National Glaucoma Research

National Glaucoma Research Report

Fall 2023

In This Issue

Jeffrey Goldberg, MD, PhD

Current Research: Could Vision Lost to Glaucoma Be Restored?

Highly Awarded Researcher Working to Cure Glaucoma

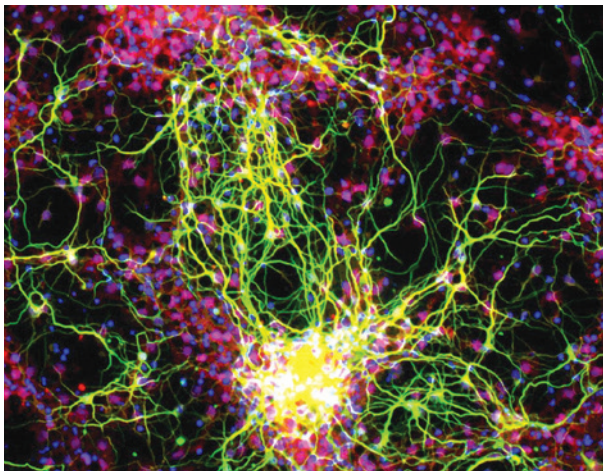
Funded by National Glaucoma Research, Jeffery Goldberg, MD, PhD, at the Byers Eye Institute at Stanford University, is studying ways to regenerate retinal ganglion cells (RGCs).

Retinal ganglion cells' degeneration is associated with vision loss in glaucoma. If successful, these findings could one day lead to a way to restore vision lost to glaucoma and other eye diseases.

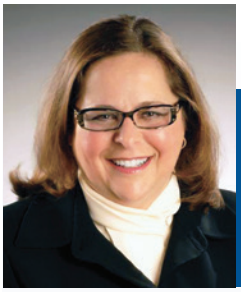
Dr. Goldberg's team is exploring a new method that effectively uses adult stem cells to rapidly generate RGCs and then transplant them into the eye. Given that the supply of primary donor cells is limited, this progress on an RGC therapy derived from adult stem cells is significant.

Their work demonstrates a highly efficient and reproducible means of induced RGC generation. While the pace of such discoveries and our understanding of how stem cells can be used for potential therapies are moving quickly, the RGC replacement therapy is not yet ready for testing in people with glaucoma.

The simplicity of the system will benefit future research moving from the laboratory into real-world practice. Important studies like Dr. Goldberg's are made possible because of support from dedicated people like you. Thank you.



Dr. Goldberg's research may one day lead to restored vision in people with glaucoma.



President's Corner

We sincerely appreciate your support for National Glaucoma Research that enables breakthrough research to forge ahead at an increasing pace.

Your generosity makes it possible for us to fund innovative research that applies technological advances directly to learning more about glaucoma. For example, the work of Jeffrey Goldberg, MD, PhD, featured in this issue of *National Glaucoma Research Report* does just that.

Dr. Goldberg is currently studying ways to regenerate retinal ganglion cells and transplant them into the eye.

Only by joining forces can we put an end to this life-altering thief of vision. Your continued support is instrumental in our collective efforts to make a difference.

Stacy Pagos Haller

A BrightFocus Glaucoma Chat with Dr. Nazlee Zebardast

Expert in the field shares promising research

BrightFocus Glaucoma Chats are monthly in-depth conversations with scientists and eye experts to share the latest about exciting scientific breakthroughs and how to manage vision loss.

One such chat was with Nazlee Zebardast, PhD, where she discussed how having a narrow angle in the eye can be a risk factor for glaucoma.

The angle often referred to is the drainage angle of the structure in the front of the eye. It's important for draining the fluid the eye makes to nourish itself and to maintain the eye pressure. People with narrower angles than normal are at risk for developing angle-closure glaucoma that can cause buildup of fluid and a sudden increase in eye pressure.

Zebardast and her team also ran a study to determine if family history was a risk for developing angle-closure.

"What we found in the study was that family history was a strong risk factor for angle-closure," Zebardast says. "And I want to emphasize this because I think it's really important for all individuals who have angle-closure to encourage their adult siblings to get screened as well."

You're invited to join us for the next BrightFocus Glaucoma Chat! To learn more about this chat and others, visit brightfocus.org/CHATS to register and listen to past chats.

First Look at Upcoming Research

We are thrilled about the new research you are helping us fund this year! Here's a sneak peek at just two of the powerful new studies National Glaucoma Research is funding, thanks to you.

