

GLEAMS

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ARE YOU AN ANGLE-CLOSURE GLAUCOMA SUSPECT? ANGLE-CLOSURE SUSPECTS ARE PERSONS WHO HAVE NOT YET DEVELOPED ANGLE-CLOSURE GLAUCOMA, BUT HAVE FEATURES THAT MAKE IT MORE LIKELY TO OCCUR LATER.

There are two main types of glaucoma, primary open-angle and primary angle-closure, each with very different features. While angle-closure is less common than open-angle glaucoma, it usually causes more vision loss if it is not treated properly. The risk factors among angle-closure suspects are different from suspects for open-angle glaucoma.

WHAT IS THE ANGLE AND WHAT IS ANGLE CLOSURE?

The angle is the space between the clear part of the eye (cornea) and the colored part (iris), close to their meeting point near the white eye wall (sclera). The angle contains the trabecular meshwork (TM), which is the main structure that drains fluid out of the eye. The angle can be viewed by doctors with a simple office test called gonioscopy.

The earliest stage of angle closure is the 'angle closure suspect.' In these persons, the iris blocks the view of the TM during gonioscopy for at least half of the angle, but the eye pressure (IOP) is normal and the optic nerve is healthy. In the next stage, 'angle closure,' there are signs of damage to the TM but the optic nerve is still healthy. Elevated IOP in angle closure can happen either suddenly and painfully in an acute angle-closure attack, or more commonly, it develops gradually and silently. When elevated IOP causes optic nerve damage, the disease stage is called 'angle-closure glaucoma'.

TREATMENT

The standard treatment for angle closure is to prevent iris blocking the TM drainage by making a laser hole in the iris—called iridotomy. Laser iridotomy is recommended for those with 'angle closure' and 'angle-closure glaucoma.' For 'angle

closure suspects' laser iridotomy is helpful as a preventive treatment, but these eyes may also do well with a 'wait and watch' approach. Recently, a large clinical trial in Chinese angle-closure suspects found that very few untreated eyes worsened over 6 years of follow-up. However, this low risk was reduced by half in eyes treated with laser iridotomy.

Currently, there is no definitive way to identify which angle-closure suspect will develop angle closure disease in the future. So, doctors attempt to estimate this risk by evaluating a series of other factors.

FACTORS INCREASING ANGLE-CLOSURE RISK

- Smaller eyes (far-sightedness)
- Older age
- Females
- Asian and Indian ethnicity
- Having a blood relative with angle-closure glaucoma
- Behavior of the iris and choroid

The standard exam findings and other personal factors of each angle-closure suspect are taken into account by the doctor in presenting the risk and benefit of preventive laser iridotomy. In angle-closure suspects who have a cataract (clouding of the lens), surgery to remove the cataract is an alternative treatment instead of laser iridotomy.

Harry A. Quigley, MD, is the A. Edward Maumenee Professor and Director of the Glaucoma Center of Excellence at the Wilmer Eye Institute at Johns Hopkins, in Baltimore, Maryland. He has participated in glaucoma studies worldwide and published over 4,500 peer-reviewed articles.



