A Promising New Strategy to Protect the Optic Nerve in Glaucoma

Repurposing an Existing Drug May Help Preserve Vision

A National Glaucoma Research-funded study led by Gillian McLellan, PhD, at the University of Wisconsin, will test a promising new treatment strategy for glaucoma. Dr. McLellan and her team of researchers plan to repurpose an existing FDA-approved drug to block a chemical growth factor thought to play an important role in processes that lead to damage to the optic nerve, resulting in vision loss in people with glaucoma. The goal is to slow or prevent permanent vision loss.

The research team will assess the ability of an oral medication that affects transforming growth factor beta signaling, to prevent progressive damage to the optic nerve. They will then determine the effects of the medication on expression of different genes and proteins in the eye tissues that are implicated.

The results will aid in confirmation and discovery of genes and pathways that contribute to loss of vision in glaucoma and provide insight into how these genes and pathways are modified by drug therapy.

This study may prove that an existing drug could be used to help aid current treatments. It will accelerate transfer of this innovative strategy to clinical trials in patients to slow or prevent the inexorable vision loss from glaucoma.
Because of your generosity, National Glaucoma Research is funding innovative science around the world, increasing our understanding of how glaucoma begins and how we can someday stop it.

Clinical trials are a critical phase of each study, playing an important role in research leading to a cure. Testing new treatments can be a slow and expensive process, delaying scientific progress. So we are investigating ways to reduce the time it takes to launch and complete this important research phase.

We want to educate people about clinical trials. Therefore, in the coming months, we will share more about how clinical trials work, key questions to ask your doctor, and how you can help make a difference to end this devastating disease faster.

With your help, we will continue to do all we can to help unravel the mysteries of glaucoma and stop it from causing irreversible blindness for people across the country and around the world.

Thank you for your partnership!

Stacy Pagos Haller
President

**SPOTLIGHT ON ...**

**Julia Richards, PhD**

With a PhD in genetics, Dr. Julia Richards took up ophthalmic genetics when she joined the faculty of the Kellogg Eye Center at the University of Michigan in Ann Arbor. She is now Director of the Glaucoma Research Center there. Her research program focuses on the underlying causes of hereditary eye disease and the normal processes of ocular aging. And it hits extremely close to home.

Dr. Richards shares, “I had been working on glaucoma genetics for three years before I found out that I am at risk for glaucoma. I have a family history of glaucoma in three of the four branches of my family.”

In her current National Glaucoma Research-funded project, Dr. Richards will study a new angle closure glaucoma gene, MTRR, which her team found by studying a large family with iris cysts. Cysts in the iris can block the flow of fluid out of the eye, leading to build up of pressure in the eye and glaucoma. Dr. Richards will study the biochemical and functional changes to this protein that have been caused by the mutation, as well as the role of the normal protein in the eye. These investigations may lead to the development of future therapies.

Her innovative studies have been made possible with support from National Glaucoma Research, which Dr. Richards says was the very first organization to fund her faculty research. “Its support helped me start my focus on glaucoma genetics, which has been the central focus of my lab ever since.”

**Ask the Expert:**

*Can glaucoma be cured by laser techniques?*

Laser surgery can aid in controlling the symptoms of glaucoma, but no treatments currently available will cure the disease. Several forms of laser surgery can help fluid drain from the eye or decrease the amount of fluid produced. These techniques support the maintenance of normal eye pressure and minimize the risk of further damage to the optic nerve.
What Are Clinical Trials and Why Are They So Important?

Clinical trials play a critical role in the development of new treatments. Clinical trials are the final phase of the research process that ultimately determines whether a treatment will be approved for use by humans. They are the culmination of years, often decades, of work done by researchers to find ways to slow, treat, or even cure diseases like glaucoma. Unlike earlier phases of research, clinical trials are completely dependent on the volunteer participation of patients and others who are personally invested in seeing new treatments become available.

Clinical trials are undertaken to test whether a new drug or treatment is safe and effective, which requires successive levels of proof that it will effectively treat people who have a certain disease or condition. This series of clinical hurdles is referred to as Phase 1, 2, and 3 clinical trials, and each phase is closely regulated by the FDA to ensure that all steps are done properly and adhere to strict standards governing the drug approval process.

Both people with a medical condition and healthy individuals may consider participating in clinical trials. Volunteers first must meet certain criteria to qualify for enrollment. Before deciding and giving informed consent, it’s important to seek as much information as possible about the trial, and think seriously about the benefits and risks of volunteering.

Clinical trials are crucial for researchers to make progress toward discovering new treatments and a cure for glaucoma. To learn more about clinical trials and find one near you that you may be able to participate in, please visit brightfocus.org/clinicaltrials.

Exploring the Genes Involved in Closed-Angle Glaucoma

Dr. Judith West-Mays is the lead researcher in a National Glaucoma Research-funded study to determine the genes involved in a group of developmental ocular disorders known as anterior segment dysgenesis (ASD), which can lead to glaucoma.

This work involves analyzing a model of ASD in which an important gene (AP-2beta) has been deleted, causing the disruption of eye fluid flow and increased risk of glaucoma. Analysis will include measurement of interocular pressure, assessment of the timing and degree of retinal ganglion cell loss, and assessment of subsequent optic nerve axon degeneration, all of which are factors in glaucoma.

The findings from this study are expected to add to our understanding of why only approximately 50% of people with ASD get glaucoma, and how the disruption of eye development early in life can lead to a risk for closed-angle glaucoma and optic neuropathy later in life. The models may also be used for testing promising therapeutic agents for glaucoma.

Thanks to the generosity of National Glaucoma Research donors, Dr. West-Mays says she’s been “provided with an excellent opportunity to explore and expand a new area of research in our laboratory that otherwise may not have been possible.”
Tuna Avocado Lettuce Wraps

National Glaucoma Research-funded research has demonstrated the importance of a healthy lifestyle on vision disease. To help you in your pursuit of good eye health, here’s a nutritious recipe to try.

Ingredients

½ very ripe avocado
2 Tbsp. mayonnaise
1 can tuna in water, drained
¼ cup green olives, halved
1 scallion, diced
2 Tbsp. green chiles, diced
2 large leaves of green leaf lettuce

Directions

1. Mash avocado until creamy, then mix with mayonnaise.
2. Add tuna, olives, scallion, and chiles to avocado mayo mixture.
3. Place one scoop of tuna salad on each lettuce leaf and enjoy!

Serves 2.
Source: alzheimers.net

Creating a Legacy with Long-term Impact and Lifetime Payments

Include National Glaucoma Research in your long-term estate or financial plans and leave a legacy that will impact future generations. One way to do this is called a charitable gift annuity. This allows you to help shape the future of National Glaucoma Research while you receive fixed, dependable payments for life.

For more information about this type of giving, or if you have any questions, please visit brightfocus.org/plannedgiving or call Lauren Fields at 1-855-345-6647.

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.

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