Grace and Walter Lantz Endowed Chair in Ophthalmology

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

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

Sherwin J. Isenberg, MD
Professor 1996–2004

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

David May II Endowed Chair in Ophthalmology

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

Gary N. Holland, MD
1999–2004

Joseph Caprioli, MD
2004–Present

Oppenheimer Brothers Chair in Ophthalmology

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

Joseph Horwitz, PhD
2003–Present

Harold and Pauline Price Chair in Ophthalmology

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

Michael B. Gorin, MD, PhD
2006–Present

Jerome and Joan Snyder Chair in Ophthalmology

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

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 appointment position in 2007 with an additional commitment

Joseph Caprioli, MD
1997–2004

Anne L. Coleman, MD, PhD
2004–Present

Jules Stein Chair in Ophthalmology

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

Wayne L. Hubbell, PhD
1983–Present

Jack H. Skirball Endowed Chair in Ocular Inflammatory 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

Bradley R. Straatsma, MD, Endowed Chair in Ophthalmology

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

Bartly J. Mondino, MD
2000–Present

Vernon O. Underwood Family Chair in Ophthalmology

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

John R. Heckenlively, MD
1997–2004

Gary N. Holland, MD
2004–Present

Edith and Lew Wasserman Chair in Ophthalmology

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

Manfred Spitznas, MD
1979–1981

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

Ben J. Glasgow, MD
2003–Present

Endowed Fellowships

Rosalind W. Alcott Fellowship

Established in 1978 for the training of outstanding postdoctoral fellows

Shantan Reddy, MD
2008–2009

Leonard Apt Endowed Fellowship in Pediatric Ophthalmology

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

Stacy L. Pineles, MD
2008–2009

The Thelma and William Brand Director's Fund

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

Steven and Nancy Cooperman Fellowship Fund

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

Klara Spinks Fleming Fellowship Fund

Established in 1985 for the support of cataract research

Eric Amesbury, MD
2008–2009

Frances Howard Goldwyn Fellowship

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

Mehryar Taban, MD
2008–2009

Elsa and Louis Kelton Fellowship

Endowed in 1982 to support post-doctoral research and training

Marvin Hsiao, MD
2008–2009

Bert Levy Research Fellowship Fund

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

David May II Fellowship Fund

To support advanced study and research in ophthalmology and vision science

Juliet Chung, MD
2008–2009

Lucy Shen, MD
2008–2009

Abe Meyer Memorial Fellowship Fund

Established in 1969 to support clinical fellows at the Institute

Robert Coffee, MD, MPH
2008–2009

Adelaide Stein Miller Research Fellowship

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

Atul Jain, MD
2008–2009

Harold and Pauline Price Fellowship

To support research and education in ophthalmology and vision care

Irena Tsui, MD
2008–2009

Frederic G. Rappaport Fellowship in Retina/Oncology

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

Shantan Reddy, MD
2008–2009

Ann C. Rosenfield Fund

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

Dr. Jack Rubin Memorial Fellowship

To support postdoctoral fellows

Sanford and Erna Schulhofer Fellowship Fund

To support postdoctoral research and training in vision science

Stacy L. Pineles, MD
2008–2009

Lee and Mae Sherman Fellowship Fund

Established in 1971 to support postdoctoral fellows

Jesse Biebesheimer, MD
2008–2009

Jules Stein Research Fellowship

Established in 1982 to honor the memory of Charles Kenneth Feldman

Hee-Jung Park, MD
2008–2009

Vernon O. Underwood Family Fellowship Fund

Established in 1993 to support clinical fellows

Catherine Hwang, MD
2008–2009

Endowments for Research, Education, and Patient Care

The Annenberg Foundation Fund

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

J. Richard Armstrong and Ardis Armstrong Fund

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

Elsie B. Ballantyne Regents Fund

For educational and patient care projects within the Glaucoma Division

Elsie B. Ballantyne UCLA Foundation Fund

Established in 1971 for research related to glaucoma

Virginia Burns Oppenheimer Endowment Fund

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

Card Family Research Fund

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

Edward and Hannah Carter Fund

Established in 1990 for continuing medical education

Anthony Eannelli Fund

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

Katherine L. Gardner Research Fund

Established in 1984 for vision research

Emma B. Gillespie Fund

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

Audrey Hayden-Gradle Trust

Established in 1994 with an unrestricted trust

Marie and Jerry Hornstein Family Endowed Macular Degeneration Research Fund

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

Michael Huffington Ophthalmology Scholarship Fund

Established in 1994 for educational activities within the Retina Division

Stella F. Joseph Fund

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

JSEI Maintenance Fund

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

Herman King Fund

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

The Karl Kirchgessner Foundation Ophthalmology Endowment Fund

Established in 1984 for promising areas of vision science research

Sara Kolb Memorial Fund

Established in 1984 for research in pediatric ophthalmology

John and Theiline McCone Macular Disease Research Fund

Established in 1989 for macular disease research

Memorial Library Funds

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

Chesley Jack Mills Trust

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

Patricia Pearl Morrison Research Fund

Established in 1982 for the investigation of retinal structure and disease

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

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

Emily G. Plumb Estate and Trust

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

Harold and Pauline Price Retina Research Fund

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

Herb Ritts, Jr. Memorial Vision Fund

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

Arna Saphier Macular Degeneration Fund

Established in 2009 with a bequest from Ms. Saphier

Albert Sarnoff Endowed Cataract Fund

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

Richard B. Shapiro Vision Fund

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

The Skirball Foundation Fund

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

Arthur Spitzer Fund

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

Raymond and Ruth Stotter Vision Science Research Fund

Established in 1990 for vision science research

Bradley R. Straatsma Research Fund

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

Barbara P. Taylor Fund

For the vision science program

UCLA Center for Eye Epidemiology

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

Paul J. Vicari Endowed Cataract Research Fund

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

Uncle Claude Fund

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

Anne H. West Estate Fund

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

Daniel B. Whipple Fund

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

Pat and Joe Yzurdiaga Fund

Established in 2009 to support cataract programs under the direction of Kevin M. Miller, MD

Educational Offerings

Ophthalmology and Vision Science Training Programs

Fourteenth Annual Vision Science Conference

October 24–26, 2008

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.

UCLA/AUPO Introduction to Clinical Research Course

March 13–15, 2009

Course Directors
Gary N. Holland, MD
Bartly J. Mondino, MD

Co-sponsored by the Association of University Professors of Ophthalmology (AUPO), and endorsed by the Association for Research in Vision and Ophthalmology (ARVO), this course provides a comprehensive overview of research methods, interpretation of statistical tests, regulatory issues, and manuscript preparation. It is designed to assist new investigators who are beginning their academic careers.

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 2008–2009, the following course components were offered:

Orbit, Eyelids and Lacrimal System

September 3–October 15, 2008

Section Chairman
Robert Alan Goldberg, MD

Retina and Vitreous

October 22–January 7, 2009

Section Chairmen
Michael B. Gorin, MD, PhD
Steven D. Schwartz, MD

External Disease and Cornea

January 14–February 25, 2009

Section Chairman
Gary N. Holland, MD

Pathology and Intraocular Tumors

March 4–March 25, 2009

Section Chairman
Ben J. Glasgow, MD

Pediatric Ophthalmology and Strabismus

April 1–June 3, 2009

Section Chairman
Arthur L. Rosenbaum, 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

Coordinator
Suraj P. Bhat, PhD

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

Phacoemulsification Course

October 25, 2008

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

Full-time and volunteer clinical faculty and visitors from the community meet bimonthly to discuss neuro-ophthalmology cases presented by clinical 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, and Arthur L. Rosenbaum, MD, 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

July 11–12, 2008

Robert Axelrod Memorial Lecturer
Julian D. Perry, MD
Cleveland, Ohio

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.

Joint Symposium on Cataract and Refractive Surgery

February 5–8, 2009

Program Chair
Kevin M. Miller, MD

40th Jules Stein Lecturer
David F. Chang, MD
University of California,
San Francisco

The Jules Stein Eye Institute and American Society of Cataract and Refractive Surgery Joint Symposium on Cataract and Refractive Surgery focused on core clinical matters related to refractive cataract surgery. The symposium included presentation of the Jules Stein Honored Lecture. It also offered continuing education courses for nurses, technicians, and administrators on matters critical to their role as support staff for cataract and/or refractive surgery patients.

Comprehensive Ophthalmology Review Course

February 26–March 1, 2009

Course Directors
David Sarraf, MD
John Irvine, MD

The Jules Stein Eye Institute and the Doheny Eye Institute sponsored the Fourth 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 12, 2009

Coordinators
Anthony C. Arnold, MD
Robert Alan Goldberg, MD
Gary N. Holland, 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 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. The 40th Annual Jules Stein Lecture was presented at the Joint Symposium on Cataract and Refractive Surgery on February 8, 2009.

7th Bradley R. Straatsma Lecturer
Gregory S. Hageman, PhD
Professor of Ophthalmology
and Visual Sciences
University of Iowa

7th Thomas H. Pettit Lecturer
David B. Glasser, MD
Assistant Professor of Ophthalmology
Johns Hopkins University
School of Medicine
Clinical Associate Professor
of Ophthalmology
University of Maryland
School of Medicine

Research Contracts and Grants

Fiscal Year 2008–2009

Vision Science Grants

Total Award

Anthony J. Aldave, MD

Cloning/Gene/Posterior Corneal Dystrophy
National Eye Institute
Duration: 9/30/05–8/31/10

\$831,195

Large Scale Sequencing of the Common Posterior Polymorphous Corneal Dystrophy
Candidate Gene Interval

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
Duration: 1/1/09–12/31/09

\$30,000

RNA Interference Targeting of the TGFBI Gene Transcript in Human Corneal
Epithelial Cells

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
Duration: 2/15/08–2/14/09

\$30,000

Suraj P. Bhat, PhD

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

\$2,211,887

Dean Bok, PhD

Identification and Cellular Localization of Gene Products that Affect
Photoreceptor Survival in Inherited Retinal Degeneration
Macula Vision Research Foundation
Duration: 4/1/08–3/31/10

\$100,000

Dean Bok, PhD, Center Director

w/ Debra B. Farber, PhD, DPhc, Michael B. Gorin, MD, PhD,
Steven Nusinowitz, PhD, Gabriel H. Travis, MD, Xian-Jie Yang, PhD

Foundation Fighting Blindness Center Grant
Foundation Fighting Blindness
Duration: 7/1/05–6/30/10

\$1,880,482

Anne L. Coleman, MD, PhD

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

\$100,000

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

\$21,849

Ocular Hypertension Treatment Study (OHTS)
NEI/Charles R. Drew University
Duration: 1/1/00–12/31/09

