A team of vision scientists at the Jules Stein Eye Institute (JSEI) has received a $3.6 million grant from the State of California to take basic science discoveries and translate them into new stem cell therapies for age-related macular degeneration (AMD). The funding was awarded by the California Institute for Regenerative Medicine, the state agency that administers Proposition 71 funding for stem cell research.

The team, led by Gabriel H. Travis, MD, Charles Kenneth Feldman Professor of Ophthalmology and Professor of Biological Chemistry at UCLA, and including other JSEI researchers as well as colleagues from UCLA’s Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research, will develop a strategy for transplanting stem-cell derived retinal pigment epithelium (RPE) cells into the eyes of patients with AMD. The RPE is the single layer of cells in the retina that sits adjacent to the photoreceptor cells. The loss of RPE cells is the major factor leading to vision loss in AMD patients.

AMD is a blinding disease of the elderly, affecting nearly one in three individuals older than 75—a prevalence significantly higher than Alzheimer’s disease. People with AMD lose their central vision, severely impairing their ability to read, watch television or drive. Although new drug therapy has improved the prognosis for patients with so-called wet AMD—the type in which new blood vessels are forming and invading the retina—there are no effective treatments for the more common dry form. As California’s population ages, the incidence of AMD will continue to rise. “This disease imposes a large social and economic burden on our society,” says Dr. Travis. “A stem-cell based transplantation strategy offers the real potential of slowing or arresting the progression of blindness in these patients.”

**Effort Focuses on Giving Patients Their Own Healthy RPE Cells**

That potential is more likely to be realized as a result of the past work of Dr. Travis and other members of the team—including JSEI vision scientists Xian-Jie Yang, PhD; Dean Bok, PhD; Steven Nusinowitz, PhD; and David Williams, PhD—who are renowned for their research in retinal degeneration, including the role of the RPE.

Dr. Travis notes that AMD is a complex disease caused not by a single defect but by a variety of factors. It is several-fold more common among cigarette smokers than among non-smokers. High-fat diets and high serum cholesterol are also known risk factors, as are having blue eyes and working outdoors (and thus being exposed to more light). Recent research has identified genes that increase a person’s susceptibility, including the complement factor H gene, which is involved in regulating the immune system; therefore, the cause of AMD includes an inflammatory component.

Although the cause is complex, AMD follows a predictable course. “The retinal pigment epithelium is affected early,” says Dr. Travis, “and the blindness comes because the adjacent photoreceptor cells—the rods and cones—are dependent on the RPE cells to stay alive.”

Dr. Travis explains that past efforts to transplant RPE cells from donors into AMD patients initially yielded therapeutic benefits, but the effects were
short-lived due to immune rejection. Current stem-cell technology offers the opportunity to avoid this complication by generating new RPE cells from stem cells derived from the patient’s own eye or skin.

The JSEI research team is investigating two sources of these healthy new RPE cells: 1) taking a skin biopsy that includes cells called fibroblasts, which can be converted in the laboratory into induced pluripotent stem (iPS) cells—cells with characteristics similar to embryonic stem cells, including the ability to be produced en masse and differentiated into any cell type; and 2) taking a biopsy of cells from the ciliary margin zone of the patient—the tissue in the far periphery of the retina that contains stem cells capable of giving rise to all of the cell types in the retina. (For more on the research strategy, see the accompanying sidebar.)

Study’s Goal: Approach Ready for Phase 1 Testing

“These approaches give us the potential to provide AMD patients with healthy RPE cells, regardless of the cause of the disease,” says Dr. Yang. “If we can successfully transplant sufficient numbers of these cells in patients without the risk of immune rejection—given that these are their own cells—we can slow the disease process and the positive effects may last for years.” She notes that the potential advantages offered by the research group’s efforts are threefold: 1) avoiding the traditional problem of immune rejection; 2) enabling, in the case of the iPS cell approach, the generation of a plentiful supply of healthy RPE cells; and 3) providing the opportunity to correct the mutations that underlie the disease.

