RETINA RESEARCH FOUNDATION
NEWSLETTER

Foresight for Sight | November 2022 | Issue Number 3 / Volume 44

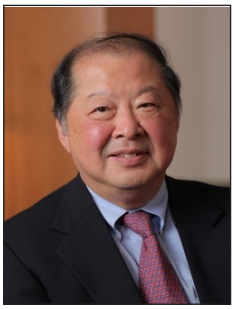
Retina Research Foundation Newsletter is published three times per year: Spring, Summer and Fall.

Happy Thanksgiving
&
Warmest Wishes
for the Holiday Season!

Retina Research Foundation
Board of Directors & Advisory Trustees

The Mission of the Retina Research Foundation is to reduce retinal blindness worldwide by funding programs in research and education

2022 RRF MAJOR AWARDS

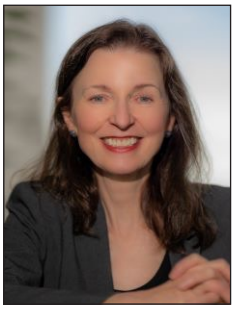


Stanley Chang, MD
Gonin Medal

Presented by the International Council of Ophthalmology (ICO) with University of Laussanne and Swiss Ophthalmological Society

Philip J. Rosenfeld, MD, PhD
Charles L. Schepens, MD/AAO Award

Presented at the American Academy of Ophthalmology Annual Meeting



Mary Elizabeth Hartnett, MD
RRF Pyron Award for Outstanding Achievement in Retina Research

Presented at the American Society of Retina Specialists (ASRS) Annual Meeting

Edwin M. Stone, MD, PhD
Award of Merit in Retina Research

Presented at the Retina Society Annual Meeting

Ajay E. Kuriyan, MD, MS
The RRF Margaret and Mills Cox Macula Society Research Project

Administered by the Macula Society

Ramin Tadayoni, MD, PhD
Jules Gonin Lecturer Award of the Retina Research Foundation

Presented at the Club Jules Gonin Annual Meeting

November 2022

Dear Friends,

As you have read on the pages of our newsletters, Retina Research Foundation funds a diverse mix of basic research projects, all with the aim of curing retinal diseases. As we near the close of 2022, we also want to share that we have reached a new milestone – RRF has now funded over $40 million in basic research since our founding in 1969. This stunning figure exceeds our initial hopes in every way and inspires our confidence that as we move forward in our sixth decade of funding research, RRF is well positioned and prepared to lead the way to the retina research breakthroughs of the future.

Moreover, we wish to thank you for your interest in our goals, for volunteering your time, for attending our events, for including the Foundation in your estate plans and for contributing to RRF's annual fund. Your generosity helps propel our efforts to these new heights, ensuring Retina Research Foundation can continue to make significant contributions to the dynamic field of retinal research. Through pilot study research grants to investigate new research topics and research awards for ongoing proven research projects, all conducted at the most prestigious research institutions, we are expanding our knowledge of and finding solutions to these sight-debilitating diseases. Together, we are ascending ever nearer to eliminating retinal blindness of all forms.

If you have not yet given to RRF this year, we hope you will consider doing so, because continued investment in basic research is essential to discovering the treatment improvements of tomorrow. We share a common goal – improved sight for those we care for, for patients wherever they are treated in the world.

With this final newsletter of the year, we thank you for your support and send warmest wishes for the upcoming holiday season.

