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The Discovery Eye Foundation newsletter is currently published twice annually. It serves to bring you the latest information about our eye research, patient outreach programs, organizational achievements, and profiles our supporters, patients and friends of DEF.

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## DEF SPONSORS RETINAL REGENERATION PROGRAM AT UCI AN INSURANCE POLICY AGAINST BLINDNESS

**There is power in numbers – especially when those numbers include research scientists from some of the best respected institutions in the world.** At this time, the Discovery Eye Foundation is a leading partner in one of the most exciting collaborative efforts involving retinal stem cells for regeneration and transplantation.

The Retinal Regeneration Program, more than 80 percent of which is being funded by DEF, engages researchers from leading research institutions such as Harvard, Yale, MIT, the University of Copenhagen, and the University of California, Irvine Eye Institute. Launched at UC Irvine earlier this year, the program has already made tremendous progress in identifying retinal cells capable of regeneration.

“This work holds a real promise for patients suffering vision loss due to macular degeneration,” says DEF Medical Director and Vice Chair for research of the UC Irvine Eye Institute Anthony Nesburn, M.D. “There is a real urgency to the work being done by the Retinal Regeneration Program. Patients are depending on us. Being a major sponsor of this collaboration opens a new chapter in growth for the Discovery Eye Foundation.”

Nesburn, who watched his father's vision fail through age-related macular degeneration, has made a personal investment in the program.

“This is an important endeavor in the history of eye research,” he says, “but I see it as something more. To me, it is an insurance policy against blindness. The work being done today will help thousands see better tomorrow.”

Dr. George Baerveldt, Chair of the UC Irvine Department of Ophthalmology, was instrumental in initiating and funding the program. Funding was provided by prominent OC businessman Igor Olenicoff through the UC Irvine Foundation and Farhad Bahremand through the Foundation Fighting Blindness.



**Henry Klassen, M.D., Ph.D.,** who holds a full time research appointment in Ophthalmology, is UCI's lead scientist in the multi-institutional Retinal Regeneration Program.

The Retinal Regeneration Program is supported by over a dozen donors affiliated with the Discovery Eye Foundation. A large anonymous donation by a patient of noted retinal specialist David Boyer, M.D., a member of the DEF Board of Directors, gave impetus to the program's launch, and demonstrates the urgency felt by patients in finding a solution for blindness caused by retinal damage and macular degeneration.

One of the challenges researchers face in achieving successful retinal transplantation is the development of a store of useable retinal progenitor (stem) cells.

“Ophthalmology has made huge progress in the treatment of many eye problems,” explains Klassen. “Surgical and medical procedures have been highly effective in lowering eye pressure in glaucoma. Laser treatments have helped prevent the progression of diabetic retinopathy. What hasn't happened, however, is the development of a capability to restore or re-grow the cells of the retina when they die or are damaged.”

Seeking an inroad into the dilemma, Klassen and Michael Young, Ph.D., Schepens Eye Research Institute, Harvard University, have been collaborating on the development of retinal progenitor cells for some time.

“We've found that there are stem-like cells in the retina that can be used to regenerate or prolong the life of crucial retinal cells,” explains Klassen. There are numerous benefits to using retinal stem cells. First and foremost, the use of stem cells harvested from an “adult” source, such as the retina, avoids the controversy and funding limitations imposed on embryonic stem cell research. Moreover, retinal progenitor cells have a tremendous ability to adapt and integrate into the retina, and, because stem cells have a high degree of immune tolerance, the risk of graft rejection is minimal.

For several years, Klassen and his colleagues have worked to transplant retinal progenitor cells to the eye of a large mammal like the pig. Once transplanted, progress can be followed accurately because the transplanted retinal stem cells come from a “green pig” – whose cells contain a florescent gene that provides an easily readable cellular marker.