Dr. Yang, a developmental biologist and Associate Professor of Ophthalmology at JSEI who is an expert in retinal development and differentiation, calls stem cell research for neurodegenerative diseases “the most exciting area of biomedical research.”

By the end of the grant period, the researchers expect to have a new and well-tested stem-cell based transplantation strategy that will be ready for Phase 1 clinical trials in AMD patients. “We have room to try many different things, and I am optimistic that we will end up with a strategy that can be beneficial for patients,” says Dr. Travis. “Ultimately, the best treatment is likely to be a combination of cellular manipulations and drugs that will protect against further damage.”

Research Involves Multi-Pronged Approach

The JSEI team funded by the California Institute for Regenerative Medicine to develop a new stem-cell based treatment for age-related macular degeneration (AMD) is pursuing a multi-pronged approach:

- The main goal is to develop a way to implant a patient’s own stem cell-derived retinal pigment epithelium (RPE) cells to replace cells that die in AMD, contributing to vision loss. Thus, the first aim of the research is to produce functional RPE cells from normal mice. Two sources are being studied: stem cells found in the ciliary margin zone (CMZ) of the eye, and induced pluripotent stem cells (iPS) generated from skin cells. iPS cells have the ability to become any cell in the body.

- Once the researchers have produced the RPE cells, they will test them to ensure the cells are functioning. This will involve transplanting the cells into “knockout” mice that carry mutations in one of two genes required for normal RPE functioning. The researchers will examine these mice using biochemical, physiological and morphological methods. If vision can be rescued in these mutant mice, it will indicate that the transplanted RPE cells are functioning normally.

- In another experiment, the JSEI researchers will add a gene to the induced RPE cells that protects from inappropriate attacks by the innate immune system—the process believed to lead to the death of RPE cells in cases of AMD. These cells will then be transplanted into the eyes of two other knockout mouse models of AMD to test whether the strategy can correct the immune defect.

- Finally, the research team will test the safety of CMZ, and iPS-derived RPE cells by transplanting them into immune-deficient mice to ensure that they do not cause tumors to form.

“Many of the mouse models that we have developed will allow us to measure the effect of our treatments with great accuracy,” says Gabriel H. Travis, MD, Charles Kenneth Feldman Professor of Ophthalmology at JSEI and the study’s principal investigator. “When you’re developing a new technology, having that constant and immediate feedback is invaluable for helping to hone the methods as we move closer to our ultimate goal of having a therapy that is ready to be tested in clinical trials.”
Mr. Dominik benefited from cataract surgery and still drives without glasses. "There is a need and there always is a need," he explained his motivation for giving with concise eloquence.

"I came to know Mr. Dominik as a patient 15 years ago, and he has since become a friend and supporter of my research," says Dr. Miller. "Mr. Dominik benefited from cataract surgery and still drives without glasses. He is a remarkable individual. His estate gift will underwrite the research activities of the Comprehensive Cataract Center to be housed in the planned Edie and Lew Wasserman building."

Born in Lemberg (also known as Lwów), Austria, and raised in Vienna, Mr. Dominik attended Prague University. He was a young Jewish pharmacist studying drugs for a major company and introducing them to the medical world when his promising future was drastically altered by the onset of World War II. After seven years of a global conflict in which he lost nearly all his family and friends, Mr. Dominik came to the United States to start a new life.

Arriving in New York without money or connections, this self-described "worker who was born hungry" found opportunity selling household items and jewelry before it was suggested he become a wholesaler of his own jewelry line. Settling in California one year later, Mr. Dominik desired a greater education and, playing jazz piano to pay his way, studied modern art at UCLA and attended the Gemological Institute. Developing an interest in carved jade, he collected and mounted 1,000-year-old objects to be worn as accessories or displayed, conceiving the term "portable sculptures." He presented his jewelry on television in collaboration with the Hallmark Store.