\$1,179,359

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

\$3,530,009

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

\$69,054

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

Dietary Vitamin Intake and Open Angle Glaucoma: A Case-Control Study
 Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
 Duration: 2/15/08-2/14/09 \$30,000

Joseph L. Demer, MD, PhD

Biomechanical Analysis in Strabismus Surgery
 National Eye Institute
 Duration: 5/1/06-4/30/11 \$2,727,647

Walt and Lilly Disney Award for Amblyopia Research Award
 Research to Prevent Blindness
 Duration: 7/1/04-12/31/09 \$75,000

Genetic and Anatomic Basis of the Fibrosis Syndrome
 NEI/Boston Childrens Hospital
 Duration: 4/1/07-11/31/09 \$124,303

Sophie X. Deng, MD, PhD

Regeneration of Limbal Stem Cells from Epidermal Epithelial Stem Cells and
 Induced Pluripotent Stem Cells
 Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
 Duration: 1/1/09-12/31/09 \$30,000

Raymond S. Douglas, MD, PhD

Immune Activation of Fibroblasts
 National Eye Institute
 Duration: 10/1/04-9/1/09 \$985,588

RPB Career Development Award
 Research to Prevent Blindness
 Duration: 7/1/07-6/30/09 \$200,000

Immune Activation of Fibroblasts
 Los Angeles BioMedical Research Institute/NIH
 Duration: 9/1/06-6/30/09 \$100,000

ITEDS: Development of Clinical Response Index in TAO
 American Society of Ophthalmic Plastic and Reconstructive Surgery
 Duration: 7/1/07-6/30/09 \$25,000

Gordon L. Fain, PhD

Physiology of Photoreceptors
 National Eye Institute
 Duration: 8/1/08-7/31/12 \$1,000,000

Debora B. Farber, PhD, DPhhc

Molecular Mechanisms in Retinal Degeneration
 National Eye Institute
 Duration: 7/1/06-11/30/11 \$1,431,250

Stem Cell Microvesicles: Potential Tools for Retinal Regeneration
 National Eye Institute
 Duration: 12/1/07-11/30/09 \$425,500

Studies in Microvesicles to Activate Quiescent Ciliary Margin Stem Cells and
 Enhance their Proliferation
 Hope for Vision
 Duration: 9/1/07-8/31/08 \$35,000

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

Does a Constitutively Active Gai3 Protein Rescue the Oa1-/-phenotype? Vision of Children Duration: 4/1/08-3/31/10	\$50,000
Characterization of Micro RNAs in Embryonic Stem Cell Microvesicles Hope for Vision Duration: 1/1/09-12/31/09	\$40,000
JoAnn A. Giaconi, MD	
Nutritional Associations w/Glaucoma/African American Women American Glaucoma Society Duration: 2/1/06-12/31/10	\$40,000
Ben J. Glasgow, MD	
Proteins in Molecular Mechanisms of Tear Film Formation National Eye Institute Duration: 7/1/06-6/30/11	\$1,912,500
Lynn K. Gordon, MD, PhD	
EMP2, a Molecular Switch for Function of RPE2 VA Merit Grant Duration: 3/5/05-9/30/09	\$600,000
Michael B. Gorin, MD, PhD	
Genetics in Age-Related Maculopathy National Eye Institute Duration: 4/1/07-3/31/12	\$6,445,729
Linkage and Association Studies for Macular Degeneration American Health Assistance Foundation Duration: 4/1/06-3/31/10	\$150,000
Diabetic Retinopathy Diagnosis Device Neuro Kinetics/NIH-NEI Duration: 9/1/07-2/28/09	\$34,770
Behavioral and Molecular Mechanisms of Photophobia: Investigating the Role Retinal Ganglion Cells and TRPV1 Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease Duration: 1/1/09-12/31/09	\$30,000
D. Rex Hamilton, MD	
Development of Diagnostic Techniques for Detection of Corneal Biomechanical Abnormalities Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease Duration: 1/1/09-12/31/09	\$30,000
Gary N. Holland, MD	
Studies of Ocular Complications of AIDS (SOCA) National Eye Institute Duration: 8/1/05-7/31/09	\$1,720,798
Longitudinal Studies of Ocular Complications of AIDS (LSOCA) National Eye Institute Duration: 8/1/03-7/31/09	\$875,571

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

Multicenter Uveitis Steroid Treatment (MUST) Trial
 National Eye Institute
 Duration: 5/1/06-4/30/09 \$641,906

Joseph Horwitz, PhD

Alpha-Crystallin and Cataractogenesis
 National Eye Institute
 Duration: 8/1/04-7/31/10 \$2,521,580

Wayne L. Hubbell, PhD

Molecular Basis of Membrane Excitation
 National Eye Institute
 Duration: 5/1/05-4/30/10 \$2,613,865

Core Grant for Vision Research at Jules Stein Eye Institute
 National Eye Institute
 Duration: 3/1/04-2/28/10 \$2,336,885

Sherwin J. Isenberg, MD

A Clinical Trial of Povidone-Iodine for the Treatment of Fungal Corneal Ulcers
 Thrasher Research Foundation
 Duration: 3/10/08-8/31/09 \$254,219

Conjunctival Tissue Gas Monitoring in the Animal Model
 Intelligent Optical Systems/NEI
 Duration: 2/25/08-7/31/08 \$139,995

Simon K. Law, MD, PharmD

Optic Disc Appearance in Advanced Age-Related Macular Degeneration
 American Geriatrics Society
 Duration: 7/1/07-6/30/09 \$150,000

Ralph D. Levinson, MD

Studies in Immunogenetics of Ocular Inflammation Disease
 MacDonald Family Foundation
 Duration: 5/1/02-6/30/10 \$350,000

Immunologic and Clinical Studies of Eye Disease at Jules Stein Eye Institute
 MacDonald Family Foundation
 Duration: 12/1/08-1/31/11 \$150,000

Tara A. McCannel, MD, PhD

High Resolution Cytogenetic Study of Archival Metastatic Choroidal Melanoma
 American Association for Cancer Research (AACR)
 Duration: 7/1/08-6/30/09 \$100,000

Bartly J. Mondino, MD

Bruce Ford and Anne Smith Bundy Foundation Grant (annual)
 Bruce Ford and Anne Smith Bundy Foundation
 Duration: 2008-2009 \$100,000

Departmental Grant Award (annual)
 Research to Prevent Blindness
 Duration: 2008-2009 \$110,000

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

Steven Nusinowitz, PhD

Photoreceptor and Retinal Pigment Epithelial Function in X-linked Ocular Albinism
The Vision of Children
Duration: 4/3/06-6/30/09

\$51,542

**Steven Nusinowitz, PhD, Principal Investigator
w/Dean Bok, PhD, Michael B. Gorin, MD, PhD**

Clinical Studies of Stargardt Disease and Development of a New Mouse Model of
Stargardt Disease
Daljit S. and Elaine Sarkaria Stargardt Macular Dystrophy Research Fund
Duration: 7/1/07-6/30/11

\$1,025,000

Ocular SHV: Role of Virus & IL-2 Optic Neuritis
Cedars-Sinai Burns & Allen Research Inst./NIH
Duration: 9/30/06-8/31/11

\$26,460

Natik I. Piri, PhD

The Retinal Ganglion Cell Protective Role of Alpha Crystallins Against
Glaucomatous Neurodegeneration
Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
Duration: 1/1/09-12/31/09

\$30,000

Roxanna A. Radu, PhD

Analysis of A2E Degradation and Complement Activation
American Health Assistance Foundation
Duration: 4/1/08-3/31/10

\$100,000

Arthur L. Rosenbaum, MD

Physician-Scientist Award
Research to Prevent Blindness
Duration: 1/1/04-12/31/09

\$55,000

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

\$459,036

Steven D. Schwartz, MD

Mrs. Merrill Park Award
Research to Prevent Blindness
Duration: 6/15/01-12/31/10

\$10,000

Gabriel H. Travis, MD

Stein Professorship Award
Research to Prevent Blindness
Duration: 7/1/01-6/30/09

\$575,000

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

\$1,925,000

Vision Science Training Grant to Researchers at Jules Stein Eye Institute
National Eye Institute
Duration: 9/30/05-9/29/10

\$1,628,914

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

\$1,931,250

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

A2E Accumulation in the Macular Degenerations:
 Pathogenic Significance and Implications for Treatment
 Macula Vision Research Foundation
 Duration: 7/1/07 -6/30/10 \$240,000

David S. Williams, PhD

Doris and Jules Stein Research to Prevent Blindness Professorship
 Research to Prevent Blindness
 Duration: 1/1/08-12/21/12 \$500,000

Retinal Cell Biology of Usher 1 Proteins
 National Eye Institute
 Duration: 12/1/07 -11/30/09 \$385,000

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

Progression of Retinal Degeneration
 Gerald Oppenheimer Family Foundation for the Prevention of Eye Disease
 Duration: 1/1/09-12/31/09 \$30,000

Xian-Jie Yang, PhD

Cytokine Signal Transduction in Retinal Development
 National Eye Institute
 Duration: 9/30/05 -7/31/10 \$1,506,044

Professional Research Series Grants

Novrouz Akhmedov, PhD, and Debora B. Farber, PhD, DPhhc

Studies on the 7R Protein that is Associated with a Novel Locus
 for Retinitis Pigmentosa
 Hope for Vision
 Duration: 4/1/08 -3/31/10 \$25,000

Novel Locus for Retinitis Pigmentosa Associated with Recently Identified 7R Protein
 Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
 Duration: 2/15/08 -2/14/09 \$30,000

Postdoctoral Fellow Grants

Noa Ela-Dalman, MD

Optic Nerve Blood Flow and Retinal Nerve Fiber Layer Thickness in
 Patients with Unilateral Amblyopia
 Blind Childrens Center
 Duration: 7/1/06 -6/30/09 \$15,000

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

Oluwatoyin Fafowora, MD

Anne L. Coleman, MD, PhD, Michael Gorin, MD, PhD (Mentors)

Fellowship: Heritability of Juvenile Glaucoma in a Genetically Diverse Population
Fogarty International Clinical Research Scholars Support Center at
Vanderbilt University
AAMC/National Eye Institute
Duration: 7/1/08-6/30/10

\$315,412

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

\$125,000

Veena Theendakara, PhD

Debra B. Farber, PhD, DPhc (Mentor)

Studies on a Novel Gene ZBED4 in Relation to Patients with Cone Dystrophy
Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
Duration: 1/1/09-12/31/09