**“green pig” – whose cells contain a florescent gene that provides an easily readable cellular marker as shown depicted in National Geographic in July of 2005.**

Klassen, Young and their team are now working to show that these cells regenerate the functional capacity of the retina and restore vision loss in the pig. Once an effective cell-based strategy for retinal repair is established, the multi-institutional team hopes to translate the success to human subjects using human retinal stem cells.

“Things are progressing,” Young adds. “The work we are doing looks very promising for translational purposes.”

The work is collaborative and multi-disciplinary, with researchers from laboratories around the world working on transplantation, stem cell biology, tissue engineering and drug delivery.

“We're taking the expertise of many different investigators and bringing it to bear on this project,” says Klassen. “No one researcher could do all of this.”

Klassen's plans include traveling to Beijing to investigate the work being done with stem cells in clinical settings. ▲

*The Discovery Eye Foundation is pleased to recognize the generosity of our friends, Mario Antonini, Herbert and Beverly Gelfand, Irving Karp, The Lincy Foundation, the Nesburn Family Foundation, Phyllis and John Parrish, Katie and Jerry Peters and Katie and Jack Schoellerman for their support of the Retinal Regeneration Program at UCI.*

## PATIENT HEAL THYSELF

UCI Physician-Scientists are Developing Clinical Approaches to Deliver Stem Cells into the Eyes of Patients with Age-related Macular Degeneration



Leonid E. Lerner, M.D., Ph.D., is a principal investigator at UCI conducting stem cell research for the treatment of AMD and retinal disease.

On the other side of the Petri dish, so to speak, Leonid E. Lerner, M.D., Ph.D., is the principal investigator of a leading team of UCI researchers who are planning a multi-departmental stem cell initiative for the treatment of age-related macular degeneration (AMD) and other degenerative retinal diseases through the identification, harvesting and transplantation of patient-specific (autologous) stem cells derived from easily accessible sources of tissue such as bone marrow or skin in a patient with the disease.

"Our stem cell initiative can be divided into a Basic Science Branch and a Clinical Branch," explains Dr. Lerner.

"On the basic science side, our team members, who are world renowned leaders in stem cell research, include Drs. Peter J. Donovan and Eva Y-HP Lee. They are investigating different tissues as potential sources of multi-potent stem cells that could be used for retinal regeneration. On the clinical side, team members including Drs. Baruch Kuppermann and Leonard Sender are working to adapt a surgical approach to performing stem cell transplantation as a treatment modality for the management of AMD and other retinal degenerations."

Dr. Lerner explains that adult stem cells are harvested and grown from the bone marrow of the patient needing treatment.

"Since the adult cells are derived from the same patient," he says, "we have 100 percent immunological compatibility and no fear of rejection. In addition, there is no risk of viral cross-contamination from the donor tissue, which improves patient safety, and there is no risk of tumor formation as we see with some embryonic stem cell transplants."

"The Lerner and Klassen teams at UC Irvine use different approaches to their work, but both are geared toward translating scientific advances in stem cell biology into clinical therapies for age-related macular degeneration, and will ultimately be brought to bear on all retinal degenerative and age-related diseases," says DEF Medical Director Anthony B. Nesburn, M.D., F.A.C.S. "This is an exciting time to be a part of the eye research and patient care worlds." ▲

