DISCOVERY

THE DISCOVERY EYE FOUNDATION

The Discovery Eye Foundation supports cutting-edge research related to sight-threatening eye diseases and their treatments.

Thanksgiving 2016

RP Treatment Completes First Year of Trial, Looks at Other Diseases

A pioneering stem cell–based treatment for retinitis pigmentosa (RP), developed by DEF-funded researchers Drs. Henry Klassen and Jing Yang at the University of California, Irvine (UCI), has completed its first year of clinical trials. Researchers are now working to expand the treatment studies to other eye diseases, including age-related macular degeneration (AMD).

Dr. Henry Klassen

RP is a hereditary blinding disease that begins with the loss of rod photoreceptors in the retina. The new treatment inserts human retinal progenitor cells into the vitreous gel in the back of the eye, where they work to fix rods and cones in the patient's retina. The goal is to keep photoreceptors from dying off and to reactivate those that are sick.

Dosing of patients in the clinical trial began in June 2015 and was completed in August 2016. The results for the safety portion of the study (Phase 1) should be complete in about a year. Thus far, preliminary evidence has been quite positive. Phase 2 of the trial will be a controlled study to test the treatment's efficacy.

Meanwhile, according to Klassen, an associate professor of ophthalmology with UCI's Gavin Herbert Eye Institute, they are working to expand the treatment to AMD, other retinal degenerations, diabetic retinopathy, retinopathy of prematurity, optic-nerve damage and even some forms of glaucoma. Klassen is confident much of the work that has been reviewed by the FDA for RP will help support work on these diseases, as well.

"DEF was pivotal in bringing me to UCI in 2006 to start this project, as well as for the funding to move us to human clinical trials," Klassen says. "DEF has been with us from the start, and we hope to continue this partnership to bring this treatment forward for other diseases."

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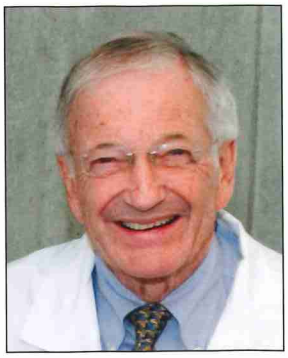


FROM THE PRESIDENT/ MEDICAL DIRECTOR

In 1971, DEF started as a small nonprofit to raise money to find treatments and cures for sight-threatening eye diseases. As time passed, we learned firsthand how vision loss was directly affecting our donors. We then created two highly regarded education/ outreach programs, the Macular Degeneration Partnership and the National Keratoconus Foundation, which improved the lives of thousands of people. Recently, in order to grow these programs, they were transferred to the Gavin Herbert Eye Institute and will become a part of their continuum of care.

> The best way to help our valued donors is to return to our roots and focus all our efforts on sight-saving research.

During the past 45 years, DEF has accomplished amazing advances in eye research. The collaborative opportunities discussed in this newsletter illustrate our decision that the best way to help our valued donors is to return to our roots and focus all our efforts on sight saving research.

Our Discovery Eye Foundation scientists are working on novel therapies for healthy aging, age-related macular degeneration, diabetic retinopathy, glaucoma and keratoconus. Your support will increase our discovery of new treatments for sight-robbing eye diseases that affect you and your family.

5 Easy Ways to Help DEF

DEF's groundbreaking research needs your help to move forward. Try these easy ways to support DEF and its sight-saving work:

1. Shop using **smile.amazon.com** instead of amazon.com.
2. Celebrate events or honor others with a **tribute donation** to DEF.
3. Enjoy the ease of **monthly donations** charged to a credit card.
4. Maximize your gift by using your employer's **matching program**.
5. **Donate stocks and bonds** in DEF's name.

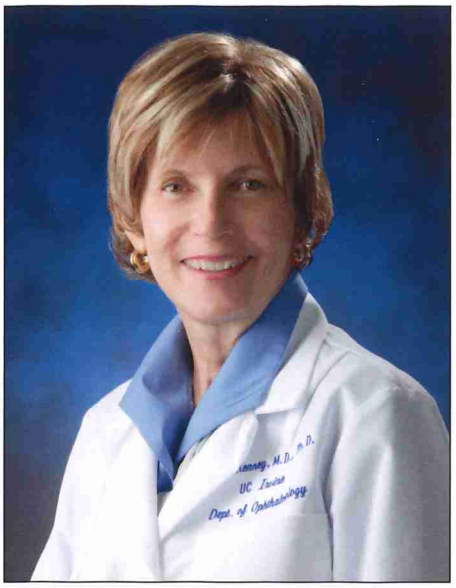
For more details, visit **www.discoveryeye.org/other-ways-you-can-help**.

