



**Macular
Degeneration
Research**

News

SPRING 2022

RESEARCHERS DISCOVER MECHANISMS UNDERLYING DRUSEN FORMATION

Study could lead to early treatment for macular degeneration

Macular Degeneration Research-funded scientists at the University of Colorado have provided groundbreaking insights into the mechanisms underlying macular degeneration. This could lead to early diagnosis and treatment for geographic atrophy, the dry form of this disease that is currently untreatable.

Miguel Flores-Bellver, PhD, and Valeria Canto-Soler, PhD, found that the retinal pigment epithelium (RPE), which nourishes the retina, naturally releases exosomes. These nanosized cell particles contain both normal proteins and proteins associated with drusen—the yellowish waste deposits that are a key indicator of macular degeneration.

However, under stressful conditions, such as that in macular degeneration, the RPE cells released about 20 times more drusen-associated proteins, providing a potential biomarker for this vision-robbing disease.

“Miguel’s research shows that when RPE cells are exposed to an environment similar to that leading to [macular



Your support makes pioneering advances like this possible!

degeneration], they respond with a dramatic increase in the release of drusen-associated proteins via exosomes,” said Dr. Canto-Soler, in a university press release about the study, which was published in the *Journal of Extracellular Vesicles*.

For years, researchers have searched for the origins of drusen-associated proteins in macular degeneration. Now, this biomarker could be found in blood samples, tears, urine, or saliva.

This promising discovery could allow doctors to diagnose geographic atrophy in its early stages—perhaps even at the time of onset—and develop treatments to prevent drusen from accumulating under the retina in the first place.

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A variety of resources are available for people living with macular degeneration. To receive a copy of our Resource List, which has information about government programs, transportation assistance, and other special services, please call Macular Degeneration Research at 855-345-6637 or visit our website at brightfocus.org/MDRresources.

Macular Degeneration Research is a BrightFocus Foundation Program

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PRESIDENT'S CORNER

We are living in a time of groundbreaking scientific advances. Researchers we fund are blazing new pathways to better understand, prevent, and treat macular degeneration—and you help make that possible.

We're excited to share some of the promising advancements being made, including a new FDA-approved therapy for wet macular degeneration, and a discovery that could lead to a treatment for the dry form of the disease.

If you haven't done so before, you might want to sign up for one of our next Chat sessions with researchers and experts. Instructions for registering are inside.

Your generosity and commitment are making a big difference. Together, we can look forward to many more exciting breakthroughs to save sight!

Stacy Pagos Haller
President

TARGETING DRUSEN PRODUCTION IN THE RETINA

Scientists have discovered how a combination of genetic and environmental risk factors leads to the formation of small lipid droplets, which can be an early indicator of macular degeneration.

Individuals with the ApoE2 gene variation, which affects cholesterol transport, are at increased risk for developing macular degeneration. Yet until now, the reason was unclear.

