

# DISCOVERY

THE DISCOVERY EYE FOUNDATION

The Discovery Eye Foundation (DEF) supports research and is dedicated to finding treatments and cures for sight-threatening eye diseases.



## DEF E-Newsletter

Fall 2019

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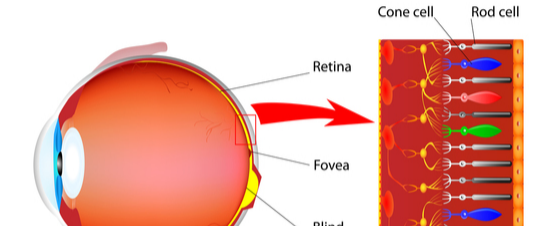
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## Color Vision, AMD and DEF — Collaborations aim to prevent AMD progression

Discovery Eye Foundation-supported researchers are closer to a way to detect age-related macular degeneration (AMD) earlier, thanks to a number of collaborations and a recent grant from the National Eye Institute.

### Color Vision and Macular Degeneration

People see color thanks to cone photoreceptors in the macula area of the retina. There are three types of cone photoreceptors that see color: The blue cones distinguish short wavelength light, the green cones see medium wavelength light, and the red cones perceive long wavelength light. The light-sensitive proteins that make possible color perception within these cones are called "opsins." The genes that make up these opsins allow people to see color, so the genetics of one's opsins influence how much color a person can see.



DEF Research Director [Dr. Cristina Kenney](#) was approached about five years ago by [Dr. Kimberly Jameson](#) of the Institute for Mathematical Behavioral Sciences at UC Irvine. Jameson is interested in the perception of color vision — specifically how it relates to the genetics of opsins. Since Kenney's lab is known for studying genetics and AMD, this interest fits perfectly into the lab's work.

One of the early signs of macular degeneration is the loss of color-vision perception. With the help of DEF funding, together, Kenney and Jameson are looking at patients' opsins and color vision to determine if they can help develop early diagnostics for people with AMD.

[Color Vision, AMD and DEF - Collaborations aim to prevent AMD progression cont'd](#)

## DEF Donor Helps With Cancer Collaboration

Researchers are realizing mitochondria play a key role in age-related diseases, such as age-related macular degeneration (AMD), and Alzheimer's and Parkinson's diseases

This is not news to DEF Research Director Dr. Cristina Kenney, who has been studying mitochondria for many years; it is the basis for much of her research on AMD and aging.

Most recently, Kenney has entered into a collaboration with Dr. Daniela Bota, medical director of the Neuro-Oncology Program at UC Irvine, to investigate the role of mitochondria in cancer-related fatigue and "chemo-brain." Bota has found that mitochondria play an important role in the development of cancer, as well as in the response of an individual to treatments.

"We're now doing work around the process of fatigue as a response to chemotherapies," Kenney says. "Specifically, we are also helping to investigate the condition known as 'chemo brain,' where after treatment, the brain doesn't function well. We believe it is the insult of chemo drugs to the mitochondria — the energy producers of cells — that causes fatigue, 'chemo brain' and even retinopathy."

Thanks to funding from a DEF donor, the researchers are looking at the idea of employing protective agents, such as antioxidants, to minimize the negative effects of chemotherapy. *Stay tuned!*

## Meet the Researcher: Samantha Bradford, PhD

Growing up, Samantha Bradford always liked math and science. "I knew I wanted to do something in a medical field, but I still wanted to be able to do the math and science, so research was perfect for me," she says.

Armed with a bachelor's degree in biological engineering from the University of Missouri, Bradford earned her doctor of philosophy in biomedical engineering at UC Irvine. For the past five years, she has been working in the lab of DEF-funded researcher Dr. James Jester, the Jack H. Skirball Endowed Research Chair and professor in the Department of Ophthalmology and Gavin Herbert Eye Institute at UC Irvine.

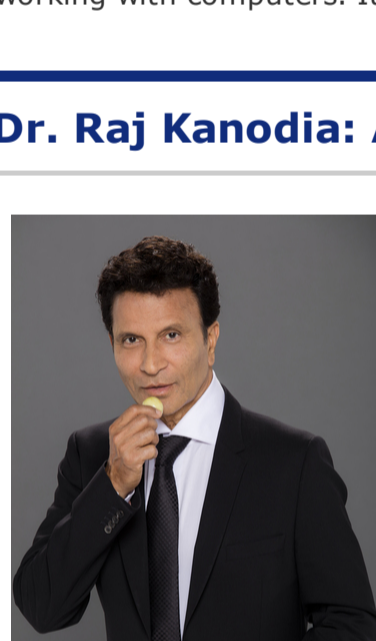


Samantha Bradford, PhD

Bradford is part of a research group that has developed a new corneal crosslinking device that uses lasers to stiffen the corneal tissue of people with keratoconus. The novel two-photon device allows doctors to "focus really tightly and treat specific areas. It is a lot more targeted than other methods using UVA light," she says. "With our method, we don't have to remove the epithelium, so it means less pain, faster healing and less damage overall for patients."

As the project continues toward building the device for use on humans in the clinic, Bradford relishes her role in the lab: "It's different every day and never monotonous. One day, I'm working with animals, the next day I'm playing with lasers, the next I'm working with computers. It's just fun."

## Dr. Raj Kanodia: Amla for AMD



As a child in India, [Dr. Raj Kanodia](#) was exposed to a fruit called [Amla](#), also known as Indian gooseberry. The food fascinated him even then, and he set about studying it for much of his life.

Fast forward to current day, and Kanodia is a renowned plastic surgeon in Beverly Hills, known as the "king of the Hollywood nose job." Yet he is more interested than ever in Amla.

"I have studied the ancient Ayurvedic literature and learned about Amla's benefits for the revitalization of cells," he says. "It improves the mitochondria, which are the batteries of every cell."

Kanodia has joined forces with DEF Research Director Dr. Cristina Kenney to investigate whether Amla can help "repair, improve and revitalize" cells in the macular portion of the retina.

[Dr. Raj Kanodia: Amla for AMD cont'd](#)

## Reaching Out to the Community: FREE Seminar

Please join us on **September 10, 2019**, for a free seminar to learn about **Age-Related Macular Degeneration & Alzheimer's Disease: Similar Diseases, Different Locations, Possible Common Treatments**

The seminar will be held at the **Florence Sylvester Memorial Senior Center**

23721 Moulton Parkway, Laguna Hills, CA 92653

For more information, please call 310-623-4466.

**The Discovery Eye Foundation is committed to finding the answers that will preserve the vision of millions of people.**

**Our groundbreaking research needs your help to move forward!**

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