With best regards,

John C. Dawson, Jr.
Chairman of the Board

Patricia K. Boyd

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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AMD Expert Shares Latest Research on Imaging Use for Monitoring AMD Progression

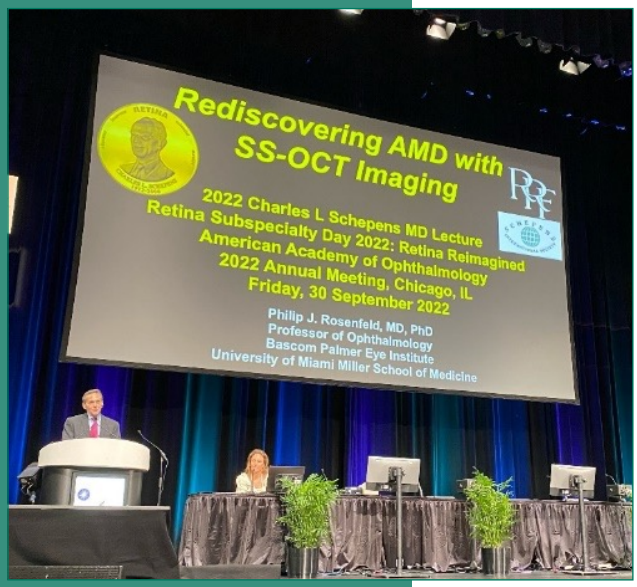
Philip J. Rosenfeld MD, PhD
Professor of Ophthalmology
Bascom Palmer Eye Institute
University of Miami

On September 30, 2022, the first day of retina subspecialty sessions at the American Academy of Ophthalmology (AAO) annual meeting, Dr. Philip J. Rosenfeld delivered the distinguished Charles L. Schepens lecture.

Dr. Philip J. Rosenfeld is a retina specialist and a world-renown expert on age-related macular degeneration (AMD) and on optical coherence tomography (OCT). Dr. Rosenfeld has been pivotal in the development of anti-VEGF therapies for neovascular and exudative (wet) eye diseases as he pioneered the use of Avastin (bevacizumab) therapy for wet eye diseases – a game changing treatment.

Dr. Rosenfeld's lecture was entitled ***"Rediscovering AMD with SS-OCT Imaging."*** Dr. Rosenfeld has been involved in the clinical development of optical coherence tomography (OCT) imaging, and in 2004, he pioneered the use of OCT-guided treatment with anti-VEGF therapy. He is interested in the development of treatments of dry AMD and the development of novel OCT algorithms for the diagnosis and study of AMD in clinical trials. More recently, his research team has focused on the development and use of swept-source OCT angiography (SS-OCTA) and novel algorithms to investigate retinal diseases with the goal of developing new OCT clinical trial anatomic endpoints for use in the study of novel AMD therapies.

In 2016, swept source – OCT (SS – OCT) was introduced, offering faster scanning speeds, longer wavelengths allowing denser penetration into the choroid, the vascular layer of the eye, and wider fields of view. The power of SS-OCT angiography (SS-OCTA) in the examination of retinal blood vessels lies in its ability to diagnosis blood vessel retinal diseases based upon the precise view segmentation of sections of the retina, such as the outer retina or the choriocapillaris, which directly nourishes the retinal pigment epithelium and photoreceptors.



In addition to its use diagnosing AMD, SS – OCTA can be used to:

- Identify conditions such polypoidal choroidal vasculopathy polyps, a disease primarily affecting the vascular layer of blood vessels in the choroid layer of the eye.

- Study the natural progression of sub-clinical, meaning disease that is not severe enough to present readily observable, definite symptoms, macular neovascularization (MNV) in eyes with intermediate dry AMD and geographic atrophy (GA). In a study by Dr. Rosenfeld and others, SS-OCTA identified subclinical MNV in 14.4% of eyes at first imaging, at follow up 12 months later, cumulative incidence of exudation in eyes with subclinical MNV at first imaging was 21.1% compared to 3.6% in eyes without subclinical MNV.

