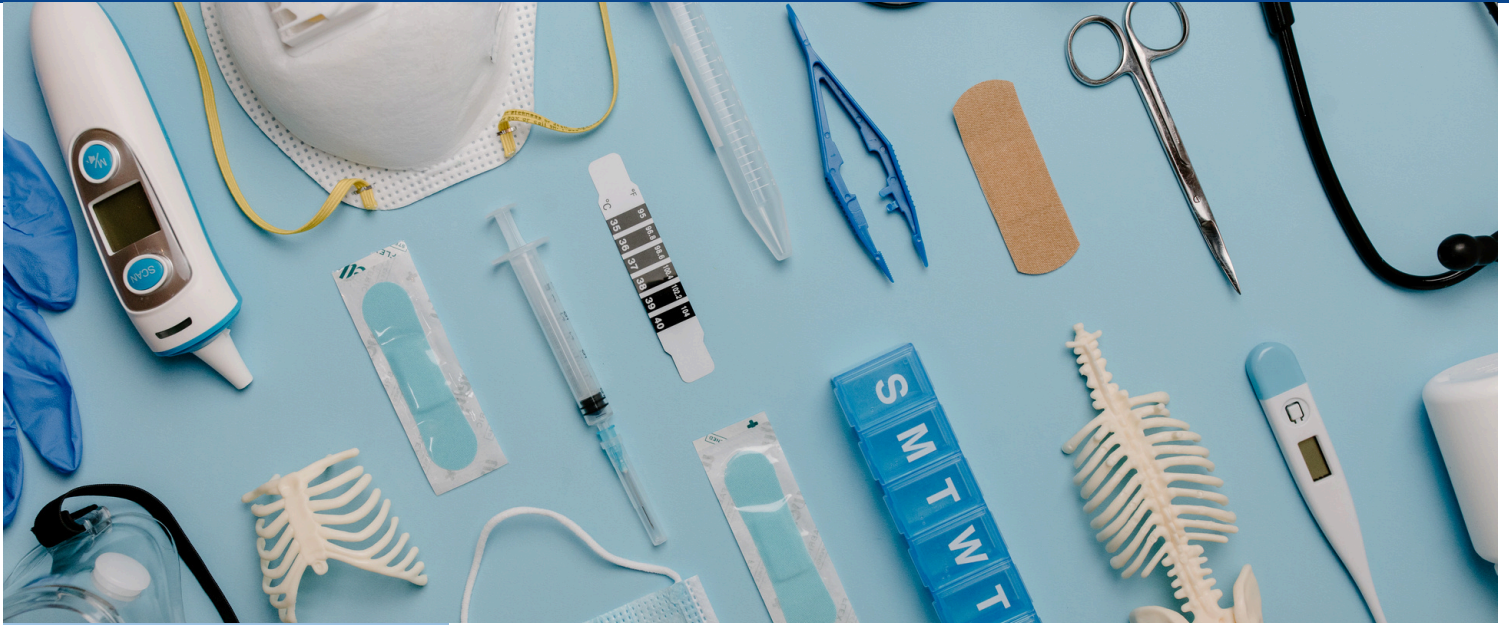


# CROSSROADS



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Dear medical newsletter readers,

This month, we bring you the most updated news in the field of medical research. January was Glaucoma Awareness Month, highlighting the importance of this sight-threatening condition. Our featured writer for this month's Rising Stars in Medicine is Ashby Glover, who discusses the impactful work of Dr. Qing Wang in the field of ophthalmology. Siri Nikku concludes with insights into the disparities surrounding micro-invasive glaucoma surgery.

Please enjoy reading The Premed Scene's February 2025 Medical Newsletter!

*Alana Saidou*

## Glaucoma Awareness Month

By: Ilana Saidov

Glaucoma is the leading cause of blindness in individuals over the age of 60. It is a common eye condition that damages the optic nerve, leading to vision loss and blindness. The optic nerve is vital for clear vision, sending visual information from the eye to the brain. This nerve can be irreversibly damaged due to high eye pressure. Since glaucoma damage cannot be reversed, the current treatments focus on decreasing intraocular pressure to slow vision loss.

While treatments to manage the condition exist, they are known to be inefficient, lead to infections, and cause inflammation. Therefore, researchers at Binghamton University are working to develop a minimally invasive and more efficient glaucoma treatment. The new treatment involves using liposomes to deliver specific medication directly to the eye. Liposomes, as opposed to current methods, are considered minimally invasive since patients only require a one-time injection. The injection will lower intraocular pressure, a critical element in glaucoma management. Furthermore, the new treatment eliminates patients' need to receive multiple eye injections, decreasing overall discomfort and adverse side effects. In the future, the researchers hope to develop a comprehensive treatment that will significantly reduce the overall consequences of glaucoma once and for all.

### Sources:

<https://www.binghamton.edu/news/story/5267/binghamton-researchers-developing-minimally-invasive-glaucoma-treatments>

<https://www.mayoclinic.org/diseases-conditions/glaucoma/symptoms-causes/syc-20372839>



## Rising Stars in Medicine: Dr. Qing Wang

**By: Ashby Glover**

Dr. Qing Wang is a rising star in the field of glaucoma research and care. An Assistant Professor of Ophthalmology at Columbia University and a clinician in the New York Presbyterian health system, she earned her MD and PhD from Columbia. Her research seeks to increase our understanding of why important cells in the eyes are lost due to glaucoma and to develop new treatments to protect and restore those cells.

