



RETINA RESEARCH FOUNDATION NEWSLETTER

Foresight for Sight

November 2023

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We are Grateful

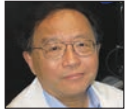
As we reflect on a year made possible by the incredible support of our community, we extend our thanks for your belief in RRF's mission of ending blindness due to retinal disease.

Wishing you and yours a
holiday season filled with joy, gratitude
and good health

**The Board of Directors
of Retina Research Foundation**



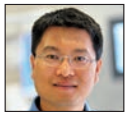
2023 RRF GRANT RECIPIENTS



Samuel Miao-Sin Wu, PhD
Baylor College of Medicine, Houston, TX
Pharmacological and Genetic Mechanisms
Underlying Retinal Cell Death in Age-related Macular
Degeneration (AMD) and Glaucoma



Yingbin Fu, PhD
Baylor College of Medicine, Houston, TX
A Novel Treatment Strategy for Age-related Macular
Degeneration by Targeting Cholesterol Transport



Rui Chen, PhD
Baylor College of Medicine, Houston, TX
Identification and Functional Analysis of Genes
involved in Retina Diseases



Richard L. Hurwitz, MD
Baylor College of Medicine, Houston, TX
Immune Consequences of Gene Therapy for Ocular
Disorders



Graeme Mardon, PhD
Baylor College of Medicine, Houston, TX
Genetic and Molecular Analysis of Retinal Development



Wenbo Zhang, PhD
University of Texas Medical Branch, Galveston, TX
Novel Therapy for Retinal Neovascularization



Lih Kuo, PhD
Texas A&M Health Science Center, Bryan, TX
Activation of Endothelin-dependent RhoA/Rock
Pathway Elicits Retinal Microvascular Dysfunction in
Diabetic Retinopathy



Curtis Brandt, PhD,
University of Wisconsin, Madison, WI
Gene Therapy for Retinal Degenerative Diseases



Timothy Corson, PhD
Indiana University School of Medicine, Indianapolis, IN
Development of A Retinal Pigment Epithelium-specific
Soluble Epoxide Hydrolase Deletion Model



Jianhai Du, PhD
West Virginia University School of Medicine,
Morgantown, WV Target NAD Degradation in Age-
related Macular Degeneration



Francesco Giorgianni
University of Tennessee Health Science Center,
Memphis, TN CD5L-mediated Autophagocytosis in
RPE Cells



James Monaghan, PhD
Northeastern University, Boston, MA
Stem Cell Fate Determination during Axolotl Retina
Regeneration



Milam A. Brantley, Jr., MD, PhD
Vanderbilt University Medical Center, Nashville, TN
The Cellular Mechanisms by which Arginine and
Citrulline Promote Vision Threatening Diabetic
Retinopathy



Erika D. Eggers, PhD+
University of Arizona, Tucson, AZ
Investigation and Modulation of Inner Retinal
Dysfunction in Diabetes



Andrius Kazlauskas, PhD
University of Illinois at Chicago, Chicago, IL
Hyperglycemia-induced Mitochondrial Adaptation



Vladimir Kefalov, PhD
University of California, Irvine, CA
Understanding how the G90D and G90V Rhodopsin
Mutations Cause Blindness



Seongjin Seo, PhD
University of Iowa, Iowa City, IA
Novel Dual AAV Approaches to Treat ABCA4-
associated Retinal Degeneration



Ann C. Morris, PhD
University of Kentucky, Lexington, KY
Retinal Damage and Regeneration in the African Spiny
Mouse (*Acomys cahirinus*): A Novel Mammalian
Model for Translational Research



Ming Zhang, MD, PhD
Augusta University, Augusta, GA
The Roles of RIP kinase 3 in the Development of
AMD-like Pathologies during Cytomegalovirus Ocular
Latency



Kinga Bujakowska, PhD**
Harvard Medical School, Massachusetts Eye and Ear
Infirmary, Boston, MA Modeling EYS Associated
Retinitis Pigmentosa in Human iPSC Derived Retinal
Organoids



Jeffrey M. Gross, PhD**
University of Texas, Austin, TX
A Proteomic Analysis of Mitochondria-ER Contact
Sites in Muller glia and the Potential Role of
Metabolomic Changes in Regulating Intrinsic Retinal
Regeneration



Alex J. Smith, PhD**
University of California, San Francisco, CA
Measuring Fluid Clearance Pathways in Retinal Edema



Christine M. Sorenson, PhD**
University of Wisconsin, Madison, WI
Treatment and Prevention of PVR and Retinal
Detachment