Mr. Dominik's love of higher learning was further fostered by a 35-year relationship with the Aspen Institute, where alongside senators, Supreme Court justices, and other "cerebral celebrities," as Mr. Dominik calls them, he discussed philosophy, religion, history and business. Mr. Dominik asserts it was through this humanistic study that he learned about and discovered America. Sharing his interests and passion for adventure for 35 years before her passing, Amelia was Mr. Dominik's beloved wife, "a Yankee from Massachusetts."

Inspired by the 17th-century writer François de La Rochefoucauld, Mr. Dominik collects and writes maxims, filling countless journals with his own fundamental principles and proverbial sayings. His artistic eye is reflected in his love of gardening, where shape, texture, and color combine to create vivid landscapes. He plays chess of a higher order—mentally visualizing each piece and all corresponding movements. He practices at his treasured Steinway piano every day, playing pieces that deftly flow from one into the other. In excellent health, Mr. Dominik swims or walks daily.

It is not surprising, then, that Mr. Dominik's artistic eye, keen visualization and philanthropic vision will lay the foundation for future advances at the Jules Stein Eye Institute.

Donor Profile

Edward Dominik—All That Jazz and Jade

The only thing that should surprise us is that there are still some things that can surprise us.

—François de La Rochefoucauld, writer, 1613-1680

Edward Dominik, longtime friend and supporter of the Jules Stein Eye Institute

“Mr. Dominik benefited from cataract surgery and still drives without glasses. He is a remarkable individual. His estate gift will underwrite the research activities of the Comprehensive Cataract Center to be housed in the planned Edie and Lew Wasserman building.”

JSEI Affiliates kick-off Matching Gift Campaign to benefit the UCLA Vision Rehabilitation Center

The JSEI Affiliates recently launched a $10,000 matching gift campaign to benefit the UCLA Vision Rehabilitation Center (VRC) at the Jules Stein Eye Institute. All donations made from now through December 31, 2009, to the VRC will be matched by the Affiliates. The VRC is committed to enabling patients with low vision to maximize functional independence, to perform daily activities and to augment their quality of life. Center Director Melissa Chun, OD, confirmed that campaign contributions will be used to purchase desperately needed low-vision aids for both pediatric and adult patients, and support the Center's training initiatives. "Private philanthropy has been essential to the Center's activities. I am very hopeful that our donors and patients will be inspired by this wonderful opportunity from the JSEI Affiliates," said Dr. Chun.

If you are interested in making a donation to the Affiliates matching campaign, please mail your check (made payable to the UC Regents) to Affiliates-VRC Matching Gift Campaign, c/o JSEI Development Office, 100 Stein Plaza, UCLA, Los Angeles, California, 90095-7080, or contact the Development Office at (310) 206-6035.
Lynn K. Gordon, MD, PhD
First Associate Dean of Academic Diversity

Lynn K. Gordon, MD, PhD, Associate Professor of Ophthalmology at the Jules Stein Eye Institute, was appointed the first Associate Dean for Academic Diversity at the David Geffen School of Medicine at UCLA, effective July 1, 2009. Her responsibilities focus on faculty recruitment and retention and on developing an inclusive and welcoming climate for all faculty members, with particular attention to issues affecting women and minorities.

Dr. Gordon, whose clinical expertise lies in the subspecialty of neuro-ophthalmology, received her PhD and MD from Harvard University. She completed her ophthalmology residency and fellowship-training program in neuro-ophthalmology at the Jules Stein Eye Institute. Upon completion of her formal training, and in part because she had a young family, she decided to pursue private practice with Dr. Howard Krauss, a UCLA clinical faculty member. However, the attraction of working as a clinician-scientist in an academic environment pulled her back to academia. A volunteer faculty member since leaving UCLA, she returned part time to the Veteran’s Affairs (VA) Greater Los Angeles Healthcare System as assistant chief of ophthalmology in 1993, and then divided her time between the VA and UCLA as a research ophthalmologist starting in 1995. She assumed the position of chief of ophthalmology at the VA in 1999, a position she held until her recent appointment. She joined the ophthalmology faculty in 2000.