\$30,000

Characterization of ZBED4, a Novel Retinal Protein
Hope for Vision
Duration: 1/1/09-12/31/09

\$25,000

Alex Yuan, MD, PhD

Debra B. Farber, PhD, DPhc (Mentor)

Embryonic Stem Cell Microvesicles: A New Approach to RNA Transfer
The Vision of Children
Duration: 6/1/07-5/31/10

\$200,288

Gerald Oppenheimer Family Foundation Center for the Prevention of Eye Disease
Duration: 2/1/07-1/31/09

\$30,000

Clinical Trials

Anthony J. Aldave, MD

A Multicenter Study to Map Genes for Fuchs Dystrophy
Case Western University/NIH
Duration: 2/1/06-3/31/09

\$11,288

Joseph Caprioli, MD

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

\$101,942

Measurement and Prediction of Progression Rates in Early and
Moderately Advanced Glaucoma
Pfizer, Inc.
Duration: 9/19/07-3/31/10

\$452,025

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

Robert Alan Goldberg, MD

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

\$74,603

Jean-Pierre Hubschman, MD

A Phase I Trial to Establish the Safety, Tolerability, and Pharmacokinetic Profile of
 Intravitreal Injections
 Ophthotech Corp.
 Duration: 2/25/08 -2/26/09

\$12,067

A Phase I, Single Ascending Dose Trial to Establish the Safety, Tolerability and
 Pharmacokinetic Profile of Intravitreal Injections of E10030
 Ophthotech Corporation
 Duration: 2/26/08 - 2/25/10

\$65,461

A Phase 1, Ascending Dose and Parallel Group Trial to Establish the Safety,
 Tolerability and Pharmacokinetic Profile of Multiple Intravitreal Injections
 Ophthotech Corporation
 Duration: 4/29/09 - 4/29/11

\$53,155

Ralph D. Levinson, MD

An 8 Week, Phase III, Multicenter, Masked, Randomized Trial
 Allergan Pharmaceutical Corp.
 Duration: 4/1/06 -12/31/09

\$122,795

Steven Nusinowitz, PhD

A Phase II Study of the Safety and Efficacy of Fenretinide
 Sirion Therapeutics, Inc.
 Duration: 9/1/07 -8/31/09

\$21,500

Steven D. Schwartz, MD

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

\$311,980

Dexamethasone Posterior Segment Drug Delivery System
 Allergan Sales, LLC
 Duration: 8/16/04 -1/31/09

\$313,155

AGN206207-011: DEX PS DDS Applicator System in the Treatment of Patients with
 Diabetic Macular Edema
 Allergan Sales, LLC
 Duration: 8/25/05 -12/31/09

\$210,597

A Multicenter, Randomized, Placebo-Controlled, Double-Masked, Parallel Group,
 Dose Ranging Clinical Trial
 Chiltern Int.
 Duration: 4/1/07 -3/31/09

\$82,337

TG-MV-006: A Randomized, Placebo-Controlled, Masked, Multicenter Trial
 of Microplasmin Intravitreal Injection for Non-Surgical Treatment of
 Focal Vitreomacular Adhesion
 Chiltern Int.
 Duration: 3/3/09 -9/3/10

\$152,561

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	\$241,461
FVF3689g: Ranibizumab with CNV Genetech, Inc. Duration: 3/1/06 -2/28/09	\$22,068
FVF4168g: Ranibizumab Injection Genetech, Inc. Duration: 10/5/07 -8/31/12	\$553,500
ADGVPEDF.11.D: Neovascular Age-Related Macular Degeneration Gen Vec, Inc. Duration: 1/31/03 -12/31/09	\$242,948
GV-000.000: Gene Transfer Product Candidates in Clinical Development Gen Vec, Inc. Duration: 2/27/09 -2/26/24	\$39,537
The Diabetic Retinopathy Clinical Research Network JAEB Center for Health Research/NEI Duration: 6/1/03 -12/31/09	\$498,418
A Natural History Study of Macular Telangiectasia Lowy Medical Research Institute/NEI Duration: 9/1/05 -8/31/10	\$185,695
Comparison of AMD Treatment Trials (CATT) University of Pennsylvania/NIH Duration: 9/1/07 -7/31/09	\$156,294

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

Clinical Research Studies

Cornea and External Eye

A Study of the 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' Endothelial Corneal Dystrophy

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

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

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 precipitate on the corneal endothelium. Investigators: Abdullah Alfawaz, MD; Gary N. Holland, MD; Anthony J. Aldave, MD; Ralph D. Levinson, MD; and Joseph Caprioli, 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 antiretroviral therapies. More than 2,000 people with AIDS are being followed nationwide. Investigators: Gary N. Holland, MD; and Susan S. Ransome, 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; Ralph D. Levinson, MD; Susan S. Ransome, MD; and David Sarraf, MD

Relationship between Natural Killer Cell Receptor Genes and AIDS-related CMV Retinitis

Institute faculty 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: Ralph D. Levinson, MD; and Gary N. Holland, MD

General Ophthalmology

Retinopathy in Adult Patients with Congenital Heart Disease

Institute faculty are investigating whether adult patients with congenital heart disease have retinal blood vessel abnormalities. Investigators: Shantanu Reddy, MD; and Steven D. Schwartz, MD; in cooperation with The Heart Disease Center at UCLA

Glaucoma and Optic Nerve

Ahmed Valve Implant vs. Baerveldt Implant in Glaucoma

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

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

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

Exposure as a Potential “Trigger Factor” for Acute NAION

This study explores whether use of PDE5 inhibitors triggers the onset of acute nonarteritic anterior ischemic optic neuropathy (NAION). NAION is 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

Ocular Hypertension Treatment Study (OHTS)

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

Osteoporotic Fractures in Elderly 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

The Role of Central Corneal Thickness in Glaucoma Progression

This study is evaluating the correlation between central corneal thickness and progression of visual field defects in a multivariate analysis of patients with open angle glaucoma. Investigator: Joseph Caprioli, MD

Lens and Cataract

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. Investigator: Kevin M. Miller, MD

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. Investigator: Kevin M. Miller, MD

Pentacam for Intraocular Lens Calculation Following Refractive Surgery

The Pentacam, a new corneal topography instrument that measures both the front and back of the cornea, is being evaluated. The instrument may be used to calculate more accurately the original corneal curvatures, thus improving the accuracy of the lens implant power calculation. Investigator: Kevin M. Miller, MD

Macula, Retina, and Vitreous

Argus II Retinal Stimulation System Feasibility

The Argus II Retinal Stimulation System is being evaluated for its safety and utility in providing visual function to blind subjects with severe to profound retinitis pigmentosa. Investigators: Steven D. Schwartz, MD; Allan E. Kreiger, MD; Jean-Pierre Hubschman, MD; and David Sarraf, MD

BLOCK ROP Study

Investigators are studying the safety of complete blockage of Vascular Endothelial Growth Factor (VEGF), a factor that stimulates blood vessel growth in the body, to decrease abnormal blood vessel activity for the treatment of retinopathy of prematurity (ROP). 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; Steven Nusinowitz, PhD; and Debora B. Farber, PhD, DPhhc

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

Using ultrasound biomicroscopy, faculty are collecting additional data to evaluate and compare differences in the healing process of the eye following vitrectomy surgery with different sutureless techniques. Investigators: Jean-Pierre Hubschman, MD; and Steven D. Schwartz, MD

Dexamethasone Injections in the Treatment of Diabetic Macular Edema

Faculty 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

Effect of Dopamine on Age-Related Macular Degeneration

This study investigates the effect of dopamine prescribed for the treatment of Parkinson's disease on dry age-related macular degeneration. Investigators: Steven D. Schwartz, MD; and Jean-Pierre Hubschman, MD

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

This study evaluates a new experimental drug, an anti-platelet derived growth factor, alone and in combination with Lucentis, in patients who have wet macular degeneration. Investigators: Jean-Pierre Hubschman, MD; Allan E. Kreiger, MD; David Sarraf, MD; and Tara A. McCannel, MD, PhD

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

Fenretinide has been shown to reduce the amount of lipofuscin in the eye. Faculty are investigating the safety and effectiveness of fenretinide as a treatment for people who suffer from age-related macular degeneration (AMD). Investigators: Steven D. Schwartz, MD; and Allan E. Kreiger, MD

Effects of Lucentis® Injections on the Quality of Binocular Function

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

Effects of Lucentis® on Autofluorescence Imaging

In this study, investigators are analyzing the effect of Lucentis® injections on autofluorescence imaging in patients with wet age-related macular degeneration. Investigators: Jean-Pierre Hubschman, MD; and Steven D. Schwartz, MD

Efficacy and Safety of Posterior Juxtасcleral Administrations of Anecortave Acetate for Depot Suspension

The primary objective of this study is to test the safety and efficacy of Anecortave Acetate for Depot Suspension in arresting the progression of dry age-related macular degeneration (AMD) in patients who are at risk for progressing to wet AMD. Investigators: Steven D. Schwartz, MD; Allan E. Kreiger, MD; David Sarraf, MD; and Tara A. McCannel, MD, PhD

Evaluation of ARC1905 in Combination with Lucentis® to Treat Wet Age-Related Macular Degeneration

This is a phase 1 trial to establish the safety, tolerability, and pharmacokinetic profile of an anti-C5 aptamer in patients with wet age-related macular degeneration. Investigators: Jean-Pierre Hubschman, MD; Allan E. Kreiger, MD; and Tara A. McCannel, MD, PhD

Evaluation of Pars Plana Vitrectomy with and without ILM Peel

This study is evaluating and comparing possible differences in the vision, thickness of the back of the eye, 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

Genetics of Age-related Maculopathy (GARM)

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. Investigator: Michael B. Gorin, MD, PhD

Microplasmin for the Non-Surgical Treatment of Vitreomacular Adhesion

This study examines the use of microplasmin, injected intravitreally, to relieve the tension between the vitreous and the retina in patients with vitreomacular traction (VMT) or macular hole as a treatment for posterior vitreous detachment (PVD). Investigators: Steven D. Schwartz, MD; Jean-Pierre Hubschman, MD; Allan E. Kreiger, MD; and Tara A. McCannel, MD, PhD

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; Allan E. Kreiger, MD; Tara A. McCannel, MD, PhD; Michael B. Gorin, MD, PhD; David Sarraf, MD; and Jean-Pierre Hubschman, MD

Rapid, Non-Invasive, 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. Investigator: Michael B. Gorin, MD, PhD

Study to Assess the Amount of Heavy Metals in Surgically Removed Human Ocular Tissue

