



DISCOVERY

THE DISCOVERY EYE FOUNDATION



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

Thanksgiving 2017

DEF Researchers Screening FDA-Approved Drugs for AMD

In the United States, age-related macular degeneration (AMD) is the most common cause of permanent vision loss in the elderly population. The dry form of AMD affects 85–90 percent of patients and involves slow cell death of the central retinal cells. Unfortunately, there currently are no good treatments for dry AMD. Wet AMD is less common (10–15 percent of patients) but more visually devastating, because it involves formation of abnormal blood vessels beneath the macula, resulting in sudden and sometimes profound vision loss. Fortunately, we have several treatments for wet AMD.

We know AMD patients have damaged mitochondria that cause the cells to undergo an early death. Once the mitochondria die, the cells lose their function and die also. Therefore, it is imperative to keep the mitochondria healthy and functioning.

DEF Research Director Dr. Cristina Kenney's laboratory uses a unique, "personalized" cybrid cell model to screen drugs that specifically target mitochondria. To date, the researchers have different cybrid cell lines representing 60 different individuals with eye diseases. They are working with companies and collaborators that have identified drugs with potential to protect AMD cells from dying. Kenney's group is the leading laboratory studying the role of mitochondrial genetics and function in AMD. They are constantly expanding our library of AMD and age-matched non-AMD cybrid cell lines, so they can be tested with the novel, mitochondria-targeting drugs.

A new approach used in the laboratory is using the "personalized" AMD cybrids to screen drugs that have already been approved by the FDA for use in other diseases. The goal is to see if these FDA-approved

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**Meet the Researcher:
Dr. Jing Yang**

When Dr. Jing Yang was practicing ophthalmology at the Peking University Eye Center (China), she saw many patients with retinal degeneration. “I got so frustrated when I had to tell patients there was no treatment for them,” she says. “I wanted to see how I could help.”

Hoping to do just that, she moved to Denmark to begin researching retinal progenitor cells. At the University of Copenhagen, she met Dr. Henry Klassen, who was already working with these cells. In 2006, DEF support gave Yang the opportunity to work full time researching retinal progenitor cells with Klassen at UC Irvine.

“My family thought I was crazy for changing my career to research,” she says, “but in my opinion, developing a novel treatment for unmet need in retinal degeneration was the best way to help patients.”

As their original project studying the use of retinal progenitor cells to treat retinitis pigmentosa completes its clinical trials (read more about the project on the back page), Yang is most excited about exploring their application for other retinal degeneration diseases, including diabetic retinopathy (DR). “We are finding good primary data that show the neuroprotective factors of the cells can rescue DR cells and slow the disease,” she says. “It’s hard to bring the retina back, but the earlier we can step in, the more we can stop progression.”

“It’s what I wanted to do many years ago,” Yang says, remembering not being able to help patients in her clinical practice. “I just didn’t realize it would take so long! But I feel like my dream is coming true.”

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



Give the gift of sight with a tribute donation to DEF. Visit www.discoveryeye.org/you-can-help, or call (310) 623-4466.

The information published in the DEF newsletter is intended to help you better understand various eye diseases and available treatment options. DEF does not sell or endorse products, treatments or procedures. Every effort has been made to ensure the accuracy of the information presented. It is not intended to be a substitute for the advice and recommendations of your professional eye-care providers.

Who's on First for my Eyes?

The difference between an optometrist and an ophthalmologist

There are a number of players on your eye-health team, among them your optometrist and your ophthalmologist. It's not always obvious, however, what position each plays and when you should call on which professional.

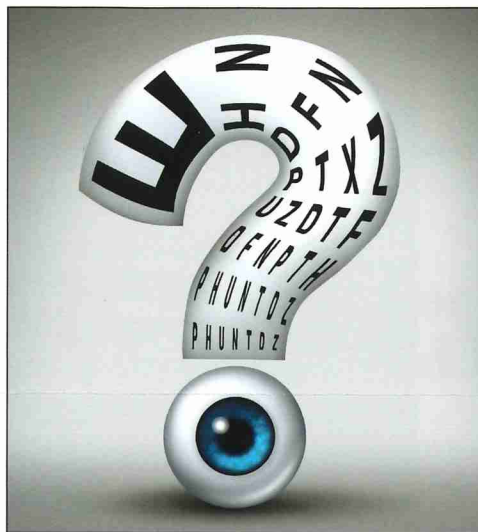
Optometrists

An optometrist holds a doctor of optometry (OD) degree. An optometrist generally completes a four-year college program in the sciences, plus four years of post-graduate professional training in optometry school.

