

NEWS



Research to
Prevent Blindness

FALL 2023

New Experimental Drug Targets Diabetic Eye Disease

RPB grantee **Dr. Akrit Sodhi** of Johns Hopkins University School of Medicine in Maryland and his collaborators recently published research showing evidence that an experimental drug may prevent or slow vision loss in people with diabetes.

“People facing diabetic eye disease and vision loss include our family members, friends, co-workers — this is a disease that impacts a large group of people. Having safer therapies is critical for this growing population of patients,” said Dr. Sodhi.

The team focused on models of two common diabetic eye conditions: proliferative diabetic retinopathy and diabetic macular edema, both of which affect the retina, the light-sensing tissue at the back of the eye that also transmits vision signals to the brain.

Results of the study, published in the *Journal of Clinical Investigation*, show that a compound called 32-134D prevented diabetic retinal vascular disease by decreasing levels of a protein called HIF, or hypoxia-inducible factor. Doses of 32-134D also appeared to be safer than another treatment that also targets HIF and is under investigation to treat diabetic eye disease.



Dr. Akrit Sodhi, Associate Professor of Ophthalmology and the Branna and Irving Sisenwein Professor of Ophthalmology at the Johns Hopkins University School of Medicine and the Wilmer Eye Institute, received an RPB Physician-Scientist Award for his research related to diabetic eye disease.

The current treatment for these diabetic eye conditions is injections with anti-vascular endothelial growth factor (anti-VEGF) therapies. Anti-VEGF therapies can halt the growth and leakiness of blood vessels in the retina in patients with diabetes. However, these treatments aren't effective for many patients, and may cause side effects with prolonged use, such as increased internal eye pressure, a risk factor for glaucoma.

Researchers working on this study found that 32-134D was well tolerated in the eyes and effectively reduced HIF levels in diseased eyes.

Study Uncovers Inner Workings Of The Retina

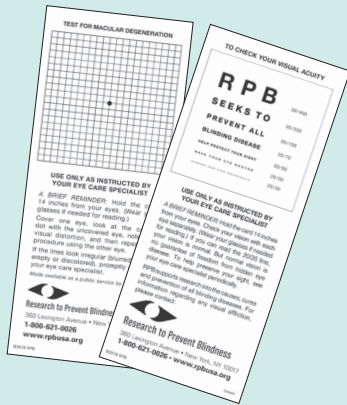
The eye is an incredibly complex organ. Understanding how the eye works is essential to treating it when vision loss occurs.

RPB-supported researchers at Northwestern University Feinberg School of Medicine in Illinois published research uncovering novel cellular mechanisms within the retina. The study, published in the respected journal *Nature Communications*, focuses on cone synapses inside the eye's retina, which help the brain process changes in light. The findings could help advance the development of targeted therapeutics for diseases and conditions impacting vision.



Did You Know...

that a simple look at the Amsler Grid can help identify signs of age-related macular degeneration (AMD)? Check the grid regularly at bit.ly/RPBamsler and see your eyecare provider at least annually to keep your eyes healthy!



A GIFT TO RPB CAN SAVE SIGHT

Research to Prevent Blindness, Inc. (RPB) is the only public foundation supporting research aimed at treating, preventing or curing *all* diseases that damage and destroy vision. Your support is critical to the success of our efforts!

Contributions totaling up to \$1 million within a calendar year are matched through a fund established by RPB's founders, Dr. Jules and Doris Stein. All gifts and bequests are tax deductible.

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Can An Oral Probiotic Treat Dry Eye Disease?



A research team at Baylor College of Medicine in Texas conducted a study demonstrating the efficacy of a commercially available probiotic bacterial strain (*Limosilactobacillus reuteri*) in alleviating dry eye disease. Their findings were recently unveiled at a scientific conference.

The research team, including RPB Stein Innovation Awardee **Dr. Cintia de Paiva**, emphasized

the connection between the beneficial bacteria residing in the gastrointestinal tract and overall health, which may extend to eye health. Based on initial research, a potential approach for treating dry eye involves the use of probiotic bacteria that possess similar protective properties.

Do You Have Dry Eye?

Dry eye affects 1 in 20 individuals in the United States. It occurs when the eyes do not receive sufficient lubrication from the tears they produce, leading to stinging, burning, inflammation, blurry vision and light sensitivity.

If left untreated, severe cases of dry eye can damage the surface of the eyes. Conventional approaches for managing dry eye are eye drops, gels or ointments.

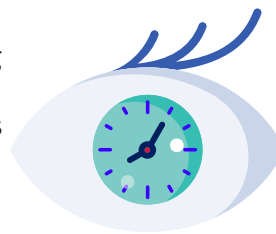


Watch Dr. de Paiva's educational video about dry eyes at bit.ly/SjogrensDryEye

Researchers Build An Eye "Aging Clock"

Using a technique they developed for studying human eye fluid, RPB-supported researchers at Stanford Medicine in California and their collaborators found a way to measure ocular aging, opening avenues for treatment of numerous eye diseases. The scientists looked at nearly 6,000 proteins in the fluid and found that they can use 26 of them to predict aging. Using artificial intelligence, they developed an eye-aging "clock," indicating which proteins accelerate aging in various eye diseases—including uveitis, retinitis pigmentosa, and diabetic retinopathy—and revealing new potential targets for therapies.

The study was published in the prestigious scientific journal *Cell*.



The researchers found that some cells commonly targeted in treatment are not the ones most involved in disease, encouraging a re-evaluation of therapies. The researchers also found that some cells showed accelerated aging before symptoms appeared.

Treating the molecular pathway early, said **Dr. Vinit Mahajan**, could prevent disease damage before it becomes irreparable. And, targeting both aging and disease cells could make treatment more effective.

The researchers also plan to apply their new technique and aging clock to other eye diseases, such as AMD, and organ fluids such as liver bile and joint fluid.