National Glaucoma Research

National Glaucoma Research Report

Summer 2024

In This Issue

FDA Approves First-of-its-Kind Glaucoma Treatment

The FDA has approved a groundbreaking treatment for glaucoma called iDose. It involves a unique implant that delivers continuous medication directly into the eye to provide constant control over eye pressure associated with glaucoma.

Unlike other implants, such as Durysta, which dissolve after six months, iDose offers 24/7 drug therapy for an extended period. This new treatment is seen as a promising option to reduce the burden of daily eye drop use.

The implant delivers prostaglandin analogs, a type of drug that reduces eye pressure by enhancing fluid outflow from the eye. The approval of iDose marks a significant advancement in glaucoma treatment options.

Thanks to generous donors like you, National Glaucoma Research funded research to explore the mechanism behind how prostaglandin analogs reduce eye pressure, improving scientists' ability to understand how this class of drugs works. iDose is expected to be available in 2024.

Thank you for all you do to help fight this "sneak thief of sight." Your continuous support enables us to fund critical studies that could be the next major breakthrough and lead to a cure.

iDose offers a new method for controlling glaucoma.

President's Corner

Thank you for your continued support of National Glaucoma Research. Your contributions have been instrumental in advancing science, as we work together toward eradicating this devastating disease and saving the eyesight of millions of people.

As you read the pages of this National Glaucoma Research Report, I trust you will find inspiration in the strides we are making to comprehend the root causes of glaucoma and explore new treatments. The breakthroughs highlighted in this issue give me genuine optimism about the possibility of a future free from the grip of glaucoma.

Collaboration remains the key to putting an end to this vision-stealing adversary. Thank you again for your support.

Stacy Pagos Haller
President

AI Identifies New Genetic Targets for Glaucoma Treatment

In an innovative study, a National Glaucoma Research–funded international research team has harnessed the power of artificial intelligence (AI) to identify new gene-based targets for glaucoma treatment and prevention. The study identified several potential candidate drug targets, including genes linked to neuroprotection, which could unlock effective treatments to prevent retina and optic nerve damage.

The research further identified new links between glaucoma risk and other diseases, including diabetes, multiple sclerosis, and lupus. That means approved medications for these diseases, such as the diabetes drug metformin, may have the potential to be used for treating glaucoma.

Current therapies for glaucoma focus on lowering eye pressure, but glaucoma involves damage that is independent of eye pressure, with no available treatments. Identifying neuroprotection-related genes opens the way to developing new therapies to protect against this damage.

Researchers conducted an extensive analysis of data from multiple genetic databanks in a search for answers. Their analysis included data from thousands of eye exam images that had been evaluated using AI. This study is the first to incorporate AI approaches to investigate the genetic basis of eye nerve damage over time.

Your support helps enable exciting new treatment avenues using AI.

SPOTLIGHT ON: András Komáromy, DVM, PhD

Can Progression of Glaucoma Be Slowed by Regular Exercise?

National Glaucoma Research grantee András Komáromy, DVM, PhD, is a professor of comparative ophthalmology at Michigan State University, a board-certified veterinary ophthalmologist, and a vision scientist with a special interest in glaucoma.

András Komáromy, DVM, PhD

Dr. Komáromy is leading a study investigating the effect of regular exercise on intraocular pressure, and if exercise can slow or prevent retinal optic nerve degeneration.

This is one of the first studies investigating neuroprotection in a well-established model of open-angle glaucoma with clinical endpoints immediately transferable to human trials. Lifestyle interventions are a new approach to complement current intraocular pressure-lowering therapies to achieve a more effective therapeutic outcome.

The results will provide new data to understand the effect of exercise on the eye, and the biomarkers tested in this study can be directly translated into clinical trials.

This study could significantly impact the treatment of glaucoma and its progression. In addition, researchers anticipate the results will generate useful leads and targets for future neuroprotective treatments by establishing metabolomic biomarkers of glaucomatous neurodegeneration.

