

# RETINA RESEARCH FOUNDATION NEWSLETTER

Foresight for Sight

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## FDA Approves Pioneering Treatment for An Advanced Form of Macular Degeneration

With the approval of pegcetacoplan by the FDA on February 17th, retinal specialists finally have a way to treat Geographic Atrophy (GA), the most severe, late-stage form of dry Age-related Macular Degeneration (AMD).

This approval, the most significant advancement in retina treatments in a decade, represents a paradigm shift, and additional promising treatments are now in clinical trials, with a possible second new drug to be approved by year end. As with any new therapy, expectations for improvements in sight require careful management. Patients and their physicians will need to discuss not only possible side effects prior to initiating the treatment but also implications of a long-term

commitment to continuing the treatment. But this new treatment and those that will follow are a ray of hope for prolonging the sight of patients impacted by macular degeneration.

Twenty percent of people with AMD will progress to develop GA, and



Retina fundus image, arrow highlights area of advanced geographic atrophy

Geographic Atrophy is a leading cause of blindness, impacting one million people in the U.S., five million worldwide. GA causes regions of the retina to experience cell wasting and death, creating “lesions” that result in blind spots, usually in the central visual field. There is no cure for the disease and, until now, no treatment. A diagnosis offered no hope of stopping the progression of the disease. Treatment with the new drug, trade name Syfovre, which is delivered to the eye by injection, can slow the progression of the disease, but will not reverse or cure it. The drug works to reduce inflammation, by regulating an over activated part of the immune system in the eye, and over activation can cause damage and disease progression.

### Symptoms of Geographic Atrophy:

- Difficulty reading in dim light
- Central vision loss
- Black spot in central vision
- Slower reading speed
- Glare

Simulation of vision with geographic atrophy



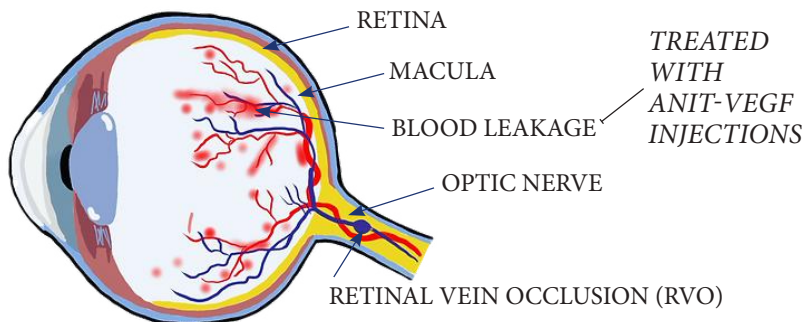
# Scientists Research Alternatives to Eye Injections

A new study by Columbia University researchers <sup>1</sup> suggests that eye drops could be a more effective, and comfortable therapy for eye disease currently treated with injections into the eye, retinal vein occlusion (RVO).

RVO is one of the most common blinding conditions in the U.S. and affects up to 2% of people over age 40. It occurs when a vein carrying blood away from the eye's retina becomes blocked, leading to swelling called macular edema – fluid trapped within and under the retina, inflammation and damage to the retina. When severe occlusion of the central retinal vein occurs and is not treated, it usually leads to significant, permanent vision loss. Risk factors for developing RVO include hypertension and cardiovascular disease, diabetes, high BMI and glaucoma.

The most effective treatment, injections of anti-vascular endothelial growth factor (VEGF) drugs, helps control blood vessel leakage and swelling in the retina. Research cited by the NIH shows that a treatment for retinal vein occlusion yields long-lasting vision gains, with visual acuity remaining significantly above baseline at five years. Many patients require ongoing treatment <sup>2</sup> and unfortunately, many patients have poor outcomes.

Occlusion of the retinal veins can lead to blood vessel leakage in the retina.



Finding the root cause of RVO is the ultimate goal; however, researchers also are working to address the discomfort and fear of having an injection needle inserted into the eye. The intent is to develop treatments that provide symptomatic relief and are better tolerated by patients to ultimately lead to better outcomes.

