



National Glaucoma Research Report

Better Health Through Research

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New Drug Appears to Protect Retinal Cells from Damage

Drug currently in phase 1 clinical trials

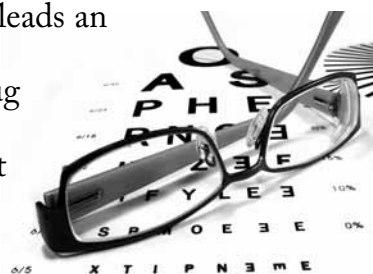
Although supported by National Glaucoma Research for other studies, ongoing work in Dr. Adriana Di Polo's laboratory recently identified an RNA-based drug that appears to protect the eye's neurons, opening the door to a potentially important treatment for glaucoma and other eye diseases.

The drug QPI-1007, injected in rats' eyes, was shown to prevent the death of retinal ganglion cells, a common feature of glaucoma, according to Adriana Di Polo, Ph.D., of the University of Montreal's Department of Pathology and Cell Biology.

Dr. Di Polo says the therapeutic effect was observed five weeks after the onset of intraocular pressure in the eye and long after ganglion cells had begun to die off. "We believe that further study of QPI-1007 is warranted in glaucoma," she concludes.

The drug, manufactured by Quark Pharmaceuticals, is now undergoing its first phase of clinical trials.

In addition to Dr. Di Polo's work with drug QPI-1007, she also leads an NGR-supported study to understand whether a drug already approved to treat Alzheimer's disease might also protect patients from glaucoma.



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Eye Drops Help Flush Out Protein Deposits

Drug to be tested in phase 2 clinical trials across the country

A new eye drop that has shown great promise in reducing intraocular pressure is entering its second phase of clinical trials. Manufactured by Inotek Pharmaceuticals, INO-8875 helps to clear away the protein material that clogs the eye's drainage system.

"Currently available first-line treatment options for glaucoma do not adequately reduce intraocular pressure in up to 40 percent of glaucoma patients," said Paul G. Howes, President and Chief Executive Officer of

Inotek. "In addition, there exist no approved products for glaucoma that act on the major pathway for outflow."

Howes says that the previous phase 1/2 clinical trial found the drug to be both effective and well-tolerated by patients, even at high doses. During the current phase 2 clinical trial, INO-887 will be tested on larger numbers of people who have either primary open-angle glaucoma or ocular hypertension.

Glaucoma Questions and Answers

I have just been told that my eye doctors are going to watch my left eye for "pre-glaucoma." What is it? And can it be prevented from progressing?

Sometimes, during an examination, an eye doctor may discover a warning sign for glaucoma, whether it's a family history, an early defect in the visual field or an irregularity in the optic nerve. Although you may not yet have glaucoma, you should be watched closely for any changes. Your eye doctor will likely track your intraocular pressure, vision, visual fields, optical coherence tomography and appearance of optic nerves.

Keep in mind that many "glaucoma suspects" or individuals with what's called "pre-glaucoma" never progress to clinically defined glaucoma. Unfortunately, we can't predict which ones will and which won't. It is possible (though not proven) that using eye drops to lower intraocular pressure can slow the onset of glaucoma. However, taking these drops without any symptoms may prove unnecessary and will also put you at risk for associated side effects. You need to discuss risks, benefits and alternatives with your doctor to determine your best course.

I have open-angle glaucoma with some loss of sight in my left eye. Is it safe to lift weights and use resistance machines in the gym? How about carrying a reasonably heavy backpack on an overnight camping trip?

It's best to avoid any activity that causes you to use a Valsalva maneuver – i.e., anything that makes you take a deep breath, hold it, bear down and strain to lift a weight or complete a motion. In particular, avoid any exercise that makes your face red and makes the blood vessels in your neck or forehead bulge.

Consult your eye doctor if you have questions about a specific activity.

When you hike, you should be able to walk in a relatively relaxed fashion, with most of your backpack's weight shifted away from your shoulders and lower back. If you have to strain to carry your load, have an experienced backpacker show you how to adjust the weight and straps to transmit the load to your hips. And have fun!