Faculty 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

Surgical Motion Evaluation with Sensors

A surgical tracking system has been developed which monitors spatial position and orientation of surgical instruments. This study analyzes the types of motions produced by subjects who manipulate the instruments. Investigator: Jean-Pierre Hubschman, MD

Trial Comparing Intravitreal Corticosteroids and Laser Photocoagulation for Diabetic Macular Edema

The purpose of this trial is to determine whether intravitreal triamcinolone injections produce greater benefit, with an acceptable safety profile, than macular laser photocoagulation in the treatment of diabetic macular edema. Investigator: Steven D. Schwartz, 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 that have eye findings as part of the medical condition. This study provides for the clinical characterization of affected individuals and at-risk family members, in conjunction with molecular genetic testing, to identify the causative genes and mutations. Investigators: Anthony J. Aldave, MD; and Michael B. Gorin, MD, PhD

Use of Microplasmin before Undergoing Vitrectomy Surgery

Faculty are evaluating whether the injection of Microplasmin, an experimental drug, will induce a total posterior vitreous detachment (PVD), the loosening of the connection between the vitreous (the jelly-like substance in the center of the eye) and the retina. Detachment of the vitreous from the retina may result in faster surgery with fewer complications. Investigators: Steven D. Schwartz, MD; Allan E. Kreiger, MD; Tara A. McCannel, MD, PhD; and Jean-Pierre Hubschman, 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 (AMD) and vision loss. Investigators: Steven D. Schwartz, MD; Allan E. Kreiger, MD; David Sarraf, MD; Tara A. McCannel, MD, PhD; Jean-Pierre Hubschman, MD; and Michael B. Gorin, MD, PhD

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 of this study is threefold: to study the structure and function of the retina overlying the tumor and the macula, to evaluate the effects of radiation on the retina, and to compare OCT imaging to other imaging procedures. Investigators: Tara A. McCannel, MD, PhD; Melissa W. Chun, OD; and Bradley R. Straatsma, MD, JD

PET/CT Imaging for Early Detection of Ocular Melanoma

This research involves the use of combined position emission tomography (PET)/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

Hydrogel Lacrimal Stent Study

Faculty are evaluating the use of the Hydrogel Lacrimal Stent in dacryocystorhinostomy (DCR) surgery. The new lacrimal stent absorbs fluid from surrounding tissue. This fluid absorbing property allows the stent to be inserted small and expand after insertion, thus minimizing scarring within the nasal cavity. Investigators: Robert A. Goldberg, MD; and Raymond S. Douglas, MD, PhD

Thyroid-Related Orbitopathy

In this research, cells from the orbital tissue of patients with Graves disease, removed during surgery, are being harvested and grown in the laboratory. Investigators are correlating molecular biologic features of the disease identified in these cells with clinical parameters of the disease. Eventually, this research may aid in the development of better therapies and targeted tests to determine the effectiveness of therapies. Investigators: Robert A. Goldberg, MD; Terry J. Smith, MD; and Raymond S. Douglas, MD, PhD

Pediatrics and Strabismus

Advanced Bio-Engineering Approach to Treat Strabismus

Institute investigators are studying the relationship between extraocular muscle activity, cranial nerve control signals, and the eye position and velocity within the orbit. This study aims to restore conjugate gaze and extraocular function to patients suffering from double vision as a result of a cranial nerve dysfunction or palsy in the hope of developing an implantable electronic device to reanimate muscles. Investigators: Federico G. Velez, MD; and Arthur L. Rosenbaum, MD

Binocularity after Implantation of a Type I Boston Keratoprosthesis

This study evaluates the binocular function of patients who underwent surgical implantation of a keratoprosthesis (artificial cornea). It tests the theory that keratoprosthesis surgery in patients with good vision in one eye would improve the use of both eyes simultaneously (i.e., “depth perception”). Investigators: Stacy L. Pineles, MD; and Arthur L. Rosenbaum, MD

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 (MRI) of the extraocular muscles, are being performed in the Institute’s Clinical and Basic Science Ocular Motility Laboratory before and after strabismus surgery. Investigator: Joseph L. Demer, MD, PhD

Blood Gas Monitoring from the Eye

A new instrument is being tested that measures blood gas parameters from the conjunctiva, as a way to decrease the incidence and severity of retinopathy of prematurity and postnatal hypoxia. Investigator: Sherwin J. Isenberg, MD

Genetic and Anatomic Basis of the Fibrosis Syndrome

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

Imaging of the Extraocular Muscles in Complicated Strabismus

This project analyzes the anatomy and functionality of the extraocular muscles on patients with complicated forms of congenital and acquired strabismus. Investigators are identifying morphological changes in the inferior oblique muscle in patients with clinically suspected dysfunction of the inferior oblique muscle. Investigators: Federico G. Velez, MD; and Arthur L. Rosenbaum, MD

Long-Term Surgical Outcomes in Intermittent Exotropia

In this study, investigators are evaluating the long-term results of patients who had surgery for intermittent exotropia (outward deviation of the eyes) with a minimum post-operative follow-up of 10 years. The aim is to determine the long-term success rate of surgery using both cosmetic and functional outcomes. Investigators are also studying pre-operative risk factors for poor outcomes, which will be helpful in counseling future patients. Investigators: Stacy L. Pineles, MD; and Arthur L. Rosenbaum, MD

Optic Nerve in Amblyopia

Amblyopia is a major cause of childhood visual loss. This study uses high resolution, surface-coil magnetic resonance imaging (MRI) 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

Povidone-Iodine Treatment of Fungal Corneal Ulcers

This study compares the effectiveness of povidone-iodine 1.25% ophthalmic solution for the treatment of fungal corneal ulcers against an antifungal antibiotic. Investigator: Sherwin J. Isenberg, MD

Publications of the Full-Time Faculty

- Gonzales CR, Singh S, **Schwartz SD**. 25-Gauge vitrectomy for paediatric vitreoretinal conditions. *Br J Ophthalmol*. 2009 Jun;93(6):787–90. Epub 2009 Feb 11.
- Tai TY, Damani MR, Vo R, Rayner SA, **Glasgow BJ**, Hofbauer JD, **Casey R**, **Aldave AJ**. Keratoconus associated with corneal stromal amyloid deposition containing TGFβ1p. *Cornea*. 2009 Jun;28(5):589–93.
- Wen JC, Oliver SC, **McCannel TA**. Ocular complications following I-125 brachytherapy for choroidal melanoma. *Eye*. 2009 Jun;23(6):1254–68. Epub 2009 Mar 6.
- Verardo MR, Viczian A, **Piri N**, Akhmedov NB, Knox BE, **Farber DB**. Regulatory sequences in the 3' untranslated region of the human cGMP-phosphodiesterase beta-subunit gene. *Invest Ophthalmol Vis Sci*. 2009 Jun;50(6):2591–8. Epub 2009 Feb 14.
- Huang Q, Ding L, Phan KB, Cheng C, Xia CH, Gong X, **Horwitz J**. Mechanism of cataract formation in alphaA-crystallin Y118D mutation. *Invest Ophthalmol Vis Sci*. 2009 Jun;50(6):2919–26. Epub 2009 Jan 17.
- Beran TM, **McCannel TA**, Stanton AL, **Straatsma BR**, Burgess BL. Reactions to and Desire for Prognostic Testing in Choroidal Melanoma Patients. *J Genet Couns*. 2009 Jun;18(3):265–74. Epub 2009 May 7.
- Taban M, Nakra T, Mancini R, **Douglas RS**, **Goldberg RA**. Orbital wall fracture repair using Sefrafilm. *Ophthalm Plast Reconstr Surg*. 2009 May–Jun;25(3):211–4.
- Shah SP, Hubschman JP, Gonzales CR, **Schwartz SD**. Submacular Combination Treatment for Management of Acute, Massive Submacular Hemorrhage in Age-Related Macular Degeneration. *Ophthalmic Surgery, Lasers, and Imaging*. 2009 May–Jun;40(3):308–15.
- Sakagami K, Gan L, **Yang XJ**. Distinct effects of Hedgehog signaling on neuronal fate specification and cell cycle progression in the embryonic mouse retina. *J Neurosci*. 2009 May 27;29(21):6932–44.
- Grillet N, Xiong W, Reynolds A, Kazmierczak P, Sato T, Lillo C, Dumont RA, Hintermann E, Sczaniecka A, Schwander M, **Williams D**, Kachar B, Gillespie PG, Müller U. Harmonin mutations cause mechanotransduction defects in cochlear hair cells. *Neuron*. 2009 May 14;62(3):375–87.
- Axonal stress kinase activation and tau misbehavior induced by kinesin-1 transport defects. Falzone TL, Stokin GB, Lillo C, Rodrigues EM, Westerman EL, **Williams DS**, Goldstein LS. *J Neurosci*. 2009 May 6;29(18):5758–67.
- Parry DA, Toomes C, Bida L, Danciger M, Towns KV, McKibbin M, Jacobson SG, Logan CV, Ali M, Bond J, Chance R, Swendeman S, Daniele LL, Springell K, Adams M, Johnson CA, Booth AP, Jafri H, Rashid Y, Banin E, Strom TM, **Farber DB**, Sharon D, Blobel CP, Pugh EN Jr, Pierce EA, Inglehearn CF. Loss of the Metalloprotease ADAM9 Leads to Cone-Rod Dystrophy in Humans and Retinal Degeneration in Mice. *Am J Hum Genet*. 2009 May;84(5):683–91. Epub 2009 Apr 30.
- Wen JC, **McCannel TA**. Treatment of radiation retinopathy following plaque brachytherapy for choroidal melanoma. *Curr Opin Ophthalmol*. 2009 May;20(3):200–4. Review.
- Hwang CJ, Afifiyan N, Sand D, Naik V, Said J, Pollock SJ, Chen B, Phipps RP, **Goldberg RA**, Smith TJ, **Douglas RS**. Orbital fibroblasts from patients with thyroid-associated ophthalmopathy overexpress CD40: CD154 hyperinduces IL-6, IL-8, and MCP-1. *Invest Ophthalmol Vis Sci*. 2009 May;50(5):2262–8. Epub 2008 Dec 30.
- Douglas RS**, Brix TH, Hwang CJ, Hegedüs L, Smith TJ. Divergent frequencies of IGF-I receptor-expressing blood lymphocytes in monozygotic twin pairs discordant for Graves' disease: evidence for a phenotypic signature ascribable to nongenetic factors. *J Clin Endocrinol Metab*. 2009 May;94(5):1797–802. Epub 2009 Feb 24.
- Fleissner MR, Cascio D, **Hubbell WL**. Structural origin of weakly ordered nitroxide motion in spin-labeled proteins. *Protein Sci*. 2009 May;18(5):893–908.
- Diago T, **McCannel CA**, Bakri SJ, Pulido JS, Edwards AO, Pach JM. Infectious endophthalmitis after intravitreal injection of antiangiogenic agents. *Retina*. 2009 May;29(5):601–5.
- Damek-Poprawa M, Diemer T, Lopes VS, Lillo C, Harper DC, Marks MS, Wu Y, Sparrow JR, Rachel RA, **Williams DS**, Boesze-Battaglia K. Melanoregulin (MREG) Modulates Lysosome Function in Pigment Epithelial Cells. *J Biol Chem*. 2009 Apr 17;284(16):10877–89. Epub 2009 Feb 23.
- Zhang Y, Molday LL, Molday RS, Sarfare SS, Woodruff ML, **Fain GL**, Kraft TW, Pittler SJ. Knockout of GARPs and the beta-subunit of the rod cGMP-gated channel disrupts disk morphogenesis and rod outer segment structural integrity. *J Cell Sci*. 2009 Apr 15;122(Pt 8):1192–200.
- Holland GN**, Denove CS, Yu F. Chronic anterior uveitis in children: clinical characteristics and complications. *Am J Ophthalmol*. 2009 Apr;147(4):667–678.e5. Epub 2009 Feb 4.
- Isenberg SJ**, Abdarbashi P. Drift of ocular alignment following strabismus surgery. Part 2: using adjustable sutures. *Br J Ophthalmol*. 2009 Apr;93(4):443–7. Epub 2008 Jul 24.
- Pukrushpan P, **Isenberg SJ**. Drift of ocular alignment following strabismus surgery. Part 1: using fixed scleral sutures. *Br J Ophthalmol*. 2009 Apr;93(4):439–42. Epub 2008 Jul 10.

