

RETINA RESEARCH FOUNDATION NEWSLETTER

Foresight for Sight

December 2019

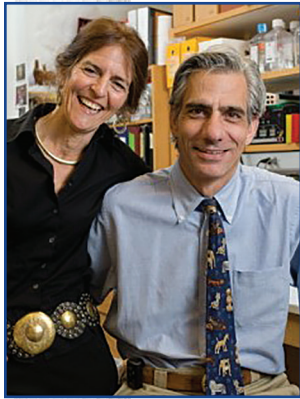
Issue Number 2 / Volume 41

Retina Research Foundation Newsletter is published three times per year: Spring, Summer and Fall.

*Happy
Holidays*

**The Board of Directors
and
Advisory Trustees
Retina Research Foundation**

2019 RRF MAJOR AWARDS



**Jean Bennett, MD, PhD
and Albert Maguire, MD**

Charles L. Schepens, MD / AAO Award
*Presented by RRF and SIS at the American
Academy of Ophthalmology Annual Meeting*



Joan M. O'Brien, MD

RRF Pyron Award

*Presented at the American Society of
Retina Specialists Annual Meeting*



James Fujimoto, PhD

RRF Award of Merit

*Presented at the Retina Society
Annual Meeting*



Stephen Yeh, MD

RRF Macula Research Project

Administered by the Macula Society



Mary Elizabeth Hartnett, MD

Paul Kayser / RRF Global Award

*Presented at the Biennial Pan-American
Association of Ophthalmology Congress*

December 2019

Dear Friends,

This year we marked a major milestone in the life of our shared mission to end blindness. Retina Research Foundation celebrated its 50th Anniversary in 2019. This is a time of reflection, a time of gratitude, and a time to be proud of the many accomplishments achieved to date thanks to your ongoing interest and support.

In 1969, under the leadership of Dr. Alice McPherson, the plan began taking shape of establishing a volunteer-led, donor-supported organization that would focus exclusively on funding scientific programs to prevent blindness and preserve vision. RRF now funds a wide variety of scientific research and educational programs, including pilot study grants, ongoing research projects, lifetime achievement awards, international fellowships, educational programs and travel grants. We are approaching the \$35 million mark in funds spent on research since inception.

As we close out another successful year, let me express deep appreciation to all of you. Our progress would not be possible without you, our friends and supporters. If you have not yet given to RRF, we ask that you consider doing so now. This will be our final newsletter of 2019, so let us take this opportunity to wish you a very happy, healthy and joyful holiday season, and all the best in the New Year and for many years to come.

With best regards,

Frank K Eggleston, DDS

Frank K. Eggleston, DDS
Chairman of the Board

Arthur Willis

Arthur Willis, MD
Fund Drive Chair



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Retina Research Foundation is dedicated to the eradication of retina disease through programs in research and education.

Retina Hall of Fame Award

Dr. Alice McPherson was named as the inaugural Honoree for the new Retina Hall of Fame Award, selected for her contributions to the field of retinal disease. The Retina Hall of Fame was established in 2016 with the purpose of recognizing and honoring individuals who have contributed to the subspecialty of retina.



Dr. Alice McPherson is presented with the inaugural Retina Hall of Fame Award by Dr. Tarek Hassan, Dr. Jerald Bovino, Dr. John Thompson, and Dr. Mark Humayun (left to right)

Four founding Board members of the Retina Hall of Fame presented the award to Dr. McPherson at Retina Subspecialty Day of the American Academy of Ophthalmology Annual Meeting on October 11 in San Francisco, CA. Drs. Jerald Bovino, Tarek Hassan, Mark S. Humayun, and John T. Thompson recognized her as one of the world's leading vitreoretinal specialists. Dr. McPherson promoted several procedures that are now accepted as basic elements in retinal detachment surgery, and she contributed greatly to the understanding and treatment of diabetic retinopathy and retinopathy of prematurity.

In 1969, Dr. McPherson founded the Retina Research Foundation with the mission of eradicating retinal blindness. Under her leadership as President, RRF has funded pilot study grants and established major awards in collaboration with the leading ophthalmologic societies, chairs and professorships at universities and research institutions, travel grants for young scientists, and international fellowships of advanced subspecialty training.

Dr. McPherson's numerous honors include Distinguished Alumni Professional Achievement Award from Harvard Medical School; Distinguished Alumni Award from the University of Wisconsin; Guest of Honor Award from the American Academy of Ophthalmology; and the Gonin Medal.

Congratulations, Dr. McPherson!



