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Using AI to Detect Glaucoma Earlier

Your generosity is fueling innovative research that could revolutionize glaucoma detection—particularly for underserved communities facing the greatest barriers to care.

Benjamin Xu, MD, PhD, a National Glaucoma Research–funded scientist, is combining artificial intelligence with telemedicine to identify glaucoma earlier and reach patients who might otherwise go undiagnosed. By the time many people are diagnosed with glaucoma today, their vision loss is already advanced and irreversible—often after driving hours to see a specialist.

Dr. Xu's groundbreaking approach uses AI to analyze imaging, clinical data, and patient demographics to detect urgent cases of glaucoma. This technology can be deployed in more accessible settings, bringing expert-level screening to rural areas and underserved populations.

The goal is simple yet powerful: connect high-risk patients to treatment sooner, preserving their sight, independence, and quality of life. This pilot research will generate essential data to expand the approach globally.

Your support is helping bridge the gap between promising ideas and real-world solutions that save sight. Thank you for investing in the future of glaucoma care.





President's Corner

Thank you for being part of our community dedicated to defeating glaucoma. Your support means everything—especially during Glaucoma Awareness Month when we shine a light on this disease that can affect anyone we love: parents, siblings, children, friends.

Together, we are advancing science, funding bold ideas, providing valuable information to the public, and creating hope for millions. In this issue, you'll read about Dr. Mengya Zhao's research on why some nerve cells survive glaucoma, which could uncover new ways to protect vision. You'll also learn how to make the most of your eye doctor appointments and about giving with a charitable gift annuity.

For decades, glaucoma has been considered an irreversible blinding disease. But your support of National Glaucoma Research is helping fund groundbreaking research that offers new hope.

Together, we can accelerate science to protect sight.

Stacy Pagos Haller

Make the Most of Your Eye Doctor Appointments

Being prepared for your eye appointments helps you get the care and answers you need to protect your vision. Here are five essential questions to ask:

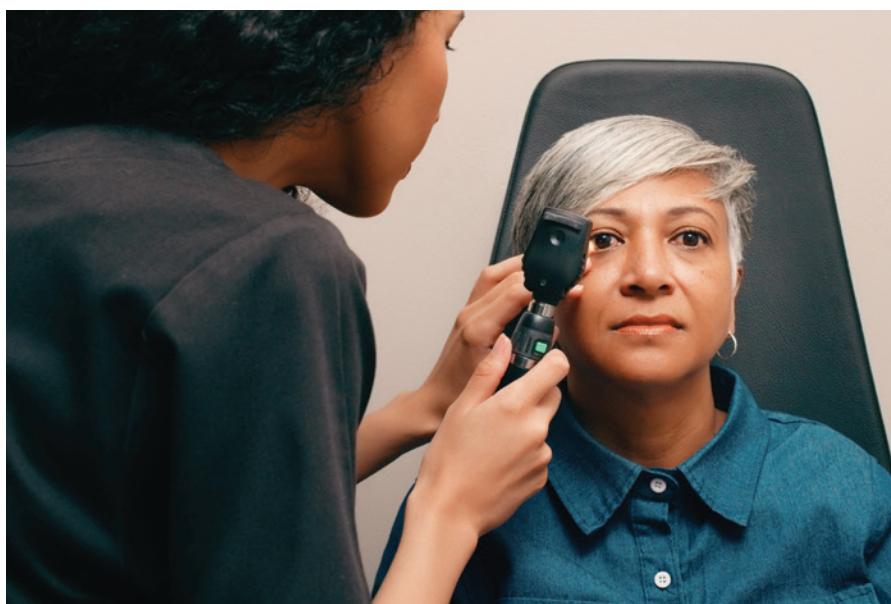
1. What tests will we be doing today, and do they include a dilated eye exam to check for diseases such as glaucoma and macular degeneration?
2. Is there anything about my medical or family history that puts me at higher risk for eye disease?
3. Are there symptoms to watch for and ways to monitor my eye health?
4. How often do you recommend I return for a comprehensive eye exam?
5. Are there lifestyle changes that might lower my risk?

Come Prepared

Bring your health insurance information, current eyeglasses or contact lenses, family eye disease history, and a list of medications and allergies. Consider bringing a friend or relative along and make sure to take notes.

If You're Diagnosed

Take an active role by asking about treatment options, potential side effects, and insurance coverage. Discuss symptoms requiring immediate attention, how the condition might affect activities like driving, and how often your eyes will be monitored. Ask whether low-vision services could help maximize your remaining vision and request educational materials about your condition.





Mengya Zhao, PhD

from the eye to the brain. But not all cells are affected equally. Some subtypes are vulnerable to damage, while others show surprising resilience. Understanding why could unlock new ways to protect vision.

With support from National Glaucoma Research, Mengya Zhao, PhD, of the University of California, San Francisco, is uncovering the secrets behind this selective survival. Using an innovative imaging technique called MERFISH, Dr. Zhao examines both the genes expressed in individual cells and their location within the retina—revealing how cells interact with their environment.

Her research shows that resilience isn't just genetic—it's also influenced by cellular position and interactions with neighboring blood vessels and

Researcher Spotlight: Mengya Zhao, PhD

Discovering Why Some Nerve Cells Survive Glaucoma—and How to Protect the Rest

Glaucoma damages retinal ganglion cells—the critical neurons that transmit visual signals

support cells. This cell-by-cell view is helping scientists understand what goes wrong in glaucoma and how to stop it.

Dr. Zhao aims to identify mechanisms that help resistant cells survive and then apply those strategies to vulnerable ones through gene therapy or new medications.

Thanks to your generosity, researchers like Dr. Zhao are pioneering treatments that could prevent vision loss before it starts.



Can Vision Loss from Glaucoma Be Restored? What the Research Says

For decades, glaucoma has been considered an irreversible blinding disease. But groundbreaking research is challenging that reality—and offering new hope for people who have lost vision to this disease.

Scientists are pursuing vision restoration through three main approaches: neuroprotection, neuroenhancement, and neuroregeneration. Neuroprotection focuses on creating a healthier environment inside the eye to prevent further damage. Neuroenhancement takes this further by helping damaged nerve cells work better, even if they're already compromised. Neuroregeneration aims to regrow lost nerve cells or their connections entirely.

Some approaches are already showing promise in clinical trials. Studies of nicotinamide (vitamin B3) supplements suggest they may improve nerve cell function. Researchers at Stanford are testing neurotrophic factors—proteins delivered through tiny implants that help cells survive and potentially regenerate. Gene therapy research is exploring ways to reprogram cells to regrow connections or even reverse cellular aging.

While these therapies aren't yet available to patients, they represent a dramatic shift in how scientists think about glaucoma treatment—moving from simply slowing disease progression to actually restoring lost vision.

Thanks to your support, researchers are transforming what was once thought to be impossible into tomorrow's reality. You're helping bring us closer to a future where glaucoma no longer means permanent vision loss.



Your Charitable Gift Annuity Can Advance Research

A charitable gift annuity offers you a secure source of fixed payments for life while supporting critical research. By transferring cash to National Glaucoma Research, you'll receive regular payments and a charitable tax deduction for the gift portion of the annuity.

Not only do you secure financial benefits but you also gain the satisfaction of furthering

breakthrough research. If funded with cash, a significant portion of your annuity payments may be tax-free. You can also use appreciated securities to avoid capital gains tax. Contact us today to learn more about how a charitable gift annuity can benefit you and glaucoma research!

To learn more, please contact us at **301-556-9362** or plannedgiving@brightfocus.org.



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.

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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