## CORNEAL TRANSPLANT RENEWS VISION FOR DEF BOARD MEMBER CLIFF EINSTEIN

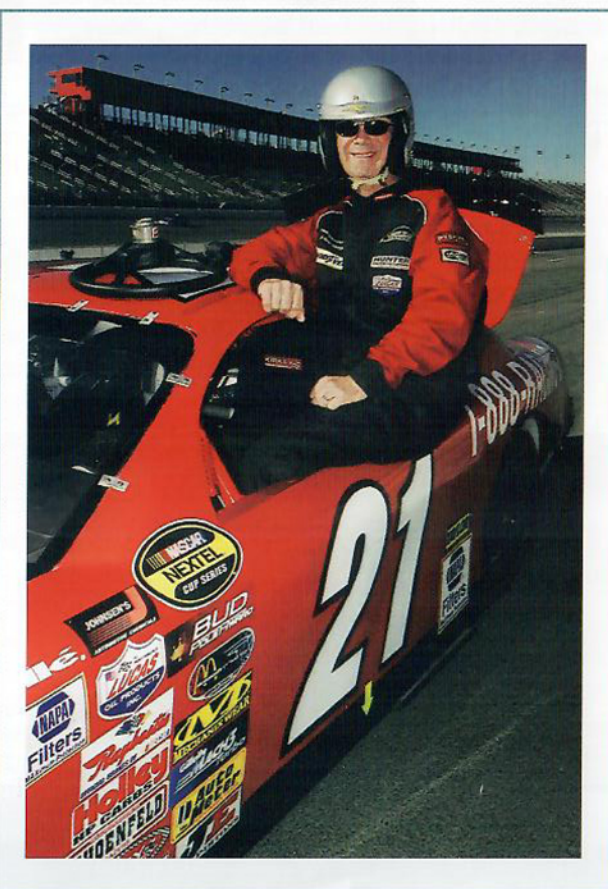
For Cliff Einstein, Chairman of Dailey and Associates Advertising, life is a visual feast. As a powerhouse in the world of advertising, an avid collector of and a leading authority on contemporary art, a dedicated sports car and motorcycle enthusiast, and a devoted family man, much of his life has evolved around his visual abilities.



Mandy and Cliff Einstein, members of the Board of Directors at Discovery Eye Foundation.

Considering his tremendous accomplishments in his chosen areas of interest, however, it is startling to learn that Einstein was diagnosed with keratoconus (KC) in both eyes while in his early 20s. A thinning disorder of the cornea that causes distortion and reduces vision, KC can be treated through medical and non-medical techniques, including corrective lenses, Intacs, and corneal transplants.

Last year, after years of treatment and progressive vision loss, Einstein – who, with his wife, Mandy Einstein, is a member of the Board of Directors of the Discovery Eye Foundation (DEF) – made the final decision to undergo a corneal transplant in his right eye.



Cliff Einstein at NASCAR racing school.

"I'd gone through every new advance in keratoconus treatment," he recalls. "I'd tried all the lenses. They'd work for a while, but then I'd develop an abrasion. Nothing seemed to work. I got to a point where I could only use the lenses for a few hours at a time. We'd always talked about the next step, but I hadn't been ready before."

A longtime patient of DEF Medical Director Anthony B. Nesburn, M.D., Einstein realized that the time had come to move forward with a corneal transplant. After that, things happened very quickly.

"He had me see his partner and corneal surgery expert, Dr. Ezra Maguen, to talk about it, and 12 days later they did the transplant," says Einstein. "I was very blessed to get a transplant so quickly. I didn't have too much time to think about it!"

After surgery, Einstein recovered rapidly with only a minor setback due to an allergic reaction to one of his prescription medications.

"They put a hard lens in, just for a moment, a few weeks after the surgery," he remembers. "I could see brilliantly. It was a remarkable promise of things to come."

Now, just ten months after surgery, Einstein's corrected vision in both eyes is 20/30. He wears corrective lenses throughout the day, but must limit his wearing as the new cornea gets more and more used to the hard contact lens. At this point there is very little discomfort and many days find him wearing the lens more than fifteen hours.

"I waited to do the transplant until the time was right. I wanted the science to have progressed as far as it could while I was still young enough to recover from the surgery," continues Einstein. "Each month my vision should be even better. People ask me what part of the day I want to see, I want to see all of it!" ▲

**AMD.org**  
Macular Degeneration Partnership

**AMD Week**  
September 18-22, 2006

The Macular Degeneration Partnership (MDP), an outreach program of the Discovery Eye Foundation (DEF), took its message of early detection and treatment to Capitol Hill to mark Age-Related Macular Degeneration Week.

