



Stargardt Disease

At a glance: Stargardt Disease

Symptoms: Loss of central vision, sensitivity to light

Diagnosis: Dilated eye exam, photos or scans of the retina, genetic testing

Treatment: Vision aids, vision rehabilitation

Clinical Trial: [Oral Metformin for Treatment of ABCA4 Retinopathy](https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/stargardt-disease/oral-metformin-treatment-abca4-retinopathy)

(<https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/stargardt-disease/oral-metformin-treatment-abca4-retinopathy>)

(Stargardt Disease)

What is Stargardt disease?

Stargardt disease is a rare genetic eye disease that happens when fatty material builds up on the macula — the small part of the retina needed for sharp, central vision.

Vision loss usually starts in childhood — but some people with Stargardt disease don't start to lose their vision until they're adults. There's no treatment for Stargardt disease, but vision rehabilitation can help people make the most of their remaining vision.

What are the symptoms of Stargardt disease?

The most common symptom of Stargardt disease is a slow loss of central vision in both eyes. Some people lose their central vision more quickly than others.

Other symptoms may include:

- Gray, black, or hazy spots in the center of your vision
- Sensitivity to light
- Needing more time for your eyes to adjust between light and dark places
- [Color blindness](https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/color-blindness)

(<https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/color-blindness>)

Some people with Stargardt disease may also lose their side (peripheral) vision.

What causes Stargardt disease?

Stargardt disease is usually caused by changes in a gene called ABCA4. This gene affects how your body uses vitamin A.

The body uses vitamin A to make cells in the retina (the light-sensitive layer of tissue at the back of the eye). Then the ABCA4 gene makes a protein to clean up the fatty material that's left over. In Stargardt disease, this gene doesn't work — so the fatty material builds up in yellowish clumps on the macula. Over time, this fatty material kills the light-sensitive cells and destroys your central vision.

Stargardt disease is an inherited genetic disease, which means it gets passed down from parents to children.

How will my eye doctor check for Stargardt disease?

An eye doctor can check for Stargardt disease as part of a dilated eye exam. The exam is simple and painless — your doctor will give you some eye drops to dilate (widen) your pupils and then check for signs of Stargardt disease, like yellowish flecks on your macula.

[Learn what to expect from a dilated eye exam](https://www.nei.nih.gov/learn-about-eye-health/healthy-vision/get-dilated-eye-exam)

(<https://www.nei.nih.gov/learn-about-eye-health/healthy-vision/get-dilated-eye-exam>)

Your doctor may do other tests to diagnose Stargardt disease or track your symptoms:

- **Color vision testing.** Stargardt disease can cause color blindness, so your eye doctor may also [test your color vision](https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/color-blindness/testing-color-blindness)
(<https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/color-blindness/testing-color-blindness>)
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- **Fundus photography.** Your eye doctor may take a photo of your retina to check for yellowish flecks on your macula.
- **Electroretinography (ERG).** An ERG lets your eye doctor check how well your retina responds to light.
- **Optical coherence tomography (OCT).** This test uses light waves to take a detailed picture of your retina.
- **Genetic testing.** Your doctor may suggest a genetic test to confirm the diagnosis of Stargardt disease.

What's the treatment for Stargardt disease?

Doctors haven't found a treatment for Stargardt disease yet. But you can take steps to slow your vision loss:

- Wear a hat and sunglasses to protect your eyes from sunlight when you go outside.
- Don't take dietary supplements with more than the daily recommended amount of vitamin A.
- Don't smoke cigarettes — and try to avoid secondhand smoke. Some research suggests that this may help slow down vision loss for people with Stargardt disease. If you're ready to quit, call 1-800-QUIT-NOW (1-800-784-8669) for free support. [You can also check out the resources on Smokefree.gov](https://smokefree.gov) (<https://smokefree.gov>).

Living with vision loss and low vision from Stargardt disease can be challenging. The good news is that there are things that can help — like low vision aids and rehabilitation (training) programs.

[Learn more about living with low vision](https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/low-vision)

(<https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/low-vision>)

What's the latest research on Stargardt disease?

Scientists are studying the biology and genetics of Stargardt disease. In a recent study, scientists [tested a new way to treat Stargardt disease](https://www.nei.nih.gov/about/news-and-events/news/scientists-successfully-test-new-way-deliver-gene-therapy)

(<https://www.nei.nih.gov/about/news-and-events/news/scientists-successfully-test-new-way-deliver-gene-therapy>)

in mice using gene therapy — which could lead to new treatment options for people with Stargardt disease.

NEI is also studying whether a medicine called metformin can help slow vision loss in people with Stargardt disease. [Learn more about this study](https://clinicalstudies.info.nih.gov/ProtocolDetails.aspx?id=2020-EI-0163)

(<https://clinicalstudies.info.nih.gov/ProtocolDetails.aspx?id=2020-EI-0163>).

[Get the latest news on NEI-supported Stargardt disease research](https://www.nei.nih.gov/about/news-and-events/news?topic=151&initiatives=All&research=All&source=All&created=All&language=All)

([https://www.nei.nih.gov/about/news-and-events/news?](https://www.nei.nih.gov/about/news-and-events/news?topic=151&initiatives=All&research=All&source=All&created=All&language=All)

[topic=151&initiatives=All&research=All&source=All&created=All&language=All](https://www.nei.nih.gov/about/news-and-events/news?topic=151&initiatives=All&research=All&source=All&created=All&language=All))

Researchers at NEI's [Ophthalmic Genetics and Visual Function Branch](https://www.nei.nih.gov/research/research-labs-and-branches/ophthalmic-genetics-and-visual-function-branch)

(<https://www.nei.nih.gov/research/research-labs-and-branches/ophthalmic-genetics-and-visual-function-branch>)

see patients with Stargardt disease. If you're interested in getting an evaluation, call 301-496-3577.

Stargardt Disease Resources

[See NEI's resources for rare diseases](https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/rare-diseases)

(<https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/rare-diseases>)

See our materials for community health educators on low vision

(<https://www.nei.nih.gov/learn-about-eye-health/outreach-campaigns-and-resources/low-vision-resources>)

Get flyers, booklets, and other resources on low vision to print or download

(<https://www.nei.nih.gov/learn-about-eye-health/resources-for-health-educators/outreach-materials?topic=241&type=All&audience=All&language=All>)

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NEI diversity program shines a light on Luke Nelson

(<https://www.nei.nih.gov/about/news-and-events/news/nei-diversity-program-shines-light-luke-nelson>)

August 1, 2024

NEI researchers home in on a new cause of Stargardt disease

(<https://www.nei.nih.gov/about/news-and-events/news/nei-researchers-home-new-cause-stargardt-disease>)

October 27, 2022

Knights Templar Eye Foundation funds NEI scientist's search for therapies to treat blinding eye disease

(<https://www.nei.nih.gov/about/news-and-events/news/knights-templar-eye-foundation-funds-nei-scientists-search-therapies-treat-blinding-eye-disease>)

July 5, 2022