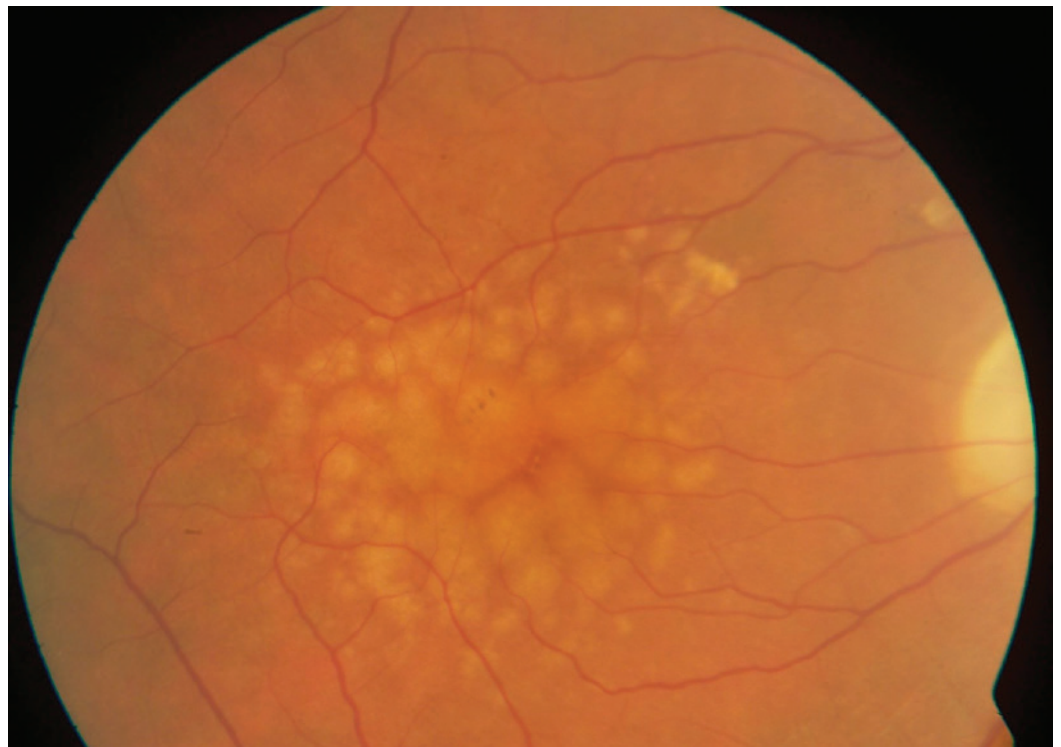
In this study, funded in part by Macular Degeneration Research, investigators found that RPE cells with the ApoE2 gene were defective in how they transported cholesterol between cells. When this defect is combined with other stressors—like aging and smoking—the immune system is activated.

Scientists used live-cell imaging to track the activity of RPE cells grown in a “dish” model. They found the

ApoE2 defect made the RPE cells vulnerable to attack by inflammatory proteins, which damaged the mitochondria inside them and set off a biochemical cascade leading to the formation of lipid droplets. These droplets are likely precursors to drusen, a major risk factor for macular degeneration.

The researchers tested three cholesterol-inhibiting drugs in the RPE cells. All of them reduced injury to the mitochondria and the formation of lipid droplets. The most effective drug was desipramine, which inhibited an enzyme activated by excess cholesterol.

This study, published in *JCI Insight*, lays important groundwork for understanding how drusen are formed and for developing new approaches to prevent macular degeneration.





FDA APPROVES NEW TREATMENT FOR WET MACULAR DEGENERATION

Last October, the U.S. Food and Drug Administration (FDA) approved a new treatment for wet macular degeneration called Susvimo. This is a watershed moment for everyone impacted by this vision-robbing disease.

Susvimo provides an alternative to the standard therapy, which requires regular eye injections of anti-vascular endothelial growth factor (anti-VEGF), sometimes as often as every four to six weeks. Instead, the medicine is administered using a port delivery system—a device the size of a rice grain that is implanted in the eye and needs to be refilled with anti-VEGF far less frequently.

The anti-VEGF medicine delivered by Susvimo is rooted in key, early-stage research supported by

Macular Degeneration Research, which provided pivotal funding to Peter Campochiaro, MD, at Johns Hopkins University, for pioneering work leading to its use in treating wet macular degeneration.

This new therapy is a wonderful example of the progress being made against this disease, thanks to committed supporters like you who help fund promising research. With your continued partnership, we will continue to break new ground and find better ways to prevent, treat, and one day cure macular degeneration.

For more information on Susvimo, please ask your eye doctor or contact Genentech at 833-EYE-GENE.



Macular Degeneration Research is a program of BrightFocus Foundation, a charitable organization that complies with all 20 rigorous BBB Wise Giving Alliance Standards.

MACULAR DEGENERATION: YOUR QUESTIONS ANSWERED

Q: Are some people at higher risk for macular degeneration than others?