(continued on page 5)

(continued from page 4)

• Identify potential OCT biomarkers for progression of non-exudative AMD. One OCT biomarker is the choriocapillaris hyper-transmission defect, seen as a bright spot in a section of RPE segmentation. In one study by Dr. Rosenfeld's team, when lesions of 250 m or larger appeared, there was an increased risk of progression to GA. Another potential SS-OCT biomarker of non-exudative AMD progression is the choroidal hypo-transmission defect, best seen as a "black spot" on the sub-RPE segmentation slab. Areas of abnormal pigment accumulation block light transmission to the choroid, resulting in the black spot seen on imaging. These lesions are thought to be associated with disease progression. Other OCT biomarkers mentioned include choriocapillaris flow deficits, basal laminar deposits, and photoreceptor thinning. Dr. Rosenfeld noted that 62% of GA growth could be explained by choriocapillaris flow deficits, basal laminar deposits, and photoreceptor thinning in a multiple regression model. Dr. Rosenfeld is also pursuing answers to explain the remaining 38% of GA growth and is planning additional SS-OCTA clinical trials to hunt these unknowns.

SS-OCTA imaging has extended the boundaries of our ability to diagnose, predict progression and treat these sight-impairing conditions. RRF is honored to recognize Dr. Rosenfeld's commitment to research in this important area.

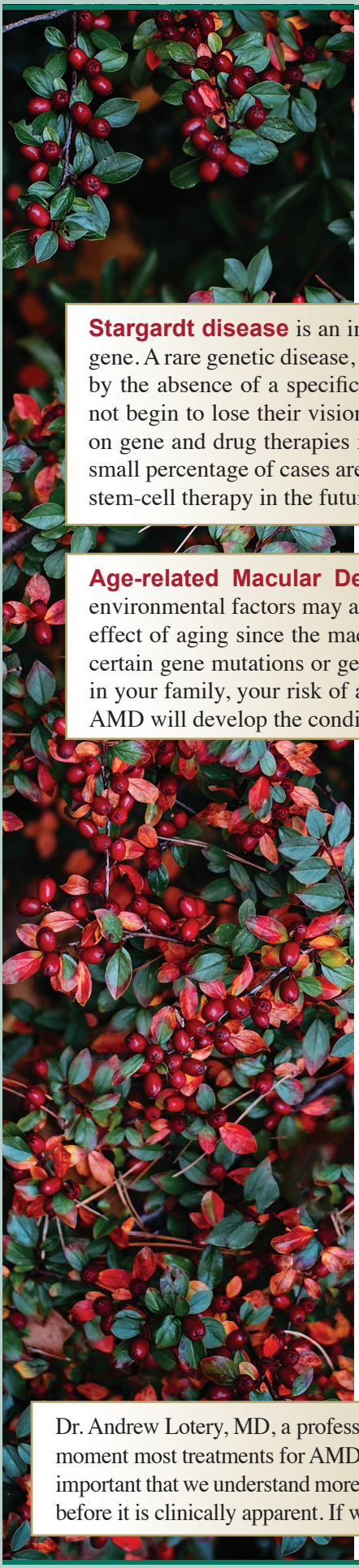
retinaroundup.com, Oct 3, 2022.

Dr. Philip J. Rosenfeld, 2022 Charles L. Schepens Award Recipient and Dr. Arthur Willis, Vice President RRF

Dr. Rosenfeld displaying his Charles L. Schepen's medal alongside his wife, Julie Rosenfeld

What Is Geographic Atrophy (GA)?

Geographic Atrophy (GA) impacts five million people worldwide, including one million in the U.S. alone. This disease causes chronic progressive degeneration of the macula and can be seen as part of late-stage, age-related macular degeneration (AMD). At present, there is no proven treatment for this macula disease; however, new drugs are in development. Patients can benefit from increased lighting, magnification and low-vision devices that help with reading. The imaging research Dr. Rosenfeld conducts is illuminating the progression of GA.



Is Macular Degeneration Hereditary?

Yes, there are known genetic components to macular degeneration. The disease, in its juvenile form, known as Stargardt disease, and in its age-related form, age-related macular degeneration (AMD), causes degenerative changes over time and is based upon inheriting mutated genes. The degeneration leads to central vision loss that may eventually result in a person being considered legally blind.