Karthik Shekar, PhD, was awarded a $200,000 grant for a two-year project that seeks to create a novel methodology to produce a detailed map of the retinal surface. This map will enable a comprehensive molecular analysis of all cell types, including retinal ganglion cells and their neighboring cells.

Because of you, science is moving toward better treatments and prevention for glaucoma.

The goal is to identify potential molecular targets. The developed technology will have broader applications in studying various neurodegenerative models beyond glaucoma.

Another grantee, Shubham Maurya, PhD, was awarded a grant to investigate how lipid mediators regulate microglia, the immune cells of the brain, in the progression of glaucoma, using a combination of advanced techniques. The ultimate goal is to identify potential ways to prevent or stop the disease.

Drs. Shekar and Maurya have both been awarded the Dr. Douglas H. Johnson Award, which is presented annually to the top-rated researchers in the National Glaucoma research program. Thank you for helping fund top scientific minds!

Types of Childhood Glaucoma

Not just an older person's disease

Childhood glaucoma is a disease of the optic nerve and is often associated with elevated eye pressure. There are many different types of childhood glaucoma, including *primary congenital glaucoma*, *infantile glaucoma*, and *juvenile glaucoma*. These types are caused by an abnormal eye structure or other related medical conditions.

When there is a secondary cause or systemic disease associated with glaucoma, doctors refer to this as *secondary glaucoma*. Secondary glaucoma can be associated with several disorders, like aniridia, which is the absence of the colored part of the eye (the iris).

Physical trauma can also induce secondary glaucoma during childhood, though it may not manifest until the child is older. Any child with a history of eye trauma must be periodically screened for glaucoma development.

Glaucoma can also be secondary to other eye conditions that occur in childhood. For example, children who have had congenital cataracts removed, or who use chronic steroid eye drops for juvenile rheumatoid arthritis–associated eye inflammation, can develop glaucoma.

Early diagnosis and treatment are very important. With proper treatment, children with glaucoma can lead vibrant and full lives. Thank you for your support in finding new ways to treat and prevent glaucoma in children.

GLAUCOMA: What Is Your Genetic Risk?

People with first-degree blood relatives who have glaucoma are at an increased risk of developing this eye disease compared to the general population. The National Eye Institute encourages people with a high risk of glaucoma to have a comprehensive dilated eye exam at least once every two years.

The risk group includes African Americans over age 40; everyone over age 60, especially Mexican Americans; and people with a family history of the disease. Early detection can be very beneficial in preventing vision loss due to glaucoma.

If family members with glaucoma have had surgery or are now blind, it is even more important for you to undergo routine eye exams so that if you have the disease, it is caught at an early stage.

Finally, if you have glaucoma, let your family members know about your diagnosis so they can get a comprehensive dilated eye examination. People diagnosed with early stage glaucoma fare much better than those diagnosed at a late stage of the disease.

Register for

BrightFocus® Chats

Recently diagnosed with glaucoma? Know someone who has it? Receive helpful information from our FREE monthly phone call with doctors, researchers, and 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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Your gift will help make an impact in the fight to save sight. To learn more, please call Charles Thomas at 301-556-9397 or visit **brightfocus.org/plannedgiving.**

Thank you for supporting National Glaucoma Research!

Please share this newsletter with someone who might be interested in learning more about some of the latest advancements in research to diagnose, prevent, treat, and cure glaucoma. This newsletter is published by National Glaucoma Research, a program of BrightFocus Foundation®, a nonprofit organization located at 22512 Gateway Center Drive, Clarksburg, Maryland 20871, 301-948-3244, brightfocus.org.

Marinated Mozzarella Tomato Salad

This combination of healthy fats, antioxidants, and vitamins makes it an excellent choice for those looking to improve their overall health and well-being.

Ingredients

6 ounces of baby spinach (or one large bag)

1 handful basil leaves, chopped

2 handfuls cherry or grape tomatoes, sliced in half or whole

10-12 mini fresh mozzarella balls, marinated.

4 crackers (high-fiber seeded crackers recommended)

2 tablespoons balsamic vinegar

4 tablespoons extra-virgin olive oil (from the marinated mozzarella balls)

Instructions

1. Wash spinach and toss into a bowl. Add basil.
2. Drizzle balsamic vinegar and olive oil over the spinach and basil.
3. Add two handfuls of cherry tomatoes and 10-12 mozzarella balls.
4. Break crackers into bite-sized pieces, add on top, and serve.

Makes two servings.

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