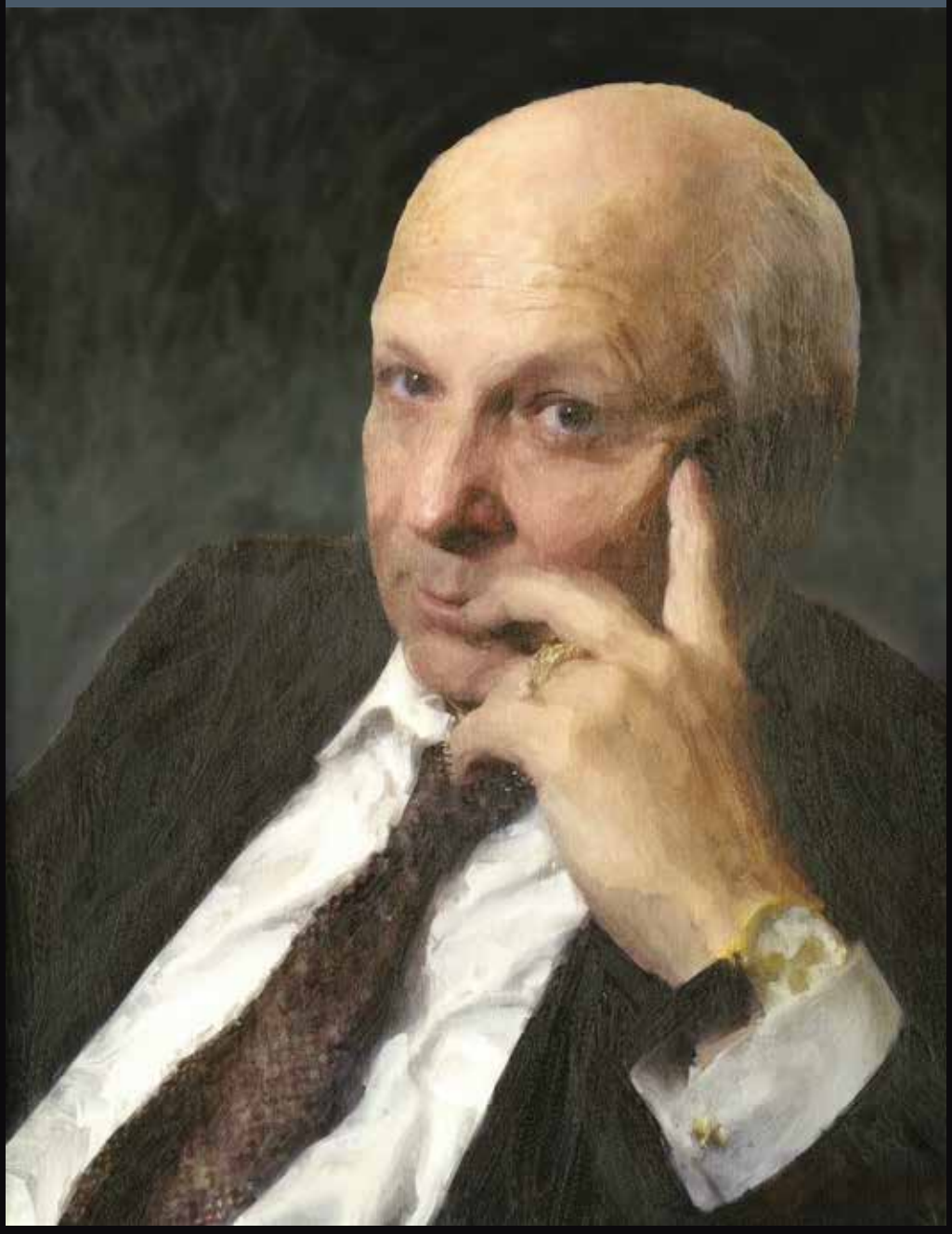
INTERNATIONAL RETINAL RESEARCH FOUNDATION

IRRF

2022 ANNUAL REPORT



IN REMEMBRANCE
LARRY DONOSO, MD, PhD
1943-2022

The IRRF 2022 Annual Report

Sandra Blackwood, Editor
Photos: Sandra Blackwood
Design: Robert Weathers

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COVER STORY:
Lawrence Albert Donoso, MD, PhD, MBA, JD

On October 9, 2022, the science world lost a brilliant researcher in the field of retina with the passing of Lawrence Albert Donoso, or LD as he preferred to be called. The International Retinal Research Foundation (IRRF) lost a dedicated and tireless Director, and many others lost a loyal and trustworthy friend.