MDP Program Director Judith Delgado met with lawmakers and politicians to raise awareness and lobby for more research funding. She points out, "There is a growing epidemic of AMD and many of our legislators have family members with the disease, so they are at risk as well."



Left to right: Joanne Leon, Seniors Coalition person with AMD; Rubén Hinojosa, U.S. Congressman, 15th District Texas; Judith Delgado, MDP, Dave Herman, Seniors Coalition.

MDP further educated members of Congress and their staff on the impact of AMD by distributing vision simulation cards. The visit was supported by a grant from AMD Alliance International and was led by The Seniors Coalition.

In recognition of AMD Week, MDP also helped in an important roundtable discussion,



Left to right: Judith Delgado, MDP; Tom Latham, U.S. Congress, 4th District, Iowa; Joanne Leon, Seniors Coalition.

The session's primary goal was to construct a document to be approved for use in helping physicians better communicate with their patients. Guidelines discussed included the need to use appropriate and sensitive language in presenting the diagnosis to patients and family members, and the need for referrals to information, support resources and vision rehabilitation specialists.

### Betty White and MDP Vision Pavilion Promote Eye Health

As expected, MDP's Vision Pavilion at the Annual AARP Conference this fall was a tremendous success. The Pavilion brought together vision organizations and rehabilitation companies to educate seniors about age-related macular degeneration (AMD). The focus of this year's Pavilion was on early detection and treatment.

The event got an extra boost from actress Betty White, who serves as the national spokesperson for the My Eye Health campaign. White spoke to an audience of more than 1,500,

demonstrating the use of the Amsler Grid to test for vision.

"This was an excellent way to reach a large number of seniors who are most at risk for AMD," says David S. Boyer, M.D., a member of the DEF Board of Directors and the head of the Retina Vitreous Associates Medical Group, as well as an associate professor with the University of Southern California. Judith Delgado, MDP Program Director, moderated the session while UCLA's Stephen Schwartz, M.D., provided information on research and treatment.

Thousands of individuals visited the Macular Degeneration Partnership exhibit for educational materials and their own Amsler Grids. Funding was provided by My Eye Health and AMD Alliance International.

For more information, please visit [www.MyEyeHealth.org](http://www.MyEyeHealth.org) or [www.AMD.org](http://www.AMD.org). ▲

"Prioritizing the Patient: A Holistic Approach to AMD Case Management." Patient advocates from across the country convened to discuss the importance of clear communication between eye doctors and their patients.

### FROM THE DIRECTOR



Anthony B. Nesburn, M.D. F.A.C.S.  
Medical Director

Dear Friends,

As we approach a new year, I would like to take the opportunity to look back and reflect on how much we have accomplished in 2006. Thanks to our friends and supporters, the Discovery Eye Foundation (DEF) has experienced some incredible advances in research and treatment, strengthening our position as a leader in vision research.

Most exciting has been the launch of the Retinal Regeneration Program at the University of California, Irvine. This multi-institutional, multi-disciplinary program brings together some of the leading researchers and scientists in the field of regenerative medicine and ophthalmology.

Most notable is Henry Klassen, M.D., Ph.D., our lead investigator at UCI, whose work in identifying and isolating retinal stem cells to regenerate cells in damaged retinas is truly groundbreaking. Thanks to his work and colleagues at Yale, Harvard, MIT and research institutions around the world, we may one day be able to use already existing retinal cells to repair the damage done by age-related macular degeneration (AMD), retinitis pigmentosa (RP) and other retinal diseases.

The Discovery Eye Foundation has been instrumental in funding work done by the Retinal Regeneration Program, adding a new chapter in growth for DEF. Personally, having watched my father's vision deteriorate due to AMD, I see the program as an insurance policy against vision loss. For this reason, I have chosen to fund a portion of the program through my own donations to DEF. I want to personally thank Dr. David Boyer, the Lincy Foundation and the many other DEF and UCI donors including Dr. George Baerveldt and Igor Olenicoff for their support of this vital program.