Dr. Gordon took time out of her busy schedule to answer some questions about her academic career and new position.

What do you enjoy most about your career?

There is so much that I enjoy. It’s really a privilege to be able to spend part of my time seeing patients both here and at the VA, part of my time teaching medical students and helping to improve medical education in ophthalmology, and part of my time in the laboratory, overseeing the discovery of new science. What I really love is the diversity of what I’m allowed to do. The challenge is how to balance the competing demands—the feeling that you’re never quite doing enough in any of those areas, and figuring out where you need to devote your attention at any one moment. However, I think that the ability to go to a conference and lecture about clinical work or basic science and understand the challenges facing both clinicians and scientists—the opportunity to experience both of those worlds is such a privilege.

What do you consider to be your most important professional contribution?

On the one hand, I think about the exciting science and new discoveries coming from my research group right now. But ultimately, I think my most important contribution is mentorship, both in the laboratory and in the clinic. And that’s largely why I’m taking this new position as associate dean of academic diversity in the school of medicine.

Let’s talk about your new position—what attracted you to this position?

I learned about academic diversity positions through participation in a program called Executive Leadership for Women in Academic Medicine. Our project centered on mentoring mid-level career individuals, and while I was doing this, I realized that my strengths are in communication, teaching and mentorship and that a lot of my outside activities have been devoted to issues of diversity and mentoring. When I learned that UCLA had opened up this new position, it was natural for me to apply.

What do you hope to accomplish as Associate Dean for Academic Diversity?

The real goal is to improve diversity in the faculty at the David Geffen School of Medicine at UCLA, primarily by improving both recruitment and retention of women and underrepresented minorities. If we look at the demographics of our faculty, there hasn’t been a great deal of change over the last decade. And yet we know that the composition of the medical school is quite different. We also know that having a diverse faculty is an important goal by itself but also because, when you have diversity, you are exposed to different ways of approaching problems and devising solutions. Our medical school is outstanding. That being said, there’s always a need for improvement. In my new position, I plan to draw on best practices from other institutions and adapt them to fit the mission at UCLA, applying the lens of diversity to create toolboxes for incoming faculty. I feel that such programs will not only improve conditions for women and minorities, but will benefit all faculty by strengthening mentorships between junior and senior members, and helping mid level career faculty to discover opportunities that they may not know exist.
JSEI Hosts Free Clinic for ICAN

The Jules Stein Eye Institute (JSEI) in collaboration with Albert Einstein Medical Center hosted a free clinic for families attending the 6th International Children’s Anophthalmia & Microphthalmia Network (ICAN) conference on June 19–21, 2009. As part of the conference, 12 children with rare eye birth defects called anophthalmia and microphthalmia (eyes that are abnormally small, completely absent or consist only of vestigial portions) received medical consultations at JSEI with oculists, oculoplastic surgeons, ophthalmologists, geneticists and genetic counselors. The clinic, organized with the help of JSEI doctors Michael B. Gorin, MD, PhD, and Maria Carolina Ortube, MD, and Tanya Bardakjian, CGC, a genetic counselor from Albert Einstein Medical Center, provided families with an opportunity to receive a second opinion about their children’s condition from top specialists, and provided a unique teaching opportunity for fellows and residents.

Leonard Apt, MD, Receives 2009 Dickson Emeritus Professorship Award

Leonard Apt, Professor Emeritus of Ophthalmology, was among six UCLA emeriti professors to receive the 2009 Dickson Emeritus Professorship Award. The announcement was made on April 22, 2009. 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, since his 1981 retirement. These include establishing the UCLA Center to Prevent Childhood Blindness and the JSEI Affiliates preschool vision-screening program, which he continues to serve as medical director. He has also collaborated with Sherwin J. Isenberg, MD, Laraine and David Gerber Professor of Ophthalmology, on a series of clinical studies establishing the safety and efficacy of povidone-iodine, a potent antimicrobial agent, for presurgical treatment of the eye, and examining its use for treating acute bacterial conjunctivitis and corneal infections in the developing world. This and other work has been disseminated in more than 100 post-retirement publications.