Eric Weh, PhD**
University of Michigan, Ann Arbor, Michigan
Developing A Novel Treatment to Prevent Vision Loss
due to Recurrent Retinal Toxoplasmosis



David M. Wu, MD, PhD**
Harvard Medical School, Schepens Eye Research
Institute, Boston, MA Metabolic Modulation of
Complement in the Retinal Pigment Epithelium

** Newly funded research projects, 2023



November 2023



Dear Friends,

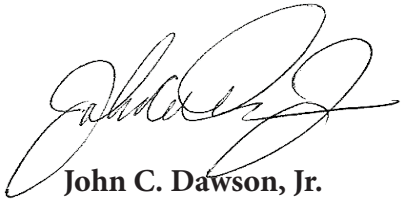
As you may be aware, Retina Research Foundation's Founder and President, Dr. Alice R. McPherson, passed away this past January. We miss our friend and visionary leader, yet we are so fortunate that she championed RRF's research cause for nearly 54 years! As with all good leaders, she leaves behind a strong and viable organization with dedicated leadership possessing many years of experience with RRF and committed to carrying on her vision for years to come. We are grateful for the advancements made during her stewardship in our understanding of the origins of retinal diseases and for the therapeutic treatments and practice innovations that emerged from these research breakthroughs. Patients, individuals impacted by vision loss as a result of retina disease, have benefitted from these efforts. Under Dr. McPherson's careful watch, RRF has funded thousands of basic science projects and research grants, directing over \$42 million into retina research since 1969.

You might think of RRF as a mature organization with a full history of supporting research, and you would be correct in this assumption. So much has been accomplished, and RRF is well-known the world over. Dr. McPherson built a diversified research program that has efficiently and effectively funded seminal research. RRF and the research it supports were central to her life's work, and together have created a legacy that forever benefits future patients. Now, we must continue the work because, while much has been learned, retinal disease still exists, and as the U.S. population ages, the incidence of all retinal disorders will also increase. Our goal is clear, we are focused on supporting vision scientists who are dedicated to the dynamic field of retina research and who endeavor to end blindness due to retinal disease.


RRF's continued success is enhanced by our community that also shares the goal of eliminating retinal disease through investment in research. As a member of this community, your interest, your volunteer time, your attendance at RRF events, and your financial support are important to our mutually desired goal. If you have not yet given to RRF this year, we hope you will consider doing so, because continued investment in basic vision research is the way forward to discovering the treatment improvements of the future.

We feel fortunate to share this journey with you, and as we end this year and look to the next, we thank you for your interest and support and send warmest wishes for the upcoming holiday season.

Sincerely,



John C. Dawson, Jr.
Chairman of the Board



Patricia K. Boyd
Fund Drive Chair



Retina Research Foundation is dedicated to the eradication of retina disease through programs in research and education.
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The Strength of RRF's Collaboration Partnerships

RRF recently completed a review of the research and educational programs it funds each year. The committee was chaired by RRF board member, Bettie H. Lee, with members, Dr. Art Willis, Dr. Ben Orman, Dr. James Key and Kathy Orton. The committee was charged to conduct a comprehensive review of each of the collaborating entities to reassess mission compatibility and to evaluate each program's effectiveness and enhancement to RRF's mission, and whether the program remains a good use of RRF funds. Programs evaluated included: awards, fellowships, research chairs and professorships, and pilot study grants.



Bettie H. Lee,
RRF Board
& Executive
Committee
Member, 2002
to present

At the October RRF board meeting, the committee provided a final report of their yearlong review of RRF's existing research and educational programs. Lee said, "The committee has concluded its scope of work, and the committee's determination is that the goals of RRF and current collaboration partners are in alignment. Further, the committee recommends continuing the full complement of strategic partnerships and associated programs, with no changes at this time. We look forward to continuing the relationships, and any future communications with our partners will be handled at the executive committee level. We appreciate the time and expertise of all members who contributed to this important review of RRF programs that has been conducted during a pivotal juncture in RRF's quest to end blindness due to retinal disease."

The committee invited Teresa Bradshaw, Executive Director of the Pan-American Association of Ophthalmology, to visit with the RRF Board in September, 2023. Pan-American has been a close RRF partner for three decades. Ms. Bradshaw provided a history of the RRF/PAAO collaboration, which began in 1992, and an update on current efforts, the Gillingham Fellowship Program and the Paul Kayser Global Award. To date, our collaborative fellowship and research programs, both current and prior programs, have impacted over 220 ophthalmologists from 40 countries in the Americas.