Collaboration Leads to Better Outcomes

Dr. M. Cristina Kenney, Discovery Eye Foundation's director of research, remembers a time when many scientists sat in their lab doing their research, not sharing their theories and results beyond a select few researchers in their own lab and, therefore, missing out on the benefits of collaboration to move therapies and potential treatments forward more quickly.

Thankfully, that's no longer the case. "Now, it's much more hopeful and more exciting," Kenney says. "Thanks to increased collaboration, there is a faster pathway to get ideas to become products and, ultimately, help people." Kenney sees three types of collaboration that have really changed the way research becomes "translational" — translating an idea or finding to a product or therapy that can be used to help people.

First, there is working with physicians in one's own field to gather patient data and samples. Kenney is currently collaborating with Dr. David Boyer of the Retina-Vitreous Associate Medical Group in Los Angeles, along with Drs. Baruch Kuppermann and Stephanie Lu of the Gavin Herbert Eye Institute at University of California, Irvine (UCI). These ophthalmologists help Kenney develop individualized cell culture models by providing evaluations and blood samples in the quest for treatments for age-related macular degeneration (AMD).



Dr. M. Cristina Kenney

"Thanks to increased collaboration, there is a faster pathway to get ideas to become products and, ultimately, help people."

Second is collaborating with those outside your field. Kenney currently is working with researchers in the fields of cardiology, Alzheimer's disease, color-vision deficiencies and genetic analyses. In this way, novel techniques or methods developed for other fields can be applied to AMD models.

For example, Dr. Kimberly Jameson is a mathematical behavioral scientist at UCI who studies color vision. Together, she and Kenney are developing a model to identify early color changes in the photoreceptors of the macula. This could lead to identifying — and treating — very early stages of AMD.

Many aging diseases, such as AMD and Alzheimer's, follow a similar process, but occur in either the retina or brain, respectively. Kenney is working with Dr. Pinchas Cohen, dean of the USC Leonard Davis School of Gerontology, who specializes in Alzheimer's disease. AMD and Alzheimer's are aging diseases that involve many similar proteins. Cohen's laboratory has identified peptides that can keep brain cells alive longer. Kenney's lab has shown these same peptides can also protect the mitochondria of AMD patients. This collaborative project could lead to the first treatment for the dry form of AMD.

Third are collaborations with universities and industry. It costs hundreds of millions of dollars to take an idea through the FDA process and clinical trials. For an individual researcher to turn his/her great ideas into a product, then market and distribute it, is nearly impossible. So researchers partner with companies that can help "translate" ideas, so treatments actually reach patients. Additionally, many big companies are restructuring and downsizing their internal research and development arms, and partnering with outside researchers and universities.

"Collaboration has changed the way many of us do research. In the

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Collaboration

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past, there was more interest in 'basic' research — just learning mechanisms. We weren't as concerned about how it would affect a patient later," Kenney says. "Now everything is pushed toward translational research, because that is where you make the biggest difference."

It's a place where DEF has lived since its inception. DEF has always believed in an integrated model, helping scientists take their ideas, test them, then take the next step to collaborate with others to reach patients. Kenney credits this philosophy to the collaborative nature of the organization. "DEF is composed of patients, clinicians and researchers, all working toward the common goal of helping patients through research. We don't lose sight of the end goal," she says.

Leave Your Legacy to Save Vision

As a loyal donor to the Discovery Eye Foundation, you have shown your vision is important to you. What if you could do more? What if you could leave a legacy to continue supporting eye research to help your family and friends keep their sight, too?

A great way to do this is by making DEF a beneficiary in your will or revocable living trust through our Vision Legacy society. You can also make DEF the beneficiary of a life-insurance policy, a retirement plan or a charitable trust. You can even use your gift to target a particular project that is close to your heart, such as macular degeneration, keratoconus or stem-cell research.

For more information about how you can become a member of Vision Legacy and include DEF in your plans, please visit our website at www.discoveryeye.org, and look under "You Can Help," or contact Dr. Anthony Nesburn, directly, at 310-623-4466 or anesburn@discoveryeye.org.

Put DEF on Your List, and Give Someone the Gift of Sight

Does your gift list seem endless?
Are you tired of shopping already?
Give the gift of sight with a tribute donation to DEF. Please visit www.discoveryeye.org/you-can-help, or call (310) 623-4466.

SAVE THE DATE

Annual Major-Donor Appreciation Lunch

Feb. 11, 2017

Shutters at the Beach
Santa Monica, Calif.

Invitations to follow