Optometrists examine eyes for vision and health problems, and correct refractive errors with glasses and contact lenses. Some optometrists also provide low-vision care and vision therapy. In the United States, optometrists may prescribe medications to treat certain eye problems and diseases, and their scope of care can differ by state. While not licensed to perform eye surgery, optometrists can play a role in pre- and post-operative care, if you have eye surgery performed by an ophthalmologist.

Ophthalmologists

An ophthalmologist is a medical doctor (MD) or a doctor of osteopathic medicine (DO), who specializes in eye and vision care. Ophthalmologists complete four years of college, four years of medical school, one year of internship and at least three years of residency in ophthalmology. Some ophthalmologists also have one or two years of additional training to become specialists in cornea, retina, glaucoma, oculoplastics, pediatrics or neuro-ophthalmology.



Both optometrists and ophthalmologists perform routine eye exams, and both are trained to detect, diagnose and manage eye diseases.

Ophthalmologists perform eye exams, diagnose and treat diseases, prescribe medications and perform eye surgery. They also prescribe corrective lenses.

Which one do I call?

Both optometrists and ophthalmologists perform routine eye exams, and are both trained to detect, diagnose and manage eye diseases. Both can prescribe corrective lenses, and both must fulfill continuing education requirements to maintain their licenses.

If your eyes are healthy, which type of professional to see is a matter of personal preference. If you already have a medical eye problem, such as diabetes, or a family history of AMD or glaucoma, you should consider seeing an ophthalmologist.

While most optometrists offer medical treatment for common eye problems and chronic eye diseases, such as pink eye, dry eye or allergies, certain eye disorders require treatment by an ophthalmologist, particularly if you need surgery, laser therapy or other specialized care.

In some cases, your optometrist and ophthalmologist may work as a team. In such a setup, the optometrist is the equivalent of your primary-care doctor, who monitors your ongoing condition and care, and the ophthalmologist is your specialist, who manages your condition medically and/or performs surgery. For routine care, you may want to check with your insurance provider to see which, if either, professional they cover and for what services.

Screening

(continued from front)

drugs can be “repurposed” to increase the cell viability in human retinal cells. Preliminary studies have demonstrated that some of these drugs can rescue the damaged mitochondria found in the AMD cybrid model.

If one or more previously FDA-approved drugs can be shown to rescue the AMD mitochondria, this could be “fast-tracked” for AMD patients, saving millions of dollars and years of clinical trials that are normally needed to get a new, unproven drug through the FDA process. This could shorten the time to clinical development by years and get help to AMD patients faster.

Thanks to this DEF-funded research, we are nearing the time for better AMD treatments.

6 Easy Ways to Help DEF

Discovery Eye Foundation’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.
6. Join our **Vision Legacy** planned-giving society, and leave the gift of sight.

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

DEF Support Promises Treatment for RP

Thanks to pioneering research funded by DEF, a therapy for retinitis pigmentosa (RP) may be one of the first stem-cell treatments approved by the FDA.

RP is a hereditary blinding disease that begins with the loss of rod photoreceptors in the retina and results in complete blindness. The new treatment inserts human retinal progenitor cells — similar to stem 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.

As a novel therapy aimed at an untreatable disease, this research project was set up to move rapidly down the clinical pathway, according to DEF-funded

researcher Dr. Henry Klassen, an associate professor of ophthalmology with UCI’s Gavin Herbert Eye Institute.

“Without DEF funding, this project could not have progressed as quickly as it has.”

Clinical trials began in 2015 and will be completed this year. The next stage is to formally examine the treatment’s potential for efficacy. If all keeps going as well as it has thus far, the drug should be generally available to the public in the early 2020s, Klassen says.

“Without DEF funding, this project could not have progressed as quickly as it has,” DEF Medical Director Dr. Anthony Nesburn says. “Continued financial support for DEF is essential to ensure this and other research continues to combat sight-robbing diseases long into the future.”