Publications are ordered chronologically, starting with the most recent publication.

- Chauhan BC, Hutchison DM, Artes PH, **Caprioli J**, Jonas JB, LeBlanc RP, Nicolela MT. Optic disc progression in glaucoma: comparison of confocal scanning laser tomography to optic disc photographs in a prospective study. *Invest Ophthalmol Vis Sci*. 2009 Apr;50(4):1682–91. Epub 2008 Dec 5.
- Pineles SL, **Rosenbaum AL**, **Demer JL**. Decreased postoperative drift in intermittent exotropia associated with A and V patterns. *J AAPOS*. 2009 Apr;13(2):127–31. Epub 2009 Jan 20.
- Deng SX**, Kamal KM, Hollander DA. The use of voriconazole in the management of post-penetrating keratoplasty *Paecilomyces* keratitis. *J Ocul Pharmacol Ther*. 2009 Apr;25(2):175–7.
- Aldave AJ**, Kamal KM, Vo RC, Yu F. The Boston type I keratoprosthesis: improving outcomes and expanding indications. *Ophthalmology*. 2009 Apr;116(4):640–51. Epub 2009 Feb 25.
- Caprioli J**, **Coleman A**. Pressure fluctuation. *Ophthalmology*. 2009 Apr;116(4):817.
- Ani C, Bazargan M, Hindman D, Bell D, Rodriguez M, **Baker RS**. Comorbid chronic illness and the diagnosis and treatment of depression in safety net primary care settings. *J Am Board Fam Med*. 2009 Mar–Apr;22(2):123–35.
- McCaughey RG, **Sun H**, Rothholtz VS, Juhasz T, Wong BJ. Femtosecond laser ablation of the stapes. *J Biomed Opt*. 2009 Mar–Apr;14(2):024040.
- Simon GJ, Syed HM, McCann JD, **Goldberg RA**. Early versus late repair of orbital blowout fractures. *Ophthalmic Surg Lasers Imaging*. 2009 Mar–Apr;40(2):141–8.
- Coleman AL**, **Caprioli J**. The logic behind target intraocular pressure. *Am J Ophthalmol*. 2009 Mar;147(3):379–80.
- Coleman AL**. The role of statistics in ophthalmology. *Am J Ophthalmol*. 2009 Mar;147(3):387–8.
- Ralli M, Goldman JW, Lee E, Pinter-Brown LC, **Glasgow BJ**, **Sarraf D**. Intraocular involvement of mycosis fungoides. *Arch Ophthalmol*. 2009 Mar;127(3):343–5.
- Law SK**. Switching within glaucoma medication class. *Curr Opin Ophthalmol*. 2009 Mar;20(2):110–5.
- Chung MY, **Miller KM**, **Weissman BA**. Morcher iris reconstruction lens and rigid contact lens for traumatic aniridia. *Eye Contact Lens*. 2009 Mar;35(2):108–10.
- Shimazaki K, Chan AM, Moniz RJ, Wadehra M, Nagy A, Coulam CP, Mareninov S, Lepin EM, Wu AM, Kelly KA, Braun J, **Gordon LK**. Blockade of epithelial membrane protein 2 (EMP2) abrogates infection of *Chlamydia muridarum* murine genital infection model. *FEMS Immunol Med Microbiol*. 2009 Mar;55(2):240–9. Epub 2009 Jan 12.
- Ocular toxoplasmosis: the influence of patient age. **Holland GN**. *Mem Inst Oswaldo Cruz*. 2009 Mar;104(2):351–7.
- Jin M, Li S, **Nusinowitz S**, Lloyd M, Hu J, Radu RA, **Bok D**, **Travis GH**. The role of interphotoreceptor retinoid-binding protein on the translocation of visual retinoids and function of cone photoreceptors. *J Neurosci*. 2009 Feb 4;29(5):1486–95.
- Kappel PJ, Monnet D, Yu F, Brezin AP, **Levinson RD**, **Holland GN**. Contrast sensitivity among patients with birdshot chorioretinopathy. *Am J Ophthalmol*. 2009 Feb;147(2):351–356.e2. Epub 2008 Oct 29.
- Levinson RD**, Monnet D, Yu F, **Holland GN**, Gutierrez P, Brezin AP. Longitudinal cohort study of patients with birdshot chorioretinopathy. V. Quality of life at baseline. *Am J Ophthalmol*. 2009 Feb;147(2):346–350.e2. Epub 2008 Oct 9.
- Nguyen MT, **Hamilton DR**. Corneal ectasia after laser in situ keratomileusis after laser thermal keratoplasty. *Cornea*. 2009 Feb;28(2):237–9.
- Horwitz J**. Alpha crystallin: the quest for a homogeneous quaternary structure. *Exp Eye Res*. 2009 Feb;88(2):190–4. Epub 2008 Jul 25.
- Ruth AL, Velez FG, **Rosenbaum AL**. Management of vertical deviations after vertical rectus transposition surgery. *J AAPOS*. 2009 Feb;13(1):16–9. Epub 2008 Dec 31.
- Rutar T, **Demer JL**. “Heavy Eye” syndrome in the absence of high myopia: A connective tissue degeneration in elderly strabismic patients. *J AAPOS*. 2009 Feb;13(1):36–44. Epub 2008 Oct 18.
- Lee S, Rutar T, Velez FG, **Rosenbaum AL**. Lemierre’s syndrome with fourth nerve palsy. *J AAPOS*. 2009 Feb;13(1):107–8. Epub 2008 Oct 18.
- Jakobsdottir J, **Gorin MB**, Conley YP, Ferrell RE, Weeks DE. Interpretation of genetic association studies: markers with replicated highly significant odds ratios may be poor classifiers. *PLoS Genet*. 2009 Feb;5(2):e1000337. Epub 2009 Feb 6.
- Chen L, Pai V, **Levinson R**, Sharpe AH, Freeman GJ, Braun J, **Gordon LK**. Constitutive neuronal expression of the immune regulator, programmed death 1 (PD-1), identified during experimental autoimmune uveitis. *Ocul Immunol Inflamm*. 2009 Jan–Feb;17(1):47–55.
- Ralli M, Taban M, Mancini R, **Goldberg RA**. Orbital abscesses caused by *Fusobacterium necrophorum*. *Ophthalmol Plast Reconstr Surg*. 2009 Jan–Feb;25(1):70–2.
- Mancini R, Taban M, Lowinger A, Nakra T, Tsirbas A, **Douglas RS**, Shorr N, **Goldberg RA**. Use of hyaluronic Acid gel in the management of paralytic lagophthalmos: the hyaluronic Acid gel “gold weight.” *Ophthalmol Plast Reconstr Surg*. 2009 Jan–Feb;25(1):23–6.
- Friberg TR, **Schwartz SD**. Introduction to Seminars issue 24-1. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):1.
- Shah SP, Jain A, Tsui I, **McCannel TA**. Optos Optomap Panoramic 200MA imaging of a serous choroidal detachment responsive to furosemide. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):40–2.