Stargardt disease is an inherited, autosomal recessive condition caused by gene mutations to the ABCA4 gene. A rare genetic disease, Stargardt causes loss of vision due to fatty material build up on the macula caused by the absence of a specific protein. Usually, Stargardt begins in childhood, although some individuals do not begin to lose their vision until much later. There is no current treatment for Stargardt, although research on gene and drug therapies is promising, with one gene therapy study currently in the clinical trial phase. A small percentage of cases are caused by mutation of a separate gene, ELOVL-4, which may be a candidate for stem-cell therapy in the future.

Age-related Macular Degeneration (AMD) is also known to have an inherited genetic factor, but environmental factors may also contribute to a person developing AMD. A primary driver of the disease is the effect of aging since the macula naturally thins as a person ages. Research provides significant evidence that certain gene mutations or genetic combinations link to increased risk of AMD. If you have a history of AMD in your family, your risk of also developing it may be higher; however, not everyone with a family history of AMD will develop the condition.

With the ability to collect DNA samples from large numbers of people with AMD, researchers can search for genetic connections using genome wide association studies (GWAS) and identify genomic variants that are statistically associated with a risk for the disease compared to those without the disease. One study identified genetic variant combinations that affected the expression of 26 genes associated with AMD. A separate 2016 study statistically linked AMD to 52 genetic variants distributed across 34 specific chromosome regions where a gene is located statistically linked to AMD. Many of these genes affected coding for lipid metabolism and cell communications. Two genes, ARMS2/HTRA, are particularly associated with the development of AMD.

Having certain genes has been linked to retina thinning in healthy people. A study conducted in 2021 at the University of Southampton in England utilized data from the UK Biobank that contains retinal scans and genetic information for over 500,000 people. Using a data subset of 67,000 individuals, researchers found that people with healthy eyes and no history of AMD had thinner retinas if they carried the genes that put them at risk. Specifically, in the data, changes to ISOSRPE thickness are seen in clinically normal individuals with AMD risk singlenucleotide polymorphisms (SNPs), suggesting structural changes occur at the macula prior to the onset of disease symptoms or observable clinical signs. While further trials are needed to identify treatments, being able to identify the signs of AMD earlier would allow individuals to change lifestyle behaviors that put them at a higher risk of losing their vision earlier.

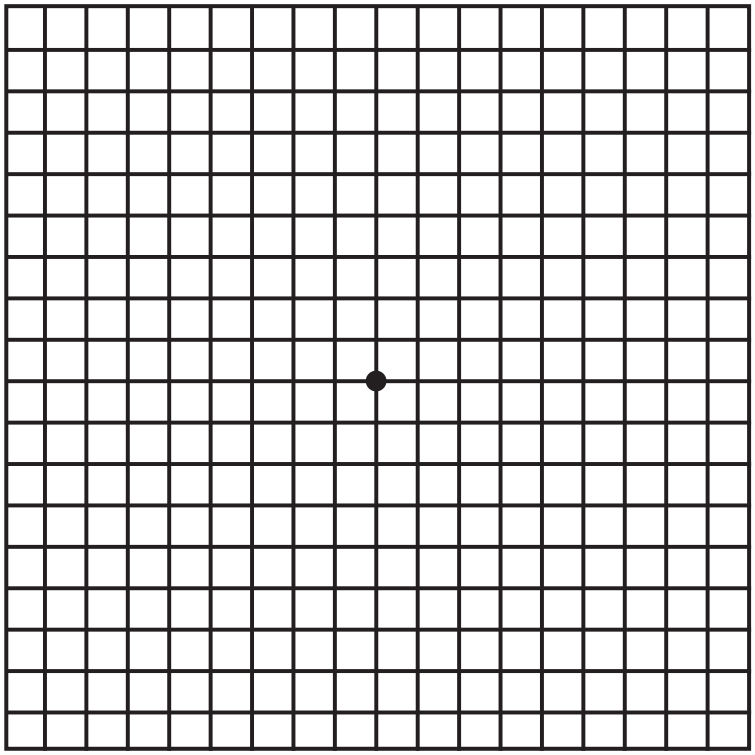
Dr. Andrew Lotery, MD, a professor of ophthalmology at the University of Southampton, who led the study, said, “At the moment most treatments for AMD only start when patients already have severe problems with their eyesight, so it is really important that we understand more about what causes it. These results help us understand the very early stages of the disease before it is clinically apparent. If we can intervene at an earlier stage, we are more likely to be able to preserve sight.”