JSEI Doctor Recognized as Sports Vision Optometrist of the Year

The Sports Vision Section (SVS) of the American Optometric Association presented its 2009 Optometrist of the Year award to David Kirschen, OD, PhD, at an awards presentation held during the association’s annual meeting in Washington, D.C., on June 26, 2009. This prestigious award is given each year in recognition of outstanding contributions to the field of Sports Vision and/or the Sports Vision Section.

JSEI Faculty Recognized by Vision Research Association

The Association for Research in Vision and Ophthalmology (ARVO) inducted seven full-time faculty from the Jules Stein Eye Institute at UCLA into its 2009 class of distinguished fellows. The prestigious fellowship honors its members for their accomplishments, leadership and contributions to the association, which follows a point system for awarding a gold or silver level of fellowship.

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 Deborah B. Farber, PhD, DPhil, Karl Kirchgeesser Professor of Ophthalmology.

2009 ARVO Silver Fellows: Michael B. Gorin, MD, PhD, Harold and Pauline Price Professor of Ophthalmology; Gary N. Holland, MD, Jack H. Skirball Professor of Ocular Inflammatory Diseases; and David S. Williams, PhD, Professor of Ophthalmology and Research to Prevent Blindness Jules and Doris Stein Professor.

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

In the EYE Summer 2009 article, “JSEI Scientist Receives Grant to Develop Gene Therapy for Usher Syndrome,” we failed to mention that Jules Stein Eye Institute scientist, David S. Williams, PhD, is a Research to Prevent Blindness Jules and Doris Stein Professor.
Calling all JSEI Alumni!
Interested in becoming a member of the UCLA Department of Ophthalmology Association? If you would like information on how to become an Association member and participate in upcoming alumni events including the annual UCLA Department of Ophthalmology Reception at AAO on Sunday, October 25, 2009, at the St. Regis, San Francisco, contact us at alumni@jsei.ucla.edu or (310) 825-4148.

Clinical and Research Seminar

About 150 participants attended this year’s Clinical and Research Seminar on June 12, 2009, held at the Jules Stein Eye Institute (JSEI) and sponsored by the Department of Ophthalmology Association.

Aesthetic Eyelid Course

The Orbital and Oculoplastic Surgery Division held its "Aesthetic Eyelid and Orbitofacial Surgery: Options and Finesse" course on July 10–11, 2009, at the Jules Stein Eye Institute. The event combined surgical demonstrations, a cadaver dissection and didactic lectures that informed participants of the latest advances in the field of aesthetic and reconstructive surgery for eyelids and face.

Resident Receives Nesburn Award

It is with great pride that the UCLA Department of Ophthalmology announces that Allen Hu, MD, is the recipient of the 2009 Dr. Henry and Lilian Nesburn Award for research done during his residency. The award was announced during the annual Los Angeles Society of Ophthalmology officer and member installation and award brunch that took place on Saturday, June 6, 2009.

A number of 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, and Yossi Sidikaro, MD, PhD, for volunteer service to the teaching programs of UCLA and affiliated hospitals. Federico G. Veloz, MD, received the Faculty Teaching Award for his contribution to residency education.

Academic News

About 150 participants attended this year’s Clinical and Research Seminar on June 12, 2009, held at the Jules Stein Eye Institute (JSEI) and sponsored by the Department of Ophthalmology Association.