- Shah SP, Jain A, Coffee RE, **McCannel TA**. Optos Panoramic 200MA ultrawide-field imaging of peripheral RPE adenoma. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):37–9.
- Tsui I, Kaines A, **Schwartz S**. Patterns of periphlebitis in intermediate uveitis using ultra wide field fluorescein angiography. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):29–33.
- Reddy S, Hu A, **Schwartz SD**. Ultra Wide Field Fluorescein Angiography Guided Targeted Retinal Photocoagulation (TRP). *Semin Ophthalmol*. 2009 Jan–Feb;24(1):9–14.
- Coffee RE, Jain A, **McCannel TA**. Ultra wide field imaging of choroidal metastasis secondary to primary breast cancer. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):34–6.
- Tsui I, Jain A, Shah S, **Schwartz SD**, **McCannel TA**. Ultra wide field imaging of peripheral exudative hemorrhagic chorioretinopathy. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):25–8.
- Kaines A, Tsui I, **Sarraf D**, **Schwartz S**. The use of ultra wide field fluorescein angiography in evaluation and management of uveitis. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):19–24.
- Jain A, Shah SP, Tsui I, **McCannel TA**. The value of Optos Panoramic 200MA imaging for the monitoring of large suspicious choroidal lesions. *Semin Ophthalmol*. 2009 Jan–Feb;24(1):43–4.
- Scoville D, Stamm JD, Altenbach C, Shvetsov A, Kokabi K, Rubenstein PA, **Hubbell WL**, Reisler E. Effects of binding factors on structural elements in F-actin. *Biochemistry*. 2009 Jan 20; 48(2):370–8.
- Clark RA, **Demer JL**. Posterior inflexion of weakened lateral rectus path: connective tissue factors reduce response to lateral rectus recession. *Am J Ophthalmol*. 2009 Jan;147(1): 127–133.e2. Epub 2008 Oct 2.
- Kamal KM, Rayner SA, Chen MC, **Aldave AJ**. Classic lattice corneal dystrophy associated with monoclonal gammopathy after exclusion of a TGFBI mutation. *Cornea*. 2009 Jan;28(1):97–8.
- Amesbury EC, **Miller KM**. Correction of astigmatism at the time of cataract surgery. *Curr Opin Ophthalmol*. 2009 Jan;20(1):19–24.
- Bakri SJ, Pulido JS, **McCannel CA**, Hodge DO, Diehl N, Hillemeier J. Immediate intraocular pressure changes following intravitreal injections of triamcinolone, pegaptanib, and bevacizumab. *Eye*. 2009 Jan;23(1): 181–5. Epub 2007 Aug 10.
- Munemasa Y, Ahn JH, Kwong JM, **Caprioli J**, **Piri N**. Redox proteins thioredoxin 1 and thioredoxin 2 support retinal ganglion cell survival in experimental glaucoma. *Gene Ther*. 2009 Jan;16(1):17–25. Epub 2008 Aug 14.
- Kono R, Okanobu H, Ohtsuki H, **Demer JL**. Absence of relationship between oblique muscle size and bielschowsky head tilt phenomenon in clinically diagnosed superior oblique palsy. *Invest Ophthalmol Vis Sci*. 2009 Jan;50(1):175–9. Epub 2008 Sep 12.
- Morales SA, Mareninov S, Wadehra M, Zhang L, Goodglick L, Braun J, **Gordon LK**. FAK activation and the role of epithelial membrane protein 2 (EMP2) in collagen gel contraction. *Invest Ophthalmol Vis Sci*. 2009 Jan;50(1):462–9. Epub 2008 May 9.
- Shadpour JM, Menghani RM, **Douglas RS**, **Goldberg RA**, Tsirbas A. Reactivation of thyroid-associated orbitopathy after cataract surgery. *Jpn J Ophthalmol*. 2009 Jan;53(1):44–6. Epub 2009 Jan 30.
- Kaines A, Oliver S, Reddy S, **Schwartz SD**. Ultrawide angle angiography for the detection and management of diabetic retinopathy. *Int Ophthalmol Clin*. 2009 Spring;49(2):53–9.
- Miller KM**, Dunn JP. Divide-and-Conquer Phacoemulsification and Nd:YAG Laser Capsulotomy. In Dunn JP, Langer PD (eds). *Basic Techniques of Ophthalmic Surgery*. San Francisco: American Academy of Ophthalmology, 2009.
- Miller KM**. Phaco Chop. In Dunn JP, Langer PD (eds). *Basic Techniques of Ophthalmic Surgery*. San Francisco: American Academy of Ophthalmology, 2009.
- Hubschman JP, Reddy S, **Schwartz SD**. Age-related macular degeneration: current treatments. *Clinical Ophthalmology*. 2009;3:155–66.
- Nusinowitz S**. Anatomically Separate Rod and Cone Signaling Pathways. In *Encyclopedia of the Eye (VISI)*. Elsevier Publications, 2009.
- Hamilton DR**. Consultation Section: Refractive Surgical Problem. *J Cataract Refract Surg*. 2009;35(1):6–8.
- Collaborative Ocular Melanoma Study Group (**Straatsma BR**). I-125 Brachytherapy for Choroidal Melanoma. Photographic and Angiographic Abnormalities: COMS Report No. 30. *Ophthalmology*. 2009;116(1):966–976.
- Straatsma BR**, Bourla D, **Young TA**. Highlights of Optical Coherence Tomography for Evaluation of Choroidal Melanoma. In Boyd S, et al. (eds). *Optical Coherence Tomography Atlas and Text*. Panama, Republic of Panama: Jaypee Highlights Medical Publishers Inc, 2009.
- Boyd S, Brancato R, **Straatsma BR** (eds). *Optical Coherence Tomography Atlas and Text*. Panama, Republic of Panama: Jaypee Highlights Medical Publishers Inc, 2009.
- Yuan A, Farber EL, Rapoport AL, Tejada D, Deniskin R, Akhmedov NB, **Farber DB**. Transfer of microRNAs by embryonic stem cell microvesicles. *PLoS ONE*. 2009;4(3):e4722. Epub 2009 Mar 6.
- Chen E, **Weissman BA**. An eye under attack. Review of Contact Lenses. 2009;146(4):37–40.
- Kalai T, **Hubbell WL**, Hideg K. Click reactions with nitroxides. *Synthesis* 2009;8:1336–40.
- Okawa H, Sampath AP, Laughlin SB, **Fain GL**. ATP consumption by mammalian rod photoreceptors in darkness and in light. *Curr Biol*. 2008 Dec 23;18(24):1917–21. Epub 2008 Dec 11.
- Smith JR, Jabs DA, Briceland DJ, **Holland GN**. Education in the ophthalmic discipline of uveitis. *Am J Ophthalmol*. 2008 Dec;146(6): 799–801.

- Dodds EM, **Holland GN**, Stanford MR, Yu F, Siu WO, Shah KH, Ten Dam-van Loon N, Muccioli C, Hovakimyan A, Barisani-Asenbauer T; International Ocular Toxoplasmosis Research Group. Intraocular inflammation associated with ocular toxoplasmosis: relationships at initial examination. *Am J Ophthalmol*. 2008 Dec;146(6):856–65.e2.
- Holland GN**, Belfort R Jr, Dernou-champs JP, Franklin R, Martenet AC, Nozik RA, Nussenblatt RB, Ohno S, Palimeris G, Saari KM, Schwab IR, Secchi AG, Smith RE, Tabbara KF, Tessler HH. Uveitis in 2008: a festschrift for G. Richard O'Connor, MD. *Am J Ophthalmol*. 2008 Dec;146(6):795–8.
- Chen L, Huang L, Zhang G, **Gordon L**. Cavernous hemangioma of the retina. *Can J Ophthalmol*. 2008 Dec;43(6):718–20.
- Weiss JS, Møller HU, Lisch W, Kinoshita S, **Aldave AJ**, Belin MW, Kivelä T, Busin M, Munier FL, Seitz B, Sutphin J, Bredrup C, Mannis MJ, Rapuano CJ, Van Rij G, Kim EK, Klintworth GK. The IC3D classification of the corneal dystrophies. *Cornea*. 2008 Dec;27 Suppl 2:S1–83. Review. English, Spanish.
- Ela-Dalman N, Velez FG, **Demer JL**, **Rosenbaum AL**. High-resolution magnetic resonance imaging demonstrates reduced inferior oblique muscle size in isolated inferior oblique palsy. *J AAPOS*. 2008 Dec;12(6):602–7. Epub 2008 Oct 4.
- Chang DF, Braga-Mele R, Mamalis N, Masket S, **Miller KM**, Nichamin LD, Packard RB, Packer M; ASCRS Cataract Clinical Committee. ASCRS White Paper: clinical review of intraoperative floppy-iris syndrome. *J Cataract Refract Surg*. 2008 Dec;34(12):2153–62.
- Hamilton DR**, Johnson RD, Lee N, Bourla N. Differences in the corneal biomechanical effects of surface ablation compared with laser in situ keratomileusis using a microkeratome or femtosecond laser. *J Cataract Refract Surg*. 2008 Dec;34(12):2049–56.
- Walker KO, Calmes D, Hanna N, **Baker R**. The impact of public hospital closure on medical and residency education: implications and recommendations. *J Natl Med Assoc*. 2008 Dec;100(12):1377–83.
- Gupta A, **Schwartz SD**. Complications of 25-gauge vitrectomy. In: *Surgical Techniques in Ophthalmology Series: Retina and Vitreous Surgery*. Elsevier Health Sciences: 2008 Dec.
- Marcus EI, Do DV, Shah SM, Nguyen QD, Biswas J, **Levinson R**. Diagnostic and therapeutic challenges. Granulomatous panuveitis. *Retina*. 2008 Nov–Dec;28(10):1544–9.
- Shimazaki K, Lepin EJ, Wei B, Nagy AK, Coulam CP, Mareninov S, Fu M, Wu AM, Marks JD, Braun J, **Gordon LK**, Wadehra M. Diabodies targeting epithelial membrane protein 2 reduce tumorigenicity of human endometrial cancer cell lines. *Clin Cancer Res*. 2008 Nov 15;14(22):7367–77.
- Stokin GB, Almenar-Queralt A, Gunawardena S, Rodrigues EM, Falzone T, Kim J, Lillo C, Mount SL, Roberts EA, McGowan E, **Williams DS**, Goldstein LS. Amyloid precursor protein-induced axonopathies are independent of amyloid-beta peptides. *Hum Mol Genet*. 2008 Nov 15;17(22):3474–86. Epub 2008 Aug 11.
- Dizhoor AM, Woodruff ML, Olshevskaya EV, Cilluffo MC, Cornwall MC, Sieving PA, **Fain GL**. Night blindness and the mechanism of constitutive signaling of mutant G90D rhodopsin. *J Neurosci*. 2008 Nov 5;28(45):11662–72.
- Davis RJ, Tosi J, Janisch KM, Kasanuki JM, Wang NK, Kong J, Tsui I, Cilluffo M, Woodruff ML, **Fain GL**, Lin CS, Tsang SH. Functional rescue of degenerating photoreceptors in mice homozygous for a hypomorphic cGMP phosphodiesterase 6 b allele (Pde6bH620Q). *Invest Ophthalmol Vis Sci*. 2008 Nov;49(11):5067–76. Epub 2008 Jul 24.
- Demer JL**. Inflection in inactive lateral rectus muscle: evidence suggesting focal mechanical effects of connective tissues. *Invest Ophthalmol Vis Sci*. 2008 Nov;49(11):4858–64. Epub 2008 Jul 3.
- Chen MC, Lee N, Bourla N, **Hamilton DR**. Corneal biomechanical measurements before and after laser in situ keratomileusis. *J Cataract Refract Surg*. 2008 Nov;34(11):1886–91.
- Jiang L, **Demer JL**. Magnetic resonance imaging of the functional anatomy of the inferior rectus muscle in superior oblique muscle palsy. *Ophthalmology*. 2008 Nov;115(11):2079–86. Epub 2008 Aug 9.
- Vernet N, Dennefeld C, Klopfenstein M, Ruiz A, **Bok D**, Ghyselinck NB, Mark M. Retinoid X receptor beta (RXRB) expression in Sertoli cells controls cholesterol homeostasis and spermiation. *Reproduction*. 2008 Nov;136(5):619–26. Epub 2008 Aug 19.
- Coleman AL**, Miglior S. Risk factors for glaucoma onset and progression. *Surv Ophthalmol*. 2008 Nov;53 Suppl1:S3–10.
- Grimm SA, **McCannel CA**, Omuro AM, Ferreri AJ, Blay JY, Neuwelt EA, Siegal T, Batchelor T, Jahnke K, Shenkier TN, Hall AJ, Graus F, Herrlinger U, Schiff D, Raizer J, Rubenstein J, Laperriere N, Thiel E, Doolittle N, Iwamoto FM, Abrey LE. Primary CNS lymphoma with intraocular involvement: International PCNSL Collaborative Group Report. *Neurology*. 2008 Oct 21;71(17):1355–60.
- Douglas RS**, Naik V, Hwang CJ, Afifyan NF, Gianoukakis AG, Sand D, Kamat S, Smith TJ. B cells from patients with Graves' disease aberrantly express the IGF-1 receptor: implications for disease pathogenesis. *J Immunol*. 2008 Oct 15;181(8):5768–74.
- Oliver SC, **Young TA**, Kobe LH, Leu MY, Lee SP, Chun MW, **Straatsma BR**. Assessment of central vision and macular structure in patients undergoing iodine-125 brachytherapy for choriochoroidal melanoma. *Am J Clin Oncol*. 2008 Oct;31(5):488–92.