The animal model study found that an experimental eye drop treatment was twice as effective as the standard injection therapy at reducing swelling

and improving blood flow within the retina of mice with RVO. The eye drops also prevented neurons (photoreceptors) in the retina from deteriorating and preserved visual function over time, relative to the standard injections that had no effect on either result. The eye drops contain an experimental drug that blocks caspase-9, an enzyme that triggers cell death. Columbia researchers, Carol Troy, PhD, and Maria Avrutsky, PhD, are the inventors on the novel drug's patent application. The caspase-9 enzyme is found to be overactive in blood vessels injured by RVO. Scientists believe the eye drops improve the health of blood vessels in the retina, which then decreases the toxic signaling that damages the retina's neurons and leads to vision loss. Future studies are aimed at preparing to test the eye drops in human clinical trials and identifying additional therapeutic targets.

<sup>1</sup> "Caspase-9 inhibition confers stronger neuronal and vascular protection compared to VEGF neutralization in a mouse model of retinal vein occlusion" was published June 28, 2023, online in Frontiers of Neuroscience.

<sup>2</sup> A report on five-year outcomes of the Study of Comparative Treatments for Retinal Vein Occlusion 2 (SCORE2), was published April 21, 2022 in American Journal of Ophthalmology. SCORE2 was funded in part by the National Eye Institute (NEI), a part of the National Institutes of Health.



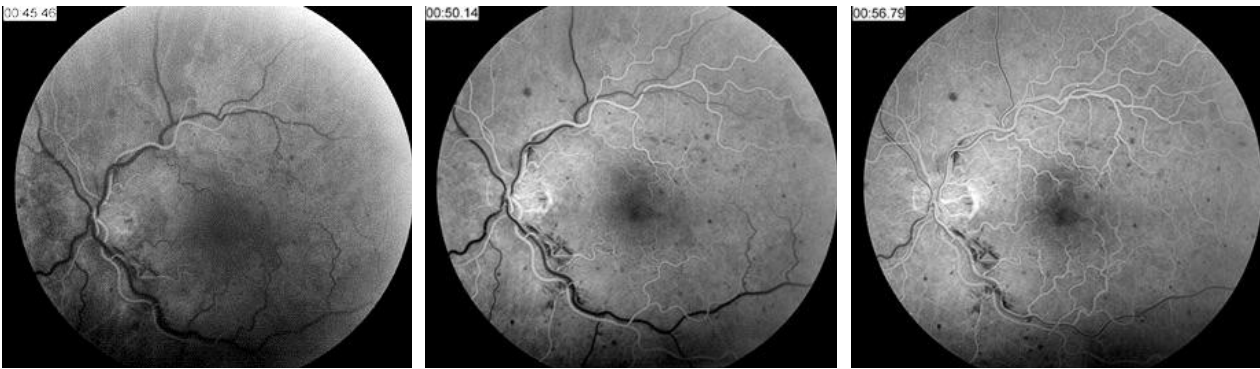


# Physician Tools for Diagnosing Retinal Vein Occlusion and Other Retinal Diseases



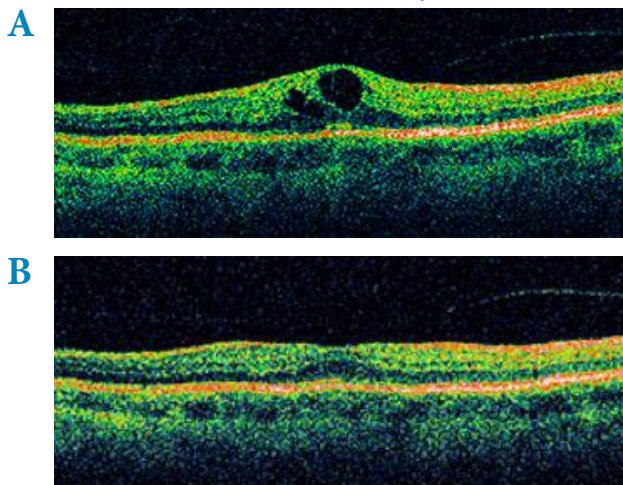
*Color fundus photo* of the eye with mildly dilated and tortuous veins. Some flame-shaped hemorrhages are present close to the nerve, and scattered intraretinal hemorrhages are seen as is typical with retinal vein occlusion (RVO).