Focus on Dr. Xin Duan's Laboratory: Restoring Vision

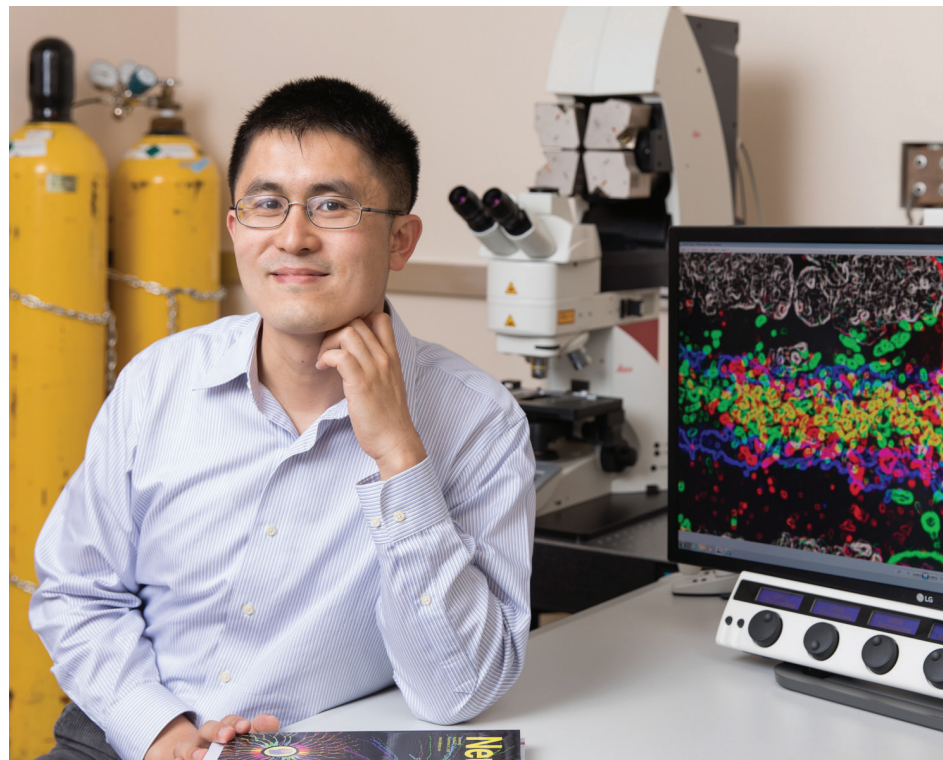
Xin Duan, PhD is an Assistant Professor of Ophthalmology at the UC San Francisco Weill Institute of Neuroscience, where in 2017 he received a Trailblazer Award in Neuroscience. His laboratory's research goals are to reconstruct neural circuits and restore normal function following neuronal injury.

Dr. Duan received his education and training at Tsinghua University, Beijing (BS degree in Biological Sciences), Johns Hopkins University in Baltimore (PhD in Neuroscience), and Harvard University in Cambridge (Neuroscience).

In 2019, Dr. Duan was selected by the Catalyst for a Cure (CFC) Scientific Advisors as one of four principal investigators in the CFC Vision Restoration Initiative, with a goal of restoring functional vision in those who have lost sight due to glaucoma. The scientists meet regularly with their advisors, who have been thrilled with the team's research progress to date, noting their "overwhelming research advancements" (Jeffrey L. Goldberg, MD, PhD) and their "ability to marshal so many investigative tools, all with high impact, that it's remarkable and unmatched by other research teams" (David J. Calkins, PhD).

With his fellow principal investigators Anna La Torre, PhD (UC Davis), Yang Hu, MD, PhD (Stanford), and Derek Welsbie, MD, PhD (UC San Diego), Dr. Xin Duan has been hard at work on optic nerve regeneration, finding innovative ways to protect and restore vision. The two main goals of the Catalyst for a Cure team are to protect the optic nerve cells that a glaucoma patient still has (neuroprotection) and to find ways to successfully replace nerve cells that have been lost (regeneration).

"My lab is dedicated to understanding how eye neurons regenerate and rejuvenate their axons," Dr. Duan told us, "and we have made significant progress to understand how eye neurons can eventually regrow to the brain to form new connections. As a team we are using models of glaucoma to study how different types of cells respond to glaucomatous conditions, and we observed that different types of ganglion cells respond differently to injury from glaucoma. We found some cells to be more resistant to injury, and we are seeking ways to help other cells to also be more resilient to prevent vision loss."



Q&A

Tips for Traveling

I'm planning a vacation this summer. What tips do you have for traveling with my glaucoma medications?



Gloria P. Fleming, MD is a glaucoma specialist and Professor in the Department of Ophthalmology at The Ohio State University's Havener Eye Institute in Columbus, OH.

If you're planning a trip, regardless of your mode of transportation, it's essential to keep your medications easily accessible.