It Only Takes A Minute to Check Your Sight

A Simple, Daily Routine Can Help Detect Vision Changes

With AMD, your vision gradually diminishes, so you might not even realize the changes that are impacting your sight. The Amsler Grid is a tool for monitoring changes in your vision that may help you find any vision changes that are not obvious. Taking a minute every day to follow five easy steps, you might identify problem spots in your field of vision – distortions caused by corresponding distortions on the surface of your retina and underlying tissues. Notably, as your vision declines, so does your ability to use the Amsler Grid correctly because it will become more difficult to focus on the central dot, which is essential to detecting vision changes. This no-tech grid is the original-at-home monitoring devise that enables tracking changes in your vision between ophthalmologist office visits, if you detect any changes, contact your physician.

Amsler Grid



(correctly sized, cut out and keep with instructions for your daily use)

Five Daily Steps for Correct Use of the Amsler Grid:

1. Wearing your normal reading glasses, hold the grid 12 to 15 inches away from your face in good light.
2. Cover one eye.
3. Look directly at the **center dot** with your uncovered eye; keep your eye focused on it.
4. While looking directly at the center dot, notice in your side vision if all grid lines look straight or if any lines or areas look blurry, wavy, dark or blank.
5. Follow the same steps with the other eye.

If you notice any areas of the grid that appear darker, wavy, blank or blurry, contact your ophthalmologist right away.

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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

FREE MATTER
FOR THE
BLIND OR
HANDICAPPED

Researchers at Rice University are seeking to improve the mobility of people with vision loss and are currently conducting a study funded by the National Eye Institute (NEI). If you or someone close to you have been diagnosed with age-related macular degeneration and live in or near Houston, please consider participation in this research.

Seeking Adults With Central Vision Loss For Research Study at Rice University, Houston, Texas

We seek adults with central vision loss (preferably due to age-related macular degeneration) to participate in a research study. The goal of this study is to learn how people use vision and hearing when they experience the world, particularly when they make judgments about collisions with obstacles in the environment. Study participants will be asked to perform tasks using computer displays of moving environments, including virtual reality, and to complete surveys.

Participants must meet eligibility requirements for the study, which will be determined by screening tests. Participation will consist of several sessions, each between about one to two hours in addition to a hearing exam and an eye exam. Each participant will receive up to $300 plus up to $60 for parking/transportation.

The research project will be conducted in Sewall Hall at Rice University, Houston, Texas. The hearing exam will take place at UTHealth in Houston. The eye exam will take place at Retina Consultants of Texas in Bellaire.

This research study has been reviewed and approved by Rice University Institutional Review Board. If you have concerns regarding this study or questions regarding your rights as a study participant, please contact Compliance Administrator-IRB, at Rice University.

Email: irb@rice.edu or Telephone: 713-348-3586

If you are interested in participating or would like further information, please contact study personnel at VRLab@rice.edu or 713-348-2432, and provide your email address or phone number and mention this announcement.

YOUR GIFT TO RRF IS ESSENTIAL TO WHAT WE DO. The success of our efforts to stimulate innovative research to better understand the retinal diseases that damage and destroy vision depends on donations from our community. RRF accepts secure donations at retinaresearchfnd.org, or you can mail your donation to the RRF office. During the holiday season, you can support RRF by making your online purchases through amazonsmile. Use the link on RRF's website or go to smile.amazon.com to register and select RRF as your charity of choice. Once selected, all your future purchases will result in an automatic donation to RRF of 0.5%, at no additional cost to you. Thank you!

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