*Fluorescein angiogram* of the eye with retinal veins unfilled with dye (dark). Note seconds shown in top left of each figure, beginning at 45 seconds. In a healthy eye, the retinal veins should completely fill within approximately 10-12 seconds of the time dye appears in the central retinal artery. In this case of RVO, dye does not enter the eye until 45 seconds.



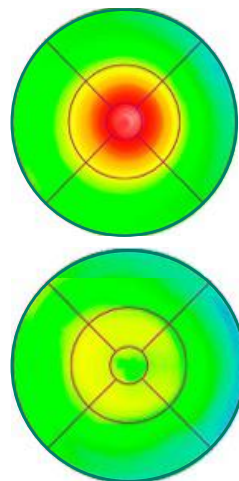
*Optical coherence tomography (OCT) study and eye map* shows central retinal thickening due to intraretinal edema from RVO(A), relative to normal OCT and map below(B).

## OCT Study



## Eye Map

red area showing location of retinal thickening on eye



# RRF Elects New Directors to Managing Board



## *W. Mac Jensen*

Mr. Mac Jensen joined the RRF Board of Managing Directors in March 2023 after three years serving on the Board of Advisory Trustees. His wife, Susan E. Jensen, “Sue” is also an RRF Advisory Trustee. Their support of the Foundation, and related research efforts, stem from a retinal issue in their immediate family.

Mr. Jensen is a Senior Advisor at Post Oak Energy Capital where he has served as chief financial officer for various portfolio companies in addition to providing business advisory and development services. Prior to that, Mac spent over 30 years in the oil and gas industry as a public company executive officer, start-up principal and investment banker. His experience includes business and risk management, capital formation and allocation, mergers and acquisitions, and corporate strategy.

Mr. Jensen is Chairman of the West University United Methodist Church Foundation and previously served on the Church Board of Stewards and the City of West University Zoning and Planning Commission. He has also served on the Finance Committee as a Briar Club member. Mac holds a BS from the University of Tulsa and an MBA from the University of Kansas. He is an outdoorsman, Sue is an avid tennis player, and they both enjoy reading and travel.

The Jensens have two wonderful daughters. Sadie is entering graduate school at Auburn this fall and Margrethe will be a sophomore at Sue’s alma mater, Wake Forest.



Mac and Sue Jensen



Mac and his daughters, Sadie (left) and Margrethe



## Lawrence P. Washington

Mr. Lawrence Washington has been associated with RRF in some capacity since 1979 and rejoined the Board of Managing Directors in March 2023. He previously served on the Board of Managing Directors from 1993-1996, was Treasurer of RRF 1994-1996 and while living outside of Texas, was on the Board of Advisory Directors from 1996-2023.

A native of Dallas, Mr. Washington, known as “Larry,” joined KPMG in Houston in 1978, where he was first introduced to the RRF. His wife Jackie is a native Houstonian, and they recently celebrated their 45th wedding anniversary by taking an extensive tour of Ireland. They are blessed with three children, their wonderful spouses and eight grandchildren.

Always fascinated by his visits with Dr. McPherson, the history of the RRF and the important research that it supports, Larry delighted in seeing Dr. McPherson whenever possible and was honored to sit with her at many RRF functions, most recently at the 2022 RRF Luncheon held last May.

In 2021, Mr. Washington retired from Bank of America after a notable career in banking and finance. His career took him from Houston to Frederick, Maryland; Jacksonville, Florida and New York City where he led teams and major initiatives across the country for Bank of America, Merrill Lynch, Citi and a private equity firm specializing in the financial services sector.