If you're traveling by air, it's a good idea to keep your medications in your carry-on bag, so you will have them with you if your luggage is lost or delayed. All prescription medications are permitted in carry-on bags, even those in liquid form.

Be sure you have enough medication for your entire trip. According to the Transportation Security Administration (TSA), there is no limit to the amount or volume of medications you may bring in your carry-on bags. With that in mind, it may be a good idea to travel with extra medication in case you are delayed. When traveling out of the country, bring supporting documentation such as a note from your doctor.

Traveling to Different Time Zones

You may want to keep a watch or clock on "home time" and continue to take your

medication eye drops at your normal time. However, if you will be visiting for an extended period, it may be easier to adjust your eye drop routine to your destination's time zone.

Set Up Reminders

Traveling affects your regular routine, so it can be challenging to remember to take your medication. However, here are some suggestions that may help.

- Use a calendar or your smartphone to keep track of your medications. Mark the calendar when you have taken each one.
- Set up an alarm on your phone, watch, or travel alarm clock to remind you when to take your daily doses.
- If you're taking day trips, don't forget to bring your medications with you.

Talk to your eye doctor if you find your medicine routine challenging to follow. Your doctor may suggest changes that can simplify your treatment regimen. Most importantly, don't lose your medication. Safe travels!

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Robert Stamper, MD – A deep commitment to Glaucoma Research Foundation

Bob Stamper, distinguished professor and longtime Glaucoma Research Foundation Board member, celebrates 35 years of leadership with GRF and support of vision restoration and a cure for glaucoma.

In 1961, Bob Stamper was celebrating his admission to medical school when his neighbor, a young ophthalmologist, invited him to do summer research in his lab at Cornell. “How do eyeballs work?” Bob asked his neighbor.

The fascinating answer would ignite Bob’s passion for vision science. But Bob’s path to becoming a leading eye clinician, glaucoma science pioneer, educator, and Glaucoma Research Foundation advocate would not be a straight line. After medical school, Bob joined the Peace Corps, stationed in the West Indies. The experience deepened Bob’s understanding of social and public health issues often glossed over in medical school, he says.



Robert L. Stamper, MD, is Distinguished Professor of Clinical Ophthalmology and Director Emeritus of the Glaucoma Service at University of California, San Francisco. He has served on the Glaucoma Research Foundation Board since 1987, and is a member of GRF’s Gleams Editorial Board, Executive Committee, and Research Committee.

Eventually, an ophthalmology training program brought Bob to California Pacific Medical Center in San Francisco. “Bob Shaffer, who co-founded GRF and wrote the textbook on glaucoma, welcomed me to the community,” he recalls. (One day, Bob himself would author a new edition of the same textbook.) “I hung around GRF and eventually was appointed to the board,” Bob humbly says. In 2019, he was honored with GRF’s 2019 Visionary Award for his longtime service and many contributions in the glaucoma field.

After 35 years with GRF, what is Bob most proud of? “GRF took action on the concept of collaborative discovery and transformed the paradigm for clinical research around the globe,” he says. Bob currently helps set the focus of GRF through his role on the Research Committee, which identifies promising areas of investigation. Inspiration for the current Catalyst for a Cure consortium, targeting vision restoration, grew from Bob’s work with glaucoma patients who, over the long term, can lose vision. “We don’t want any patients to slip through the cracks,” Bob says. “Vision restoration will be critical to our ability to manage glaucoma for everyone.”

With the discovery of three risk-factor genes for glaucoma, Bob can see a future in which glaucoma treatment will be based on each patient’s genetic profile. Such individualized medicine, Bob believes, will make today’s most innovative care options seem old-fashioned. “There is no question,” he says, “we are moving closer to the goal line — a cure for glaucoma.”

2022 Shaffer Grants for Innovative Glaucoma Research

Shaffer Research Grants provide funding to bold investigators whose creative projects explore promising ideas and show strong potential for impact on glaucoma. Honoring glaucoma pioneer Robert N. Shaffer, MD, these one-year grants provide \$50,000 in seed money for collaborative projects that target one or more of our strategic research goals.



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