<https://rhaf.memberclicks.net/>

NEW Eight-Electrode Recording System for Retina Research

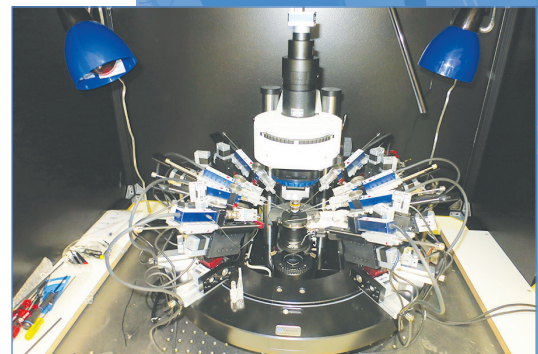
For the first time in the world, it is possible to simultaneously record light responses from eight neurons in the same retina and to study their interconnectivity by measuring responses of various types of retinal cells to current injection into adjacent cells. The power of this approach is that it allows monitoring of light responses of various types of retinal neurons under identical adaptational conditions and studying their synaptic connections in the same retina.

The retina is a neural network that consists of millions of interconnected neurons, and up to now, these neurons have been studied by patch clamp recording one at a time (occasionally two). This substantially limits the capability in studying retinal function and dysfunction, because neurons recorded individually are obtained in different adaptational conditions and/or from different retinas, and no synaptic connectivity studies could be performed by single cell recording.

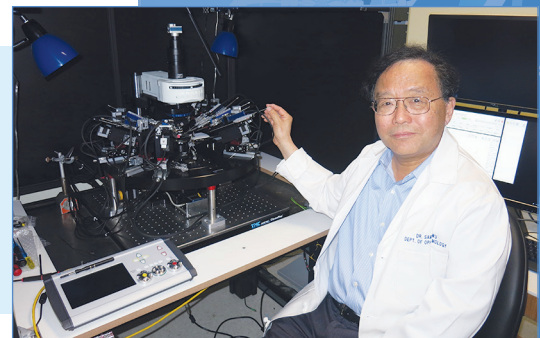
Dr. Samuel Wu's lab, supported by Retina Research Foundation, has recently constructed an eight-micromanipulator-patch electrode recording system. His group has used the system and successfully recorded eight neurons in the same retina many times, and obtained simultaneous light responses and synaptic signals from each cell in response to current injections to adjacent cells.

They will extend these experiments to diseased retinas and identify defects in light response sensitivity and waveform as well as cell-cell interconnections. These results will help to develop new drug and gene therapies against diseases associated with retinal network dysfunction, such as glaucoma and AMD.

Dr. Wu's research has been continually supported by RRF since 1982. His project is titled "*Pharmacological and Genetic Mechanisms Underlying Retinal Cell Death in Glaucoma and Age-related Macular Degeneration (AMD)*" and funded by the Paul Kayser Fund and The Elkins Foundation.



*Samuel M. Wu, PhD,
Cullen Eye Institute,
Baylor College of Medicine,
Houston, TX*



Search for a Safer Way To Deliver Gene Therapy To the Retina



Dr. Peter Campochiaro

“The best time for patients with inherited retinal degeneration to receive gene therapy treatments is when they still have fairly good vision. However, at that time, they also have more to lose from complications. The ability to offer a safer, more convenient procedure would be a breakthrough,” says Peter Campochiaro, MD.

Dr. Campochiaro is the Eccles Professor of Ophthalmology and Neuroscience at the Johns Hopkins University School of Medicine and Wilmer Eye Institute. He and his team have developed a new, sight-saving gene therapy technique that, if proven safe and effective in humans, could lead the way to a new therapeutic option for patients with diseases such as wet age-related macular degeneration (AMD). In addition, this technique could replace defective genes in patients with inherited retinal disease such as Leber congenital amaurosis.

This new technique, tested in animals, was published in the August 13 issue of *The Journal of Clinical Investigation*. Researchers used a small needle to inject genetically engineered and harmless viruses into the space between the white of the eye and the eye’s vascular layer. At that point, the virus can spread throughout the eye to deliver therapeutic genes to cells in the retina.

Researchers proved that this technique would allow the virus to reach the back of the eye, in other words that it could effectively deliver gene therapies to the entire retina. Further, they proved that this virus could deliver an anti-VEGF gene in 40 rats with a humanlike form of macular degeneration. Also performing these experiments in pigs and rhesus monkeys and finding similar results, the researchers confirmed that this delivery method worked in the eyes of larger animals also.

While this gene therapy technique is promising, Dr. Campochiaro notes it may not be an option for everyone. People whose immune system could prevent the virus from delivering its cargo into the retina’s cells due to having been previously exposed to similar

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Program of the National Library Service for the Blind

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(continued from page 6)

viruses might not be candidates. However, it is possible that this technique will someday be a viable option for a large number of patients with wet AMD and also those with inherited disorders caused by defective genes.

www.hopkinsmedicine.org

Peter Campochiaro, MD, was selected as the 2014 recipient of the RRF Award of Merit in Retina Research. In being chosen for the Award of Merit, Dr. Campochiaro gave the Charles L. Schepens Lecture at the 47th Annual Scientific Meeting of The Retina Society in Philadelphia, PA. Created in 1978 by RRF, this award recognizes outstanding vision scientists whose work contributes to knowledge about the retina and retinal diseases.



photo credit to Kevin Caldwell

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