IMPACT: 1993-2023

	PROGRAM	GILLINGHAM FELLOWS	PAUL KAYSER INT'L FELLOWS	TYSON RESEARCH	TOTAL
Participants		57	91	70	218
Countries		14	13	12	

Source: PAOF

(continued on page 5)

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THE KAYSER GLOBAL AWARD RECOGNIZES INNOVATION IN OPHTHALMIC CLINICAL AND BASIC SCIENCE RESEARCH DIRECTED TOWARD IMPROVING VISION AND PREVENTING BLINDNESS



2023

Recipient: Rajeev H. Muni MD PhD & the University of Toronto

Title: Bacillary Layer Detachment and Associated Abnormalities in Rhegmatogenous Retinal Detachment



2019

Recipient: Mary Elizabeth Hartnett MD PhD & University of Utah John A. Moran Eye Center

Title: Toward a Safe and Effective Treatment for Retinopathy of Prematurity



2017

Recipient: Jennifer Kang-Mieler MD PhD & Illinois Institute of Technology

Title: A novel microsphere-hydrogel ocular drug delivery system for anti-vascular endothelial growth factors (anti-VEGFs)



2015

Recipient: William Harbour MD PhD & Bascom Palmer Eye Institute

Title: The Harbour Laboratory: Two Decades of Discovery in Uveal Melanoma



2013

Recipient: Eduardo Büchele Rodrigues MD PhD & Federal University of São Paulo

Title: Lutein: A New Dye for Chromovitrectomy

Source: PAOF

Ms. Bradshaw also presented the RRF Board with a plaque recognizing Dr. Alice R. McPherson's posthumously awarded Dr. Bronwyn Bateman PAAO Award for Women's Leadership in Ophthalmology and Vision Research. This award, launched in 2023, recognizes a female ophthalmologist from the Americas, Spain, or Portugal as a leader in the areas of research, education, clinical care, organizational and public health care contributions.



RRF Board Chairman, John Dawson receiving Dr. McPherson's Award from Ms. Bradshaw



Teresa Bradshaw (front, three in from right), Executive Director of PAAO visits with the RRF Board, September, 2023

RRF Visits the McPherson Eye Research Institute

In May, RRF Board and Executive Committee members John C. Dawson, Jr. and W. Richard Walton, traveled to Madison, Wisconsin, to visit the McPherson Eye Research Institute (MERI). The visit coincided with the MERI Spring Advisory Board meeting and the annual Alice R. McPherson endowed lectureship, this year presented by Dr. Patricia D'Amore, Charles L. Schepens Professor of Ophthalmology and Vice-chair Basic and Translational Research, Harvard Medical School. Dr. McPherson was specially recognized at the accompanying evening event by Dr. David Gamm, Distinguished Director of the Institute, who gave a moving tribute. Mr. Dawson and Mr. Walton also had the opportunity during the trip to tour the labs of RRF Chairs and Professors and discuss their research programs in depth.



Mr. Dawson and Mr. Walton near the entrance of the McPherson Eye Research Institute, next to the display of Dr. Alice R. McPherson's 2014 Gonin Medal.

RRF visited the lab of Dr. David Gamm, who is interested in developing cell-based therapies to combat retinal degenerative diseases, and the lab of Dr. Bikash Pattnaik, who researches congenital eye diseases physiology and optic nerve visual impairments that lead to blindness in children.



Dr. Kris Saha (left), RRF Murfee Chair, Associate Professor within the UW Departments of Biomedical Engineering and Pediatrics, who leads the Crisper Vision Program focused on cell and gene therapy, gave Mr. Dawson, Mr. Walton and Virginia Gissel Schwanauer, RRF Foundation Administrator, a tour of the Wisconsin Institute for Discovery Center where his lab is located. The Wisconsin Institute for Discovery is a unique fusion of public and private research initiatives, dedicated to exploring new ways of generating innovation in science and engineering in diverse fields, including vision research. Dr. Saha's research interests lie in emerging methods of human cell engineering to improve vision therapeutics.



Mr. Walton and Mr. Dawson visited with Dr. Christine Sorenson and Dr. Nader Sheibani while touring the Sheibani and Sorenson Labs. Dr. Sheibani, RRF Chair at the University of Wisconsin, researches ocular vascular development and homeostasis. Dr. Sorenson, RRF pilot grant researcher and distinguished scientist of neonatology and pediatrics at UW, researches the role apoptotic processes essential to programmed cell death play in vascular development and function.

Driving This Holiday Season? Make It a Day Trip!