Most recently, Larry can be found devoting his time and energy to his family and reconnecting with extended family and friends. He is also an active PGA golf tournament volunteer, serving in various “on-course” roles at eight tournaments, including working for the Golf Channel. Other times he is playing golf, hunting, fishing, biking, hiking, playing the guitar and traveling.



Larry and Jackie Washington, Ireland, 2023

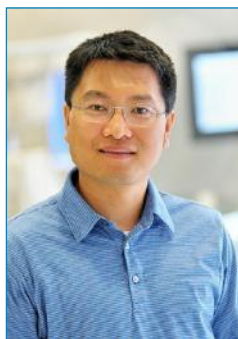


Larry, Jackie and their grandchildren



Larry commentating for The Golf Channel

# RRF Scientist Relentlessly Pursues Discovery of the Genetic Causes of Inherited Retinal Diseases



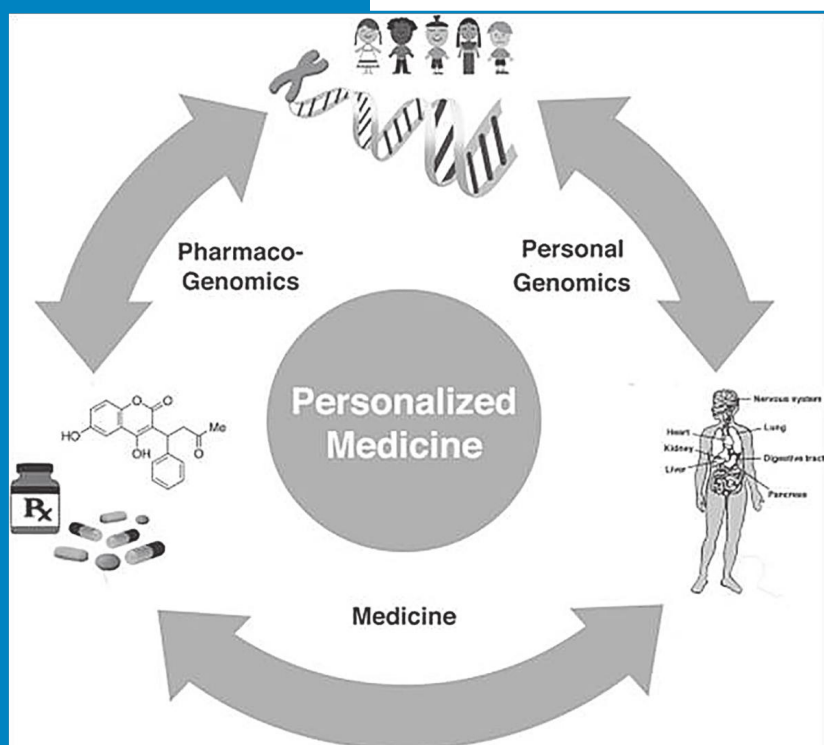
Rui Chen, PhD, is the primary investigator of RRF's W. O. Manning Research Project and is affiliated with Baylor College of Medicine's Human Genome Sequencing Center within the Department of Molecular and Human Genetics. Dr. Chen recently shared an update on his research with the RRF Board of Directors.

Dr. Chen researches inherited retinal diseases (IRDs), and his work is integral to an evolving treatment approach for these retinal diseases called precision genomics. This genetic approach, which has been highly successful in treating cancer patients, is personalized. A genetic analysis that identifies the specific genes and mutations underlying a patient's particular disease is performed to confirm an accurate diagnosis and, subsequently, to direct development of targeted, patient-tailored gene replacement therapy. The genetic step is important because many IRDs are caused by multiple shared genes.

Dr. Chen's basic research identifies new genes responsible for IRDs within a cohort of patients and learns how these genetic mutations cause disease, knowledge that leads to the development of animal disease models that simulate the degeneration seen in humans and enable the study of response to treatment with gene therapy.