Glaucoma damages the optic nerve over time, slowly leading to blindness in a manner that has earned it the title “the silent thief of sight.” In her doctoral dissertation, Dr. Wang explored the molecular pathways that guide the development of key cells for our vision. Retinal ganglion cells (RGCs) process visual information from light and transmit it to the brain. These RGCs are the cells primarily damaged by glaucoma. When RGCs die due to glaucoma, they are not replaced since they are a part of the central nervous system, which does not regenerate when damaged. Because of this, it is key to discover how RGCs form and understand how they function. In her dissertation, Dr. Wang was able to pinpoint both the genes and a group of progenitor cells that give rise to certain RGCs.

After training at Columbia, she joined the EyeSTAR program at the Stein Eye Institute of the University of California, Los Angeles. There, Dr. Wang completed a residency in ophthalmology at the Stein Eye Institute and a postdoctoral research fellowship. Her work there focused on molecular mechanisms that could work to coax RGC axons into regrowing after an injury.

Presently, Dr. Wang seeks to understand how specific cell interactions at the optic nerve head drive RGC loss in mouse glaucoma models. Her work has the potential to develop new therapies to treat glaucoma. Between her research and her work as a clinician with glaucoma patients, Dr. Wang is an inspiring figure in the fight against “the silent thief of sight.”

### Sources:

<https://www.nei.nih.gov/about/news-and-events/news/glaucoma-silent-thief-begins-tell-its-secrets>

<https://www.vagelos.columbia.edu/profile/qing-wang-md>

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<https://glaucoma.org/articles/why-retinal-ganglion-cells-are-important-in-glaucoma>





## Racial Disparities in Microinvasive Glaucoma Surgery

By: Siri Nikku

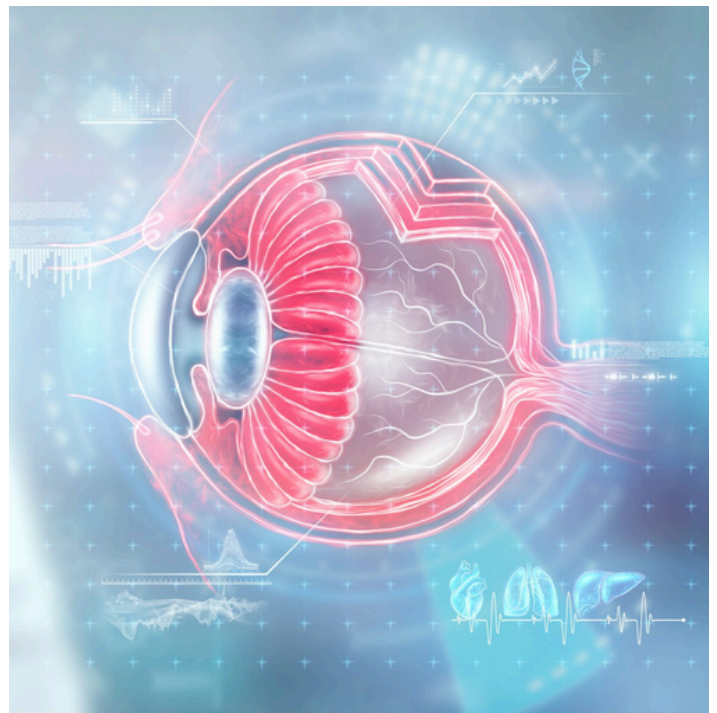
Glaucoma is treated by decreasing intraocular pressure, the only known risk factor that can be modified through pharmacotherapy, lasers, and surgeries. Traditional surgeries are usually performed for eyes with advanced glaucomatous progression but have a high level of associated morbidity.

As a result, micro-invasive glaucoma surgery (MIGS) has gained traction due to its earlier intervention and more personalized care. MIGS has also managed mild-moderate primary open-angle glaucoma (POAG). However, even with the advantages of MIGS, there are still health disparities, such as patient selection and surgery time, when it comes to glaucoma surgical interventions. These disparities are due to socioeconomic factors like the type of insurance, ophthalmology testing conducted, and demographic traits such as age, race, and ethnicity. Furthermore, black populations were more at risk for ocular disease and advanced disease stages due to decreased rates of diagnostic screening and fewer outpatient visits.

A retrospective cohort study was conducted with participants having mild or moderate POAG; the experimental group included African American patients with POAG, and the control group was non-black POAG patients. After matching the cohorts by age and analyzing the calculated odds ratios, it was determined that the study's African American patients underwent fewer MIGS than the control group. POAGs are more common in African Americans, but fewer MIGS are being performed on this group, emphasizing the health inequality when it comes to glaucoma care.

Source:

<https://www.sciencedirect.com/science/article/pii/S0002939424004756>



***“Although MIGS have an indication for use in phakic eyes, a large proportion of surgeries are conducted with concomitant cataract surgery, which potentiates yet another potential reason for reduced glaucoma surgery incidence in Black patients.”***

### PLACEMENT OF SOME MIGS DEVICES