- Forooghian F, Macdonald IM, Heckenlively JR, Héon E, **Gordon LK**, Hooks JJ, Detrick B, Nussenblatt RB. The need for standardization of anti-retinal antibody detection and measurement. *Am J Ophthalmol*. 2008 Oct;146(4):489–95. Epub 2008 Jul 30. Review.
- Jampaulo M, Olson MD, **Miller KM**. Long-term Staar toric intraocular lens rotational stability. *Am J Ophthalmol*. 2008 Oct;146(4):550–553. Epub 2008 Jul 26.
- Forister JF, Chao J, Khy K, Forister E, **Weissman BA**. Predicted tear layer oxygen tensions under two designs of silicone hydrogel toric lenses. *Cont Lens Anterior Eye*. 2008 Oct;31(5):228–41; quiz 274–5. Epub 2008 Jul 30.
- Chen L, **Holland GN**, Yu F, **Levinson RD**, Lampi KJ, **Horwitz J**, **Gordon LK**. Associations of seroreactivity against crystallin proteins with disease activity and cataract in patients with uveitis. *Invest Ophthalmol Vis Sci*. 2008 Oct;49(10):4476–81. Epub 2008 Jun 6.
- Clemons T, Gillies M, Chew E, et al. for the MacTel Research Group (**Schwartz SD**, **Straatsma BR**). The National Eye Institute Visual Function Questionnaire in the Macular Telangiectasia (MacTel) Project. *Invest Ophthalmol Vis Sci*. 2008 Oct;49(10):4340–6.
- Olson MD, Masket S, **Miller KM**. Interim results of a compassionate-use clinical trial of Morcher iris diaphragm implantation: report 1. *J Cataract Refract Surg*. 2008 Oct;34(10):1674–80.
- Kim SH, Munemasa Y, Kwong JM, Ahn JH, Mareninov S, **Gordon LK**, **Caprioli J**, **Piri N**. Activation of autophagy in retinal ganglion cells. *J Neurosci Res*. 2008 Oct;86(13):2943–51.
- Scherer RW, Feldon SE, Levin L, Langenberg P, Katz J, Keyl PM, Wilson PD, Kelman SE, Dickersin K; Ischemic Optic Neuropathy Decompression Trial Research Group (**Arnold AC**). Visual fields at follow-up in the Ischemic Optic Neuropathy Decompression Trial: evaluation of change in pattern defect and severity over time. *Ophthalmology*. 2008 Oct;115(10):1809–17. Epub 2008 May 16.
- Chiang A, Chang LK, Yu F, **Sarraf D**. Predictors of anti-VEGF-associated retinal pigment epithelial tear using FA and OCT analysis. *Retina*. 2008 Oct;28(9):1265–9.
- Seitzman RL, Mangione C, Ensrud KE, Cauley JA, Stone KL, Cummings SR, Hochberg MC, Hillier TA, Yu F, **Coleman AL**. Postmenopausal hormone therapy and age-related maculopathy in older women. *Ophthalmic Epidemiol*. 2008 Sep-Oct;15(5):308–16.
- Schwartz TW, **Hubbell WL**. Structural biology: A moving story of receptors. *Nature*. 2008 Sep 25;455(7212):473–4.
- Kartha JS, Skordos KW, **Sun H**, Hall C, Easterwood LM, Reilly CA, Johnson EF, Yost GS. Single mutations change CYP2F3 from a dehydrogenase of 3-methylindole to an oxygenase. *Biochemistry*. 2008 Sep 16;47(37):9756–70. Epub 2008 Aug 22.
- Tsui S, Naik V, Hoa N, Hwang CJ, Afifiyan NF, Sinha Hikim A, Gianoukakis AG, **Douglas RS**, Smith TJ. Evidence for an association between thyroid-stimulating hormone and insulin-like growth factor 1 receptors: a tale of two antigens implicated in Graves' disease. *J Immunol*. 2008 Sep 15;181(6):4397–405.
- Nusinowitz S**, **Sarraf D**. Retinal function in X-linked ocular albinism (OA1). *Curr Eye Res*. 2008 Sep;33(9):789–803.
- Souied EH, Reid SN, **Piri NI**, Lerner LE, **Nusinowitz S**, **Farber DB**. Non-invasive gene transfer by iontophoresis for therapy of an inherited retinal degeneration. *Exp Eye Res*. 2008 Sep;87(3):168–75. Epub 2008 Apr 29.
- Radu RA, Yuan Q, Hu J, Peng JH, Lloyd M, **Nusinowitz S**, **Bok D**, **Travis GH**. Accelerated accumulation of lipofuscin pigments in the RPE of a mouse model for ABCA4-mediated retinal dystrophies following Vitamin A supplementation. *Invest Ophthalmol Vis Sci*. 2008 Sep;49(9):3821–9. Epub 2008 May 30.
- Diabetic Retinopathy Clinical Research Network (**Schwartz SD**), Glassman, AR et al. A Randomized Trial Comparing Intravitreal Triamcinolone Acetonide and Focal/Grid Photocoagulation for Diabetic Macular Edema. *Ophthalmology*. 2008 Sep;115(9):1447–9, 1449. e1–10.
- Darcy SJ, Miller TA, **Goldberg RA**, Villablanca JP, **Demer JL**, Rudkin GH. Magnetic resonance imaging characterization of orbital changes with age and associated contributions to lower eyelid prominence. *Plast Reconstr Surg*. 2008 Sep;122(3):921–9; discussion 930–1.
- Goldberg RA**. Advances in surgical rehabilitation in thyroid eye disease. *Thyroid*. 2008 Sep;18(9):989–95.
- Naik V, Khadavi N, Naik MN, Hwang C, **Goldberg RA**, Tsirbas A, Smith TJ, **Douglas RS**. Biologic therapeutics in thyroid-associated ophthalmopathy: translating disease mechanism into therapy. *Thyroid*. 2008 Sep;18(9):967–71. Review.
- Douglas RS**, **Goldberg RA**, Smith TJ. A symposium on thyroid-associated ophthalmopathy, also known as Graves' orbitopathy at the Jules Stein Eye Institute at the University of California, Los Angeles. *Thyroid*. 2008 Sep;18(9):931.
- Smith TJ, Tsai CC, Shih MJ, Tsui S, Chen B, Han R, Naik V, King CS, Press C, Kamat S, **Goldberg RA**, Phipps RP, **Douglas RS**, Gianoukakis AG. Unique attributes of orbital fibroblasts and global alterations in IGF-1 receptor signaling could explain thyroid-associated ophthalmopathy. *Thyroid*. 2008 Sep;18(9):983–8. Review.
- Jacobson SG, Cideciyan AV, Aleman TS, Sumaroka A, Roman AJ, Gardner LM, Prosser HM, Mishra M, Bech-Hansen NT, Herrera W, Schwartz SB, Liu XZ, Kimberling WJ, Steel KP, **Williams DS**. Usher syndromes due to MYO7A, PCDH15, USH2A or GPR98 mutations share retinal disease mechanism. *Hum Mol Genet*. 2008 Aug 1;17(15):2405–15. Epub 2008 May 7.