Gregory S. Hageman, PhD, Professor of Ophthalmology and Visual Sciences at University of Iowa, gave the 7th Bradley R. Straatsma Lecture entitled, “A New Era for Age-Related Macular Degeneration: Biological and Therapeutic Insights.” David B. Glasser, MD, an alumnus of the ophthalmology residency program at JSEI, gave the 7th Thomas H. Petit Lecture entitled, “Diagnosis and Management of Ocular Surface Squamous Neoplasia (CSSL)”.

Course co-directors, Drs. Robert Goldberg (left) and David Glasser (left) with Dr. Gary Holland, Chief of the Cornea and Uveitis Division

Dr. Alan Shabo (right), recipient of the S. Rodman Irvine Prize, with JSEI Director, Bartly Mondino

From left, Drs. Doreen Fazio, Malvin Anders and Yossi Sidikaro were among those who received Senior Honor Awards for volunteer service to UCLA’s teaching programs.

From left, Drs. Doreen Fazio, Malvin Anders and Yossi Sidikaro were among those who received Senior Honor Awards for volunteer service to UCLA’s teaching programs.

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

Dr. Alan Shabo (right), recipient of the S. Rodman Irvine Prize, with JSEI Director, Bartly Mondino

Thomas H. Petit Lecturer, Dr. David Glasser (left) with Dr. Gary Holland, Chief of the Cornea and Uveitis Division

2009 Nesburn Award recipient Dr. Allen Hu

Course co-directors, Drs. Robert Goldberg (left) and Catherine Hwang, the Jerome Comet Klein, MD, Fellow, are shown with course lab instructor and clinical faculty member, Dr. Jerome Klein. Dr. Klein supports this annual fellowship in honor of his late father, a renowned international facial plastic surgeon.
Shared Vision Reaches Abroad to Share the Gift of Sight

Ever wondered what to do with those old eyeglasses laying around the house, tucked away inside of your drawers or hiding in the glove compartment of your car? Donate them to the JSEI Affiliates Shared Vision program and we will give your discarded eyeglasses a second life and share the gift of sight with those less fortunate!

The Shared Vision program collects gently used eyeglasses at bins throughout the Jules Stein Eye Institute, through volunteer collection drives, and through individual and corporate donations. The glasses are cleaned and given to local clinic missions, such as the Venice Family Clinic, as well as to international aid clinics hosted by relief organizations and volunteer physicians in developing countries.

Global Angels, an International Relief Organization, was the recipient last summer of a shipment of more than 1,000 pairs of eyeglasses collected by Shared Vision volunteers. The eyeglasses were given to clinic patients in both Kenya and Nepal.

JSEI Affiliates Roll Out New Website

The JSEI Affiliates rolled out its newly redesigned website this past June. New features include an online volunteer opportunities calendar, online volunteer application forms, updated program information and overviews, and a photo library to view program and event photographs.

The new site is much easier to navigate and provides current information for volunteers and those interested in getting involved. The site also offers much easier to navigate and provides current information for volunteers and those interested in getting involved. The site also offers improved navigation, a photo library, and provides current information for volunteers and those interested in getting involved.

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

Art and Blindness Lecture

On June 23, 2009, Joseph Caprioli, MD, David May II Professor of Ophthalmology and Chief of the Glaucoma Division, was a keynote speaker at an event for donors and friends of the Jules Stein Eye Institute. The lecture offered a unique perspective on how artists have historically depicted eye disease, blindness and the use of ophthalmic devices. Dr. Caprioli explored many European works and illustrated the connection between art and medicine.

If you are interested in receiving information about this event or upcoming medical forums, please contact the JSEI Development Office at (310) 206-6035.

Jules Stein Eye Institute, “Best Ophthalmology Center in the West”

Jules Stein Eye Institute, once again, ranks 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 20th annual guide to America’s Best Hospitals was published in a special August 2009 edition of the magazine. The Institute continually ranks among the top ophthalmology centers in the country in this annual survey. To be ranked among the nation’s best eye care centers once again is a tribute to the Institute’s physicians, scientists and staff.