This issue features a profile of DEF Board Member Cliff Einstein. He shares with us some of the events leading up to his decision and the tremendous results of his corneal transplant surgery—one of the miracles of modern medicine.

As always, DEF remains true to its three-fold mission of advancing retinal and corneal research, and supporting patient education. The Macular Degeneration Partnership (MDP) and the National Keratoconus Foundation (NKCF) are vital international outreach programs of DEF.

Let me thank all of you who came out to make our fourth annual Discovery Eye Foundation Golf Tournament a success. The event raised a total of \$89,000 in support of eye research at the Morris S. Pynoos Research Laboratories at UCI. I agree with James J. Salz, M.D., chairman of the Golf Tournament Committee, who stated that this was the best event yet.

Finally, it would be a pleasure to have you to join me for a tour of the Morris S. Pynoos Research Laboratories at UCI on Saturday, November 18, 2006 at 10:30 a.m. It is truly a unique opportunity to speak with some of the very best scientists about their research projects and everyone always enjoys the tour. For more information, please call DEF at 310-623-4466.

Have a great holiday season and thank you again for your support of Discovery Eye Foundation.

Sincerely,

Anthony B. Nesburn, M.D., F.A.C.S.  
DEF Medical Director

## NKCF NATIONAL KERATOCONUS FOUNDATION

### Shared Knowledge – Shared Vision

In January 2007, the first Global Keratoconus Congress will convene in Las Vegas, Nevada. The three-day conference, which will be attended by eye care professionals, researchers and physicians from around the world, will focus on research into the causes of keratoconus and advances in patient care and treatment. The Discovery Eye Foundation's (DEF) National Keratoconus Foundation (NKCF) is proud to be among the organizations sponsoring the event.

"The congress represents a great opportunity to learn more about the research and treatment of keratoconus from leading researchers, patient care professionals and organizations," explains DEF Medical Director Anthony B. Nesburn, M.D., who will moderate a research session. "We need to encourage new research into the diagnosis, genetics, causes of, and treatments for this debilitating condition. It is also important that we share with our colleagues the exciting research and patient care findings that are being pioneered by DEF and NKCF."

Catherine Warren, Executive Director of NKCF, will moderate a session on patient management issues, including insurance reimbursement for contact lens for KC patients.

"This is a very important topic," she says. "Contact lenses are the primary treatment option for keratoconus, yet insurance companies continue to refuse reimbursement for the cost of these specially designed and expensive lenses. This creates a financial hardship for those with keratoconus."

Also attending the Global Keratoconus Congress will be DEF researcher M. Cristina Kenney, M.D., Ph.D. Dr. Kenney will present her updated research findings on KC genetics and the role oxidative stress plays in the progression of KC.

A portion of all registration fees from the Congress will be donated to the DEF National Keratoconus Foundation.

To learn more about keratoconus and NKCF, please call Catherine Warren at 310-623-6644, visit the Discovery Eye Foundation at [www.discoveryeye.org](http://www.discoveryeye.org), or go to [www.nkcf.org](http://www.nkcf.org). ▲

## Discovery Eye Foundation (DEF)

is a 501(c)3 dedicated to finding cures and treatments for corneal and retinal eye diseases. It supports scientists participating in groundbreaking eye research particularly in the areas of diabetic retinopathy, macular degeneration, ocular herpes, keratoconus and other sight threatening conditions.

DEF also supports two excellent educational programs with world-wide reach, Macular Degeneration Partnership (MDP) and the National Keratoconus Foundation (NKCF). These programs uniquely serve a growing population affected by eye disease with opportunities for Internet interaction, free printed educational materials and telephone access to a healthcare professional.