A: Yes. White Americans are at the highest risk for developing this disease, while Hispanic and Black American populations are at the least risk. This may be due to the Western diet, which is high in refined foods, sugar, and fat, but lower in whole-food, plant-based products.

Q: Is there a connection between carbohydrate intake and vision health?

A: Evidence shows that simple sugars are bad for macular degeneration. It's best to avoid foods containing added sugar, fructose, and sucrose, as well as those that release sugars rapidly, such as soft drinks, bread, pasta, and baked goods made from white flour. Added sugars can lead to harmful inflammation. By contrast, complex carbohydrates, such as those found in fruits and beans, are broken down more slowly and are generally safer.

Q: Are there any treatments for dry macular degeneration?

A: There are a number of avenues being explored that appear to slow the progression of dry macular degeneration. They target inflammation, which has been implicated in its development. These drugs are now in Phase 3 clinical trials and are being tested with larger numbers of patients.



**Please share this newsletter with others
who may be interested!**

Register for

BrightFocus[®]
Chats

Recently diagnosed with macular degeneration?

Know someone who has it? Receive helpful information from our FREE monthly phone call with doctors, researchers, or experts in the field on timely topics. You can submit questions before or during the event.

Transcripts and audio recordings are available afterward on our website.

To register, call 800-437-2423 or go to brightfocus.org/eyechats.

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CARING FOR SOMEONE WITH LOW VISION

When a person is visually impaired, their loved ones may not be sure what type of aid they need or want. As a result, they may overprotect or withdraw.

Frank discussions among everyone affected can help. People with low vision need to communicate openly, asking for support when needed but asserting their independence as well. It may also be useful for family and friends to divide up responsibilities so that no individual gets overwhelmed.

These tasks can include adapting the home and ensuring it's safe for the person with low vision; running errands; preparing meals; scheduling medical appointments and providing transportation; housecleaning; and helping with social outings.

Assisting a person with vision loss is a team effort, which should include not only loved ones, but also physicians, visual rehabilitation specialists, and community volunteers.

Helpful Resources

American Academy of Ophthalmology (AAO)

Find ophthalmologists and get information on eye health.
aao.org/eye-health
415-561-8500

American Occupational Therapy Association (AOTA)

Certified low vision therapists may help improve your ability to perform daily activities.
aota.org
301-652-6611

National Aging and Disability Transportation Center (NADTC)

Offers transportation options across the U.S. to help mature adults live independently.
nadtc.org
866-983-3222

HomeMods.org

Provides information on modifying a home to make it safer for people at risk for falls and other injuries.
homemods.org/resources/
213-740-1364

Meals on Wheels America

Provides information on local meal deliveries and group meal locations for seniors.
mealsonwheelsamerica.org
888-998-6325

For additional resources, visit
brightfocus.org/MDRresources.



GIVE MONTHLY TO HELP SAVE SIGHT!

Monthly gifts help you do even more good in the fight against macular degeneration.

It makes giving more convenient because your gifts are automatically charged to your credit card or deducted from your checking account.

Your monthly gifts provide regular income we can count on to fund research and provide valuable information to the public.

3 Easy Ways to Sign Up:

1. Fill out the back of the enclosed reply form and select “Make this a recurring gift.”
2. Visit brightfocus.org/MDRmonthly.
3. Call us at 855-345-6637.

Thank you!



MAKE A TAX-FREE GIFT FROM YOUR IRA

If you are 70½ or older, you can lower the income and taxes from your IRA withdrawals while also supporting our sight-saving work. An IRA charitable rollover is a way you can help continue our work and reap the benefits this year.

How You Benefit

- Avoid taxes on transfers of up to \$100,000 from your IRA to our organization.
- May satisfy your required minimum distribution for the year.

- Reduce your taxable income, even if you do not itemize deductions.
- Make a gift that is not subject to the deduction limits on charitable gifts.
- Help further the work and mission of our organization.

Make an Impact Today

Your gift will help make an impact in the fight to save sight. For more information, please call Charles Thomas at 301-556-9397 or visit brightfocus.org/plannedgiving.



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