Dr. Chen's most recent research has focused on TLCD3B, a newly discovered gene associated with a specific type of Cone-rod dystrophy (CRD), a group of inherited eye disorders that affect the light sensitive cells of the retina – the cones and rods – and which over time, especially causes cone deterioration and vision loss. Dr. Chen has successfully completed the process of identifying how this mutation impacts normal development, and created a TLCD3B mouse model to demonstrate the feasibility of treatment of TLCD3B-caused genetic anomalies with gene therapy, research that is essential to take the next step toward clinical trials. With this effort completed, the data can be used to guide clinical trials in humans, and Dr. Chen's laboratory will turn to the pursuit of discovery of still unidentified genetic causes of inherited retinal disease with the same goal, to pave the way toward development of safe, genetic therapies to help these patients.

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Precision Genomics Medicine: New Approach for Treating IRD Diseases, courtesy of R. Chen, May, 2023

# Heat Takes a Toll On Your Eyes, Too

With the record-breaking heat, you might not know it, but just like other parts of your body, your eyes require extra care. Several common conditions can affect the eyes of people of all ages and are exacerbated by intense heat waves like we are experiencing this summer:

**Dry eyes.** High temperature can cause the eye tear film to evaporate quickly, resulting in dry eye symptoms, including redness, irritation or a burning sensation.

**Conjunctivitis.** Conjunctivitis can be caused by either viral or bacterial infection and occurs more commonly during the summer. Symptoms include redness, discharge, watery eyes, and foreign body sensation. Conjunctivitis is contagious and can be passed through direct contact or by use of shared objects.

**Styes.** Styes are bacterial infections affecting the eyelids that cause swelling and redness, and can be painful. While common in children, during the summer, adults are also more susceptible to the condition.

**Eye allergies.** High temperatures and high levels of irritants and air pollutants, like smoke from fires or Saharan sand in the air, increase the risk of eye allergies. Patients with eye allergies may experience more symptoms such as redness, itching, and a burning sensation.

If any of these symptoms become really bothersome, visit your ophthalmologist to find out what is causing your condition and how to treat and manage it properly.

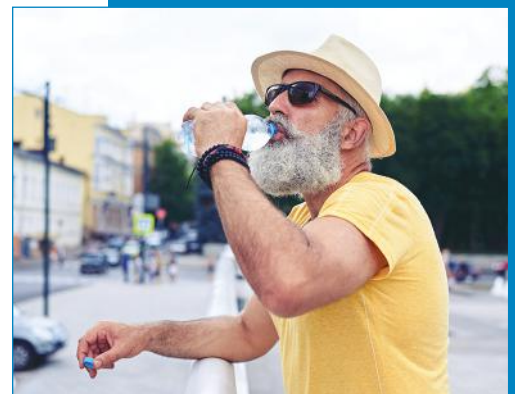
Our eyes are highly vulnerable to the heat and sunlight, fortunately there are ways you can protect your sight. The most important thing you can do for your eye health, is **stay hydrated**. Hydration helps the body and protects the eyes from dry eyes. Prolonged exposure to UV light can cause symptoms of irritation, burning sensation, and redness, and chronic exposure can lead to pinguecula or pterygium -- benign tissue growth on the eyes, development of cataracts, and macular degeneration.

When outdoors, always wear sunglasses with full UV protection, including 100% UVA and UVB coverage or labeled as UV 400. Sunglasses provide a barrier between your eyes and air pollutants and irritants. Hats and caps provide helpful protection from direct sunlight. If you wear contacts, UV protection contact lenses are also effective when used in combination with these vision safeguards.

When indoors, avoid direct air from the A/C or fans, which can cause the eyes to quickly dry out. Other tips include:

- **Don't share** towels, pillowcases, sheets and cosmetics, especially with anyone suspected of having conjunctivitis;
- **Wash hands** frequently with soap and water;
- **Practice proper hygiene** of the lids and lashes to prevent styes, including removing makeup every night and replacing makeup products routinely.
- **Take regular breaks** from the computer and **sleep at least six to eight hours** to rejuvenate your eyes and natural tears.

Incorporate these healthy habits into your eye care routine in the summer months and all year long. Source: Sunyopt.edu





# RETINA RESEARCH FOUNDATION NEWSLETTER

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