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Targeting a Key Protein to Prevent Glaucoma



Hannah Youngblood, PhD

Thanks to your support, groundbreaking research is shedding light on the causes of a common form of glaucoma known as pseudoexfoliation glaucoma (XFG), which affects over 10 million people worldwide. Hannah Youngblood, PhD, a National Glaucoma Research-funded scientist at Georgia Tech, is exploring how a specific protein called LOXL1 may increase or decrease a person's risk for developing this disease.

Variations in the LOXL1 gene are strongly linked to XFG, but until now, scientists haven't fully understood why. Dr. Youngblood's research is the first to compare the protein's structure with and without these genetic variations. Her work focuses on how LOXL1 interacts with another protein called fibulin-5, which helps guide it to the correct location in the eye. When LOXL1 is misdirected, it may cause damaging material to build up, leading to vision loss.

This exciting two-year study may uncover how to prevent glaucoma before it starts, rather than just managing symptoms.

Because of your generosity, researchers like Dr. Youngblood are pushing science forward. She says, "As both a vision researcher and a daughter of someone with glaucoma, thank you for your generous, sustained support of glaucoma research."

Register for

Glaucoma



Chats

Recently diagnosed with glaucoma? Know someone who has it? Join our FREE monthly phone call with doctors, researchers, and experts on glaucoma to receive valuable information. You can submit questions before or during the live event. Transcripts, audio recordings, and podcasts are available on our website.

To register, call **855-345-6647** or go to brightfocus.org/NGRchats.



President's Corner

I am inspired by the pioneering research made possible by your generosity. Thanks to you, scientists are accelerating discoveries that bring us closer to new treatments for glaucoma and a future without vision loss.

For example, Dr. Shruti Patil is modeling optic nerve damage to better understand how pressure and strain affect nerve fiber health. And Dr. Hannah Youngblood is exploring how a specific protein may increase or decrease a person's risk for developing glaucoma. National Glaucoma Research is proud to award over \$1.8 million to 10 new, innovative studies from the next generation of scientists who are bringing new hope and innovation.

Your support now is more important than ever as federal research funding is being cut. Together, we are advancing science, funding bold ideas, providing valuable information to the public, and creating hope for millions. Thank you.

Stacy Pagos Haller



The Dilated Eye Exam: Your Window to Eye Health

While no one looks forward to the hours of blurry vision you experience after a dilated eye exam, it is one of the most powerful tools for protecting your vision. Here's why this temporary inconvenience is worth it.

Why Dilation Matters When your pupils are small, your eye doctor can see only a limited view of your retina and optic nerve. Dilation drops expand your pupils, giving your doctor a complete view of the back of your eye—the only place in your body where part of your central nervous system is visible without surgery.

What It Reveals A dilated eye exam can detect glaucoma, macular degeneration, diabetic retinopathy, retinal tears, and even eye tumors before symptoms appear. Early detection often means better treatment outcomes and preserved vision.

What to Expect After receiving dilating drops, your pupils will fully expand in 15 to 30 minutes. You'll experience light sensitivity and blurred vision for 4 to 6 hours, so bring sunglasses and arrange for a ride home.

When to Schedule Most people should have annual dilated eye exams starting at age 60. African Americans should begin receiving them at age 40 due to a higher glaucoma risk, while diabetics need to get a dilated eye exam soon after diagnosis, regardless of age.

Thanks to you, we're advancing new treatments that protect vision and improve outcomes while providing vision-saving information like this to the public.



Shruti Patil, PhD

RESEARCHER SPOTLIGHT: Shruti Patil, PhD Modeling Optic Nerve Damage to Discover New Glaucoma Treatments

Glaucoma damages the optic nerve, often beginning with injury to the retinal ganglion cell (RGC) axons—fibers that carry visual signals from the eye to the brain. One key factor may be the stiffness of the optic nerve head, but until now, it's been difficult to study this process in a realistic lab setting.

With support from National Glaucoma Research, Shruti Patil, PhD, of Indiana University School of Medicine, is building a breakthrough model to change that. Her innovative 3D microfluidic hydrogel system re-creates the

mechanical environment of the optic nerve head using stem cell–derived RGCs. By adjusting the stiffness of the gel, Dr. Patil can closely examine how pressure and strain affect nerve fiber health.

This is the first model to accurately mimic both the structure and physical stress experienced by RGC axons in glaucoma. In doing so, it may reveal exactly how damage begins—and how we might stop it.

Thanks to your generosity, pioneering research like Dr. Patil's brings us closer to treatments that protect the optic nerve and preserve vision for millions at risk of blindness.

Research Grants Awarded to Help Defeat Glaucoma

National Glaucoma Research is funding 10 new, innovative studies from scientists around the world with over \$1.8 million in support. Grant recipients are investigating a wide range of scientific approaches, including novel treatments, early detection methods, and efforts to protect and regenerate retinal ganglion cells that could preserve or restore vision.

2025 National Glaucoma Research grant recipients:

Brad Fortune, OD, PhD

Legacy Devers Eye Institute

Tatjana Jakobs, MD

Schepens Eye Research Institute of
Massachusetts Eye and Ear

Colleen McDowell, PhD

University of Wisconsin-Madison

Rob Nickells, PhD

University of Wisconsin-Madison

Gavin Roddy, MD, PhD

Mayo Clinic, Rochester

Dorota Skowronska-Krawczyk, PhD

University of California, Irvine

W. Daniel Stamer, PhD

Duke University

Karl Jonas Wahlin, PhD

University of California, San Diego –
Health Sciences

Pete Williams, PhD

Karolinska Institute (Sweden)

Benjamin Xu, MD, PhD

University of Southern California

"This year's grant awards represent some of the boldest, most cutting-edge ideas in vision research," says BrightFocus Foundation President and CEO Stacy Pagos Haller. "With recent major cuts to federal research funding, private foundations like National Glaucoma Research, a BrightFocus Foundation program, are more essential than ever—stepping up to keep promising research alive, nurture early-career scientists, and accelerate breakthroughs."

National Glaucoma Research is supported entirely by donor contributions from the public and corporate sectors, and foundation grants. We receive no government funding.



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more info

Planning for Tomorrow

To thank you for supporting the future of National Glaucoma Research, we want to make it easier to support your own future and ensure your legacy lives on by supporting the causes you care about. We've partnered with FreeWill to provide a no-cost online estate planning tool. It only takes about 20 minutes to complete and will make a significant impact in the fight against glaucoma.

By using FreeWill, you can:

1. **Ensure your wishes are honored.** Your will guarantees that your loved ones will be protected even as you support your philanthropic interests, sparing your family members from unnecessary stress and legal hurdles.
2. **Give to the causes you hold dear.** Including National Glaucoma Research in your estate plan ensures that you'll make a lasting impact on critical eye disease research.
3. **Access expert guidance at no cost.** FreeWill guides you step-by-step, helping you understand complex topics—from guardianship to charitable gifts—without charging you a penny.

Best of all? The entire process is quick, secure, and designed for your peace of mind. Whether you're just getting started or updating an existing will, visit freewill.com/brightfocus and build a legacy—for your family and for scientific progress.



Financial Aid for Glaucoma Medications

Glaucoma medications can be pricey. Did you know there are resources available to help cover the costs of your glaucoma prescription medications, as well as organizations that provide financial aid or discounts? For more information, visit brightfocus.org/financial-aid.

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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