**DISCOVERY**  
EYE FOUNDATION  
~ FOUNDED IN 1970 ~

8733 Beverly Blvd. Suite 201  
Los Angeles, California 90048



### A GLANCE AT WHAT'S INSIDE

Retinal Regeneration  
at UCI



Corneal Transplant  
Renews Vision



#### Also inside:

**UCI Physician-  
Scientists are  
Developing Clinical  
Approaches to Deliver  
Stem Cells**

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#### Mission Statement:

*Discovery Eye Foundation exists to facilitate the development of cures and improve patient care through corneal and retinal research and educational programs for eye disease.*

## DISCOVERY EYE FOUNDATION EVENTS

### Golf Tournament a Hole-In-One

The fourth annual Discovery Eye Foundation Golf Tournament was a tremendous success, raising a total of \$89,000 to be used to fund eye research at the Morris S. Pynoos research laboratories at the University of California, Irvine.

Held in August at the Monarch Beach Golf Links in Dana Point, this year's tournament's Allergan Cup winner was the Mordechai and Jeff Fishman foursome, who were new to the event. The cup was awarded by Jim Trunick, Senior Director at Allergan who lauded the event for its support of research in curing blindness.

The full day event raised \$30,000 more than the 2005 event and featured celebrity golfers, a silent and a live auction, dinner, and an awards ceremony. Radio personality Rick Dees, whose syndicated radio program is broadcast worldwide, auctioned off a trip to Cancun with a beachfront villa and a seven day trip to Aspen.

"This is the best tournament yet," said a pleased James J. Salz, M.D., member of the

Discovery Eye Foundation Board of Directors, who served as chairman of the Golf Tournament Committee with Ronald G. Gastor, M.D., F.A.C.S., as vice-chair.



Left to Right: Event Chairman, James J. Salz, M.D., USC Doheny Eye Institute Chairman, Ron Smith, M.D., radio personality Rick Dees, Allergan Sr. Director, Jim Trunick, Anthony B. Nesburn, M.D., DEF Medical Director, DEF Board Chairman, Jack Schoellerman.

Committee members included: Anthony B. Nesburn, M.D., Norman Delgado, JaMarr Brown, Chris Muller, and tournament director Tom Hebert.

The event's hosted reception and silent auction were organized by committee chairwoman Donna Lee Posner along with Gracie Rogoff, Toni Loconto, Gail Dellos and Cindy Morales

Many thanks to this year's DEF Golf Tournament sponsors, who included: *Presenting Sponsor:* Allergan; *Co-Sponsors:* Alcon Lab, Advanced Medical Optics, and Julie and Barry Smooke; *Fairway Sponsor:* Intralase Corporation; *Hole Sponsors:* American Eye Institute, Angelus Block, Inc., Bausch & Lomb, Cerritos Center for the Performing Arts, DevicePharm, Mr. and Mrs. Clifford Einstein, Ista Pharmaceuticals, Laser Locators, Inc., Oasis Medical, Inc., Refractec, Mr. and Mrs. Jack Schoellerman, and Wavelight; *Hole-In-One Sponsors:* Mr. William LeVine, and Dr. Tony Nesburn and Dr. Cris Kenney; *Reception Host:* Vineyard Bank; *Putting Green Sponsor:* Frances Hirsh; *Lunch with the Experts Sponsor:* NeoMedix; and *Lunch Sponsor:* Revision Optics.

**GUIDED TOUR OF  
THE MORRIS S. PYNOOS  
RESEARCH LABORATORIES AT UCI**  
with Dr. Anthony B. Nesburn, DEF Medical Director

Please join resident scientists for discussions on cutting-edge eye research in the areas of Macular Degeneration, Diabetic Retinopathy, Glaucoma, Keratoconus and Ocular Herpes.

**ADMIT ONE**

**SATURDAY, NOVEMBER 18  
AT 10:30 A.M.**

Location:  
UCI Medical Center  
101 The City Drive, Building 55, 2nd floor  
Orange, California 92868

**PLEASE RSVP TO 310 623-4466**

Parking will be validated and refreshments will be served.  
Please call for directions.