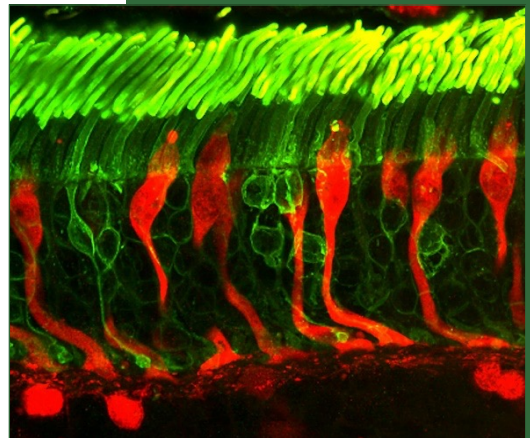
It's that time of year, when we hop in our cars to go somewhere special for the holidays. Most people drive 50 miles or more to reach their destination, and the roads will likely be full of traffic and anxious drivers. If you can, consider making your trip during the day; if you have to drive at night, take extra care! For example, statistics show that between 8 p.m. on Wednesday and 3 a.m. Thanksgiving morning, the rate of car accidents will increase by about 17 percent, and half of all fatal car crashes happen after dark. Distracted driving and fatigue, drunk driving, night-driving impairments, and speeding all contribute to more accidents happening during this time of year, specifically at night.

DMV data from 2020 indicates that 48 million U.S. licensed drivers are over the age of 65. Typically, older drivers are more cautious, and the most common safety choice older drivers make is to not drive after dark. There are good reasons for this decision. As we age, the specialized cells in our eyes that allow us to see light also age and degenerate, and unlike other tissues, they are not replaced. The result is that our sight at night just is not as good as it was when we were younger, and we even may become night-driving impaired. Night blindness might also be caused by rare, but significant, genetic retinal disorders.

In the daytime, we are able to see color and fine detail using specialized cells located in the retina, called photoreceptor cones. These cones are also primarily responsible for our central vision. At dusk, we shift to a combination of cones and a second type of photoreceptor, called rods. Rods enable our peripheral vision and allow us to see in low levels of light, but not in color, nor to the same degree of detail. In very low light, at night, we rely entirely on rods. That's why in the dark, everything appears black and white.

Our retinas are predominantly made up of rods; 95 percent of the retina's photoreceptors are rods. Rods appear to be more vulnerable than cones to aging, and their function and structures degenerate earlier. One result of this loss of rods is less acute night vision, while your daylight vision may be just fine. In people with age-related macular degeneration, this degenerative process is even more pronounced. With age, we also become less sensitive to changes in contrast and thus less able to distinguish objects like road signs or pedestrians from their background.

Cells of the Retina



A confocal microscope image of rod and cone photoreceptors in a human retina. Fluorescent probes have been used to identify rod photoreceptors (green) and cone photoreceptors and horizontal cells (red).

Credit: National Eye Institute

Other factors beyond the aging or dysfunction of photoreceptors that may contribute to difficulty seeing at night:

- ➔ Glare from oncoming cars headlights may be caused by cataracts. By the time we reach our late 50s, one in 10 will suffer from cataracts; by 80, more than half have cataracts.
- ➔ The ability of the pupil to contract and then open following exposure to bright lights takes longer as we age. This is called photo stress recovery time.
- ➔ The eye's pupil, which regulates how much light enters the eye, shrinks as we age due to weakening of the tiny muscles that control pupil size. At age 60 and older, the retina of our eyes are receiving only one-third of the light they did when we were 20. We don't notice it really because the change is so gradual.
- ➔ Vitamin A deficiency might cause night blindness, but this can be corrected with retinal supplementation.

All things considered, whether you are on the younger side or older side of 60, whether you are noticing that it is more difficult to drive at night or not, chances are others are on the roads at night who are disregarding these concerns, so make a safer choice and plan your holiday car trip during daylight hours.

RETINA RESEARCH FOUNDATION NEWSLETTER

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FOR THE
BLIND OR
HANDICAPPED

CHANGE SERVICE REQUESTED

Please indicate changes in boxes and make any corrections needed next to your name and address, then clip and return entire address label in an envelope.

- Change name or address as shown on address
- Remove name from mailing list

Special Remembrances

IN MEMORY OF

Carol H. Connally
Dalyn Schriewer

Lynna Littleton-Gibbs
Gregg Gibbs

Sharon L. King
Charlotte Pitts

Dr. Alice R. McPherson
Don R. and Patricia K. Boyd Foundation

IN HONOR OF

Dr. Stanley Chang
Peter Pollack

YOUR GIFT TO RRF IS ESSENTIAL TO WHAT WE DO. The success of our efforts depends on donations from our community. RRF accepts secure donations at retinaresearchfnd.org, or you can mail your donation to the RRF office. For more information call: 713-797-1925. Thank you for helping us stimulate innovative research to discover cures for the retinal diseases that damage and destroy vision!

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