- Law SK.** A modified technique of Ahmed glaucoma valve implantation with adjunctive use of antifibrotic agents. *Am J Ophthalmol.* 2008 Aug; 146(2):156–8.
- Faia LJ, **McCannel CA**, Pulido JS, Hatfield RM, Hatfield ME, McNulty VE. Outcomes following 25-gauge vitrectomies. *Eye.* 2008 Aug;22(8):1024–8. Epub 2007 Apr 20.
- Munemasa Y, Kim SH, Ahn JH, Kwong JM, **Caprioli J**, **Piri N.** Protective effect of thioredoxins 1 and 2 in retinal ganglion cells after optic nerve transection and oxidative stress. *Invest Ophthalmol Vis Sci.* 2008 Aug; 49(8):3535–43. Epub 2008 Apr 25.
- Isenberg SJ.** How should we try to affect myopic progression? *J AAPOS.* 2008 Aug;12(4):322–3. Epub 2008 Jul 3.
- Dumars S, Andrews C, Chan WM, Engle EC, **Demer JL.** Magnetic resonance imaging of the endophenotype of a novel familial Möbius-like syndrome. *J AAPOS.* 2008 Aug; 12(4):381–9. Epub 2008 May 2.
- Tychsen L, Richards M, Wong A, Foeller P, Burhkalter A, Narasimhan A, **Demer J.** Spectrum of infantile esotropia in primates: Behavior, brains, and orbits. *J AAPOS.* 2008 Aug;12(4): 375–80. Epub 2008 Mar 4.
- Yang Z, Chen Y, Lillo C, Chien J, Yu Z, Michaelides M, Klein M, Howes KA, Li Y, Kaminoh Y, Chen H, Zhao C, Chen Y, Al-Sheikh YT, Karan G, Corbeil D, Escher P, Kamaya S, Li C, Johnson S, Frederick JM, Zhao Y, Wang C, Cameron DJ, Huttner WB, Schorderet DF, Munier FL, Moore AT, Birch DG, Baehr W, Hunt DM, **Williams DS**, Zhang K. Mutant prominin 1 found in patients with macular degeneration disrupts photoreceptor disk morphogenesis in mice. *J Clin Invest.* 2008 Aug;118(8):2908–16.
- Collaborative Ocular Melanoma Study Group, Boldt HC, Byrne SF, Gilson MM, Finger PT, Green RL, **Straatsma BR**, Simpson ER, Hawkins BS. Baseline echographic characteristics of tumors in eyes of patients enrolled in the Collaborative Ocular Melanoma Study: COMS report no. 29. *Ophthalmology.* 2008 Aug;115(8): 1390–7, 1397.e1–2. Epub 2008 Feb 11.
- Browning DJ, Glassman AR, Aiello LP, Bressler NM, Bressler SB, Danis RP, Davis MD, Ferris FL, Huang SS, Kaiser PK, Kollman C, Sadda S, Scott IU, Quin H; Diabetic Retinopathy Clinical Research Network (**Schwartz SD**). Optical coherence tomography measurements and analysis methods in optical coherence tomography studies of diabetic macular edema. *Ophthalmology.* 2008 Aug;115(8): 1366–71, 1371.e1.
- Friberg TR, Gupta A, Yu J, Huang L, Suner I, Puliafito CA, **Schwartz SD.** Ultrawide angle fluorescein angiographic imaging: a comparison to conventional digital acquisition systems. *Ophthalmic Surg Lasers Imaging.* 2008 Jul–Aug;39(4):304–11.
- Radu RA, Hu J, Peng J, **Bok D**, Mata NL, **Travis GH.** Retinal pigment epithelium-retinal G protein receptor-opsin mediates light-dependent translocation of all-trans-retinyl esters for synthesis of visual chromophore in retinal pigment epithelial cells. *J Biol Chem.* 2008 Jul 11;283(28):19730–8. Epub 2008 May 12.
- Bakri SJ, **McCannel CA**, Edwards AO, Moshfeghi DM. Persistent ocular hypertension following intravitreal ranibizumab. *Graefes Arch Clin Exp Ophthalmol.* 2008 Jul;246(7):955–8. Epub 2008 Apr 19.
- Young A, Powelson EB, Whitney IE, Raven MA, **Nusinowitz S**, Jiang M, Birnbaumer L, Reese BE, **Farber DB.** Involvement of OA1, an intracellular GPCR, and G alpha i3, its binding protein, in melanosomal biogenesis and optic pathway formation. *Invest Ophthalmol Vis Sci.* 2008 Jul;49(7): 3245–52. Epub 2008 Mar 31.
- Chang DF, Braga-Mele R, Mamalis N, Masket S, **Miller KM**, Nichamin LD, Packard RB, Packer M; ASCRS Cataract Clinical Committee. Clinical experience with intraoperative floppy-iris syndrome. Results of the 2008 ASCRS member survey. *J Cataract Refract Surg.* 2008 Jul;34(7):1201–9.
- Caprioli J**, **Coleman AL.** Intraocular pressure fluctuation a risk factor for visual field progression at low intraocular pressures in the advanced glaucoma intervention study. *Ophthalmology.* 2008 Jul;115(7):1123–1129.e3. Epub 2008 Feb 20.
- Levinson RD.** Tubulointerstitial nephritis and uveitis syndrome. *Int Ophthalmol Clin.* 2008 Summer; 48(3):51–9. Review.
- Fleming ES, Perkins J, Easa D, Conde JG, **Baker RS**, Southerland WM, Dottin R, Benabe JE, Ofili EO, Bond VC, McClure SA, Sayre MH, Beanan MJ, Norris KC. Addressing health disparities through multi-institutional, multidisciplinary laboratories. *Ethn Dis.* 2008;18(2 Suppl 2): S2-161–7.
- Ani C, Bazargan M, Bazargan-Hejazi S, Andersen RM, Hindman DW, **Baker RS.** Correlates of self-diagnosis of chronic medical and mental health conditions in under-served African American and Latino populations. *Ethn Dis.* 2008;18(2 Suppl 2):S2-105–11.
- Fleming ES, Perkins J, Easa D, Conde JG, **Baker RS**, Southerland WM, Dottin R, Benabe JE, Ofili EO, Bond VC, McClure SA, Sayre MH, Beanan MJ, Norris KC. The role of translational research in addressing health disparities: a conceptual framework. *Ethn Dis.* 2008;18(2 Suppl 2): S2-155–60.
- Straatsma BR.** The International Council of Ophthalmology and Ophthalmic Education: 1857–2007. *J Academic Ophthalmol.* 2008;1(2): 48–52.

Bazargan M, Ani CO, Hindman DW, Bazargan-Hejazi S, **Baker RS**, Bell D, Rodriquez M. Correlates of complementary and alternative medicine utilization in depressed, underserved African American and Hispanic patients in primary care settings. *J Altern Complement Med.* 2008; 14(5):537-44.

Pirouzian A, **Demer JL**. Clinical findings of Ahmed glaucoma valve in pediatric population. *J Clin Ophthalmol.* 2008;2(1):123-7.

Samimi D, **Hamilton DR**. Post LASIK Epithelial Ingrowth in Patients with Compromised Orbicularis Oculi Function. *J Refractive Surg.* 2008; 24(5):544-6.

Ding Z, Dong J, Liu J, **Deng SX**. Preferential gene expression in the limbus of the vervet monkey. *Mol Vis.* 2008;14:2031-41. Epub 2008 Nov 10.

Mihalcea O, **Arnold AC**. Side effect of head and neck radiotherapy: optic neuropathy. *Oftalmologia.* 2008;52(1): 36-40. Review.

Demer JL, Clark RA, Crane BT, Tian JR, Narasimhan A, Karim S. Functional anatomy of the extraocular muscles during vergence. *Prog Brain Res.* 2008;171:21-8.

Desai PV, **Caprioli J**. The treatment of normal-tension glaucoma. *Prog Brain Res.* 2008;173:195-210.

Yeung KK, **Weissman BA**. Keratoconus: an updated perspective. *Review of Optometry.* 2008;145(4):58-68.

Pineles SL, **Rosenbaum AL**, **Demer JL**. Changes in binocular alignment after surgery for comitant and pattern intermittent exotropia. *Strabismus.* 2008;16:57-63.



Giving Opportunities

The Jules Stein Eye Institute, established in 1966, is dedicated to the preservation of sight and the prevention of blindness. Today, UCLA's vision scientists are extending the boundaries of current knowledge and approaching the goal for a lifetime of good vision for everyone, due in large part to a strong tradition of philanthropy from private sources.

Contributions from individuals, corporations, and foundations provide JSEI faculty with the resources necessary to consistently record noteworthy achievements in research, education and patient care.

The Institute offers a variety of giving options to those who wish to contribute to this tradition of excellence.

How to Support the Jules Stein Eye Institute

Outright Gifts

Outright gifts—of cash, securities or other property—provide JSEI with much-needed financial assistance. Outright gifts have an immediate impact on JSEI's faculty research, education and patient care programs because they can be used to support a variety of current needs.

Gift Pledges

A pledge is a formal statement of intention to make a gift to JSEI. It may be followed by an immediate gift, or may simply confirm your intention to make a gift in the future. Many donors choose to complete their gift pledge by making regular payments over a five year period. This method often allows donors to give more generously than they may have originally considered. Whenever possible, full payment of pledges is encouraged within five years of the original commitment.

Securities

A gift of long-term appreciated marketable securities helps you save taxes twice. Such a gift will provide an income-tax charitable deduction and capital gains tax savings.

Matching Gifts

Many corporations have demonstrated their support for JSEI by matching, or multiplying, their employees' gifts to the Institute, up to a set amount. Before you make a gift, you may want to ask whether your employer participates in such a program. Certain restrictions apply to matching gifts; please consult your company's personnel office.

Real Estate

When you give a gift of your home or real property to JSEI, you may claim an income-tax charitable deduction based on the full market value of the gift, avoid capital gains taxes, and eliminate certain costs associated with the transfer of real property. Gifts of real estate can also provide income to you.

Bequests

In writing a will, living trust or other planned giving arrangements, donors can specify that they would like their estate to benefit JSEI.

Charitable Gift Annuity

Donors can transfer money, securities, or real estate in trust to JSEI and receive income for themselves or a loved one for life. Donors may receive immediate tax benefits, and JSEI ultimately receives the trust property.

Tribute Gifts

Contributions may be made in memory, honor, or celebration of a loved one, or to commemorate a special occasion. Donations can be used for unrestricted program support or be directed to any area of JSEI.

Endowments

A gift of an endowment demonstrates a long-term commitment to JSEI, since the fund is maintained in perpetuity. A portion of the annual investment income is used to support clinical, educational and scientific initiatives and the remaining investment yield is returned to principal; thus, over the years, the fund can grow and provide continuous support.

An endowment serves as an enduring legacy as it can bear the donor's name, or can honor a loved one. These funds can be made payable for up to five years. Giving opportunities exist for endowed chairs; endowed fellowships; and endowed funds for research, education and patient care.

However you choose to support JSEI, you will be embarking on a partnership with one of the world's preeminent eye research institutes. Such an investment will greatly expand our understanding of the causes of eye diseases, expose alternative treatment options, and ultimately prevent blindness. Your gift can make a difference.

For further information, please contact:

Jules Stein Eye Institute
Development Office
100 Stein Plaza
University of California, Los Angeles
Los Angeles, California 90095-7000
Phone: (310) 206-6035
Fax: (310) 794-1665
giving@jsei.ucla.edu

To make an unrestricted gift online, please visit: giving.ucla.edu/jsei



Jules Stein Eye Institute Annual Report 2008-2009

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



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

Jules Stein Eye Institute Annual Report 2008–2009

director

Bartly J. Mondino, MD

faculty advisor

Debra B. Farber, PhD, DPhhc

managing editor

Gloria P. Jurisic

editors

Nancy M. Graydon
Sara V. Nguyen

photography

J. Charles Martin
Reed Hutchinson PhotoGraphics

design

Robin Weisz/Graphic Design

production

The Oak Company

printing

Colornet Press

©2009, by the Regents of the University of California.

All rights reserved.

This report covers the period July 1, 2008, through June 30, 2009.

Requests for additional copies of the publication

Jules Stein Eye Institute
Annual Report 2008–2009
may be sent to:

Office of the Managing Editor
Jules Stein Eye Institute
100 Stein Plaza, UCLA
Box 957000
Los Angeles, California 90095-7000
Phone: (310) 206-7178

For more information on the Institute, see our website: jsei.org

View the Annual Report online at: jsei.org/annual_report.htm

Printed on recycled paper using soy-based inks

On the cover (left to right):

Retinal fluorescein angiogram (recolorized black and white image) showing hypoxia of the retinal periphery in the eye of a premature infant

Fluorescent light micrograph of cells in the retina; the tissue has been tagged with fluorescent markers specific to certain proteins

Colored scanning electron micrograph (SEM) of the fiber-like cells that form the crystalline lens of the eye

Computer artwork of blood vessels in the retina