Thank you for supporting researchers like Dr. Komáromy who are advancing science and finding exciting new treatments for this sight-stealing disease.

Six Common Glaucoma Eye Tests

It is important to have an eye doctor regularly examine your eyes for glaucoma, since symptoms don't appear until irreversible damage has already taken place. These are six common eye tests that are used to test for glaucoma.

1. **Eye Pressure Check** – A tiny instrument contacts the surface of the eye after it is numbed.
2. **Visual Field Test** – This test allows your doctor to determine if you have lost part of your field of vision due to glaucoma.
3. **Glaucoma Imaging Test** – Your pupils will be dilated using eye drops, and then the doctor will photograph your optic nerve with a digital camera.
4. **Dilated Eye Exam** – In assessing your glaucoma, the ophthalmologist will dilate your eyes so they can get a magnified 3D view of your optic nerve.
5. **Cornea Thickness Test (Pachymetry)** – After the eye is numbed, a small probe is used to painlessly measure the thickness of the cornea.
6. **Angle Test (Gonioscopy)** – This test allows the eye doctor to see the "angle" where the cornea meets the iris.

Mexican Lasagna

This Mexican-Italian fusion dish is sure to satisfy!

Ingredients

6 corn tortillas

1 cup low-sodium black beans

2 cups chunky tomato sauce

1 cup shredded Monterey Jack cheese

10 oz baby spinach leaves

1 cup diced grilled chicken

1 tbsp finely chopped fresh cilantro

Nonstick cooking spray

Makes four servings.

Instructions

1. Preheat oven to 400° F.
2. Place two corn tortillas on the bottom of a greased 9" x 13" pan.
3. Add all of the beans, half the cheese, and one-third of the tomato sauce. Cover with two more tortillas.
4. Add chicken and one-third of the tomato sauce. Cover with the last two tortillas.
5. Add the last of the tomato sauce and cheese. Top with cilantro.
6. Bake for 30 minutes, or until cheese is melted.
7. Let cool and cut into squares.

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Research Uncovers New Way to Lower Eye Pressure

Researchers funded by National Glaucoma Research have uncovered a potential breakthrough in glaucoma treatment by studying Schlemm's canal, a tiny but crucial part of the eye's drainage system.

This ring-shaped vessel regulates fluid levels and eye pressure. Myoungsup Sim, PhD, and Paloma B. Liton, PhD, at Duke University, found that cell activity in Schlemm's canal could offer a new pathway for lowering eye pressure.

In glaucoma, increased eye pressure damages the optic nerve, often due to blocked outflow of liquid in the eye. This groundbreaking study highlights the importance of Schlemm's canal and its role in activating autophagy, a process crucial for cell efficiency.

Thanks to your support, these findings could enhance current glaucoma drugs and pave the way for more effective and safer treatments.

Future studies will delve into the molecular mechanisms of autophagy within Schlemm's canal and could lead to novel therapies and a cure for glaucoma.

NEW! Register for Glaucoma Chats

Recently diagnosed with glaucoma? Know someone who has it? Receive helpful information from our FREE monthly phone call with doctors, researchers, or experts in the field on timely topics. You can submit questions before or during the event. Transcripts and audio recordings are available afterward on our website.

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

Donor Advised Funds

A donor advised fund (DAF) is a charitable savings account with the flexibility to recommend grants to National Glaucoma Research. It allows you to combine the most favorable tax benefits with the flexibility to easily support your favorite charities.

How It Works

- Establish your DAF by making an irrevocable, tax-deductible donation to a public charity that sponsors a DAF program.
- Advise the investment allocation of the donated assets (any investment growth is tax-free).
- Recommend grants to qualified public charities of your choice.
- Easily give through your DAF with 3 clicks on our website at brightfocus.org/DAF-NGR.

The innovative research that generous donors like you help fund is our most powerful weapon against glaucoma. Through a DAF gift, you will join the fight, ensuring that life-changing advancements continue by supporting visionary scientists as they search for a cure.

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.