I am very nearsighted, have a history of low blood pressure and have normal-tension glaucoma, for which I take Xalatan and Timolol. What are the chances my vision will remain stable over the next five to ten years? What can I do to help to prevent the progression of the disease?

The only thing we can currently do to prevent the further progression of glaucoma is to reduce intraocular pressure. It's very important then, to take your prostaglandin analog (Xalatan) and your beta blocker (Timolol) every day.

Some studies have shown a link between normal-tension glaucoma and hypotension, or low blood pressure. If your pressure is low, your doctors may recommend raising it through such means as eating more salt. However, it is very important to have your salt intake and blood pressure closely monitored by coordination between your primary care physician and eye doctor, to prevent hypertension, which will further increase your risk for glaucoma.

Unfortunately, it's impossible to predict how glaucoma will progress in any individual. Your best option is to follow your eye doctor's instructions and to have your vision and intraocular pressure tested at regular intervals.

Exploring Ties Between Genes, Environment

National Eye Institute looks to bridge disciplines



To get a better fix on how genes and the environment interact to create glaucoma, the National Eye Institute has mounted a collaborative project, called NEI Glaucoma Human Genetics Collaboration (NEIGHBOR), that will unite clinicians and genetic researchers from across the country.

The project will collect genetic and clinical data from more than 5,000 people, half of them with primary open-angle glaucoma. A related project called Gene-Environment Interactions in Glaucoma (GLAUGEN), will gather information from another 2,400 people with and without glaucoma.

“Ultimately,” says Paul A. Sieving, M.D., Ph.D., Director of the National Eye Institute, “NEIGHBOR and GLAUGEN will serve as the platform for large-scale, genome-wide association studies to identify new genetic variations associated with glaucoma and discover how interactions between genes and the environment relate to the condition.”

Because African-Americans are at particular risk for the disease, the Institute has also mounted an African Descent and Glaucoma Evaluation Study, which is amassing clinical data from 1,200 black and white Americans to determine which techniques best detect damage to the optic nerve.

Chairman's Corner

According to a recent survey, some 90 percent of Americans have heard of glaucoma. Only 8 percent know that it comes with no early warning signs.

Welcome, in short, to one of glaucoma's most insidious features. By the time you feel it happening, it has already taken root.

The truth is that only a qualified eye doctor can detect glaucoma's subtle early signs. That's why, whenever we get a chance, National Glaucoma Research reminds people – particularly individuals at high risk – how important it is to

Getting the word out

get a comprehensive eye exam every two years or as recommended by your eye doctor.

Early diagnosis is the key to successful treatment. So, if you or someone you know is at risk, please urge them to get to an eye doctor as soon as possible. And as regularly as possible.

We don't have a cure yet. But if we can catch this disease in its earliest stages, we can give ourselves a fighting chance against it.

Brian K. Regan, Ph.D.



A Retirement Plan that Gives Back

Charitable gift annuities benefit givers and receivers alike

If you want to advance the work of National Glaucoma Research and ensure a steady stream of income for yourself or others, then consider a charitable gift annuity.

A charitable gift annuity is a contract under which you transfer cash or other assets, such as stocks or bonds, to National Glaucoma Research. In exchange, you receive a fixed sum of money, paid out over a lifetime period.

An annuity can be made for a single party or for two parties – for example, a husband and wife, an aunt and a niece, or a father and a daughter. Many times, a married couple will choose an annuity to ensure that both parties enjoy an income for life.

A charitable gift annuity is considered a particularly good

investment for people 65 years of age or older. Annuitants receive:

- Guaranteed lifetime income;
- The option of receiving payments annually, semi-annually, quarterly or monthly;
- Income tax benefits; and
- Competitive annuity payment rates

The minimum amount to establish a gift annuity is \$10,000.

For more information on this unique way of giving, contact Barbara Russell of National Glaucoma Research at 800-437-2423.

Thank you for thinking of National Glaucoma Research!



Log on to our website at

www.ahaf.org

then simply click on the National Glaucoma Research link to learn more about what's new in the world of research and information about risk factors for glaucoma. You can also follow us on Twitter ([@glaucoma_](https://twitter.com/glaucoma_)) or become a fan on Facebook.

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