PREMIER SCIENTIST:

Born to Cuban immigrant parents on January 11, 1943, LD graduated from the University of Utah's School of Medicine. He completed his Ophthalmology Residency at the University of Louisville in 1978, followed by a Research Fellowship in Ocular Oncology at Wills Eye in 1979 and a Retina Fellowship in 1980 at the Vitreo-Retinal Research Foundation in Memphis, Tennessee. He became the Director of Research at the Henry & Corinne Bower Memorial Laboratories of Wills Eye Hospital in Philadelphia, excelling in retina research. Later, he was appointed the Thomas D. Duane, MD, PhD Professor of Ophthalmology at Wills Eye Hospital and Jefferson Medical College.

Throughout his career, LD authored and co-authored over 200 scientific papers on vitreo-retinal diseases, gaining renown in his field. He also served as a reviewer for more than 25 professional journals and was a member of two editorial boards. LD possessed an insatiable thirst for knowledge, earning degrees in chemistry (BS), experimental biology (MS), biochemistry/biology (PhD), law (JD), and business (MBA) beyond his medical degree.

In 2001, upon the recommendation of Charles D. Kelman, MD, and Alston Callahan, MD, founders of the IRRF, along with Dr. Callahan's son, Michael A. Callahan, MD, LD joined the IRRF Board of Directors as Scientific Director. The Foundation, then in its nascent stages, was situated in a modest office at the Callahan Eye Hospital in Birmingham, Alabama. LD worked tirelessly for the IRRF, dedicating innumerable hours to establish a ten-year collaboration with the Albert and Mary Lasker Foundation. This collaboration formed the Lasker/IRRF Initiative for Innovation in Vision Science, aiming to identify knowledge gaps in vision research and develop innovative strategies for advancing retinal research, thereby discovering sight-saving treatments and preventing retinal diseases. The Initiative united distinguished scientists from diverse specialties and fostered new explorations into potential breakthroughs.

In 2017, the Larry Donoso, MD, PhD Endowed Chair in Retina was established following a $4 million transfer by the Wills physicians to the Philadelphia Retina Endowment Fund (PREF). These funds were allocated specifically for conducting basic, translational, and clinical research related to retinal diseases within the Henry and Corinne Bower Memorial Laboratory.

On March 13, 2020, the IRRF Board of Directors honored LD's dedication and service by establishing the Larry A. Donoso, MD, PhD Award in Retinal Research.

MENTOR:

LD's humility was among his most endearing qualities. He never flaunted his professional affiliations or achievements, always ready to mentor whenever needed, without seeking accolades or recognition. Seeing his colleagues thrive in their careers brought him immense satisfaction.

In 2013, Professor Harminder Dua of the University of Nottingham published his discovery of a layer, just 15 microns thick, between the corneal stroma and Descemet's Membrane, which became known as Dua's layer. This thin yet robust corneal layer can withstand up to 2 bars of pressure. Its properties have guided surgeons in corneal transplants, who rely on Dua's layer's resilience to gauge the depth of their incisions.

Today, Dua's Layer is a recognized structure within the eye, significantly contributing to our understanding of corneal anatomy. In an interview following the discovery, Dr. Dua acknowledged Dr. Larry Donoso, Head of Research at the Wills Eye Hospital in Philadelphia, USA, as a mentor during his period of discovery. Dr. Dua also revealed that his research laboratory at the University of Nottingham bears the name Larry A. Donoso Laboratory for Eye Research. The Donoso Laboratory has received recognition from the Wills Trust Board, the Pennsylvania Senate, and was mentioned in the Congressional Records at Capitol Hill, standing as one of LD's enduring legacies.

Another colleague, Ming Wang MD, PhD, Director of the Wang Vision Institute in Nashville, Tennessee, and former Bower Research Fellow, described LD as "a mentor to students aspiring to study ophthalmology and a friend to foreign scholars." Dr. Wang emphasized, "LD was instrumental in inspiring me to study the eye and become an ophthalmologist. After completing my MD at Harvard and MIT (in the Health Science and Technology program), LD introduced me to the excitement of ophthalmology, highlighting it as a fantastic field and profession." During his residency at Wills, Dr. Wang pursued research on retinoblastoma in LD's lab, earning the James Shipman Award. Recognized globally for his pioneering work in laser vision surgery and cornea treatment, Dr. Wang penned an autobiography, "From Darkness to Sight." The book, soon to be a film featuring Greg Kinnear, describes Dr. Wang's journey from a struggling immigrant student to a renowned ophthalmologist, underscoring LD's influential mentorship. The film is slated for a wide theatrical release on October 27, 2023.

RENAISSANCE MAN:

Beyond his distinguished professional career, Dr. Donoso indulged in a plethora of interests, resulting in diverse and extensive achievements. A talented amateur photographer, keen historian, and explorer, he, alongside his long-time friend and fellow photographer Roger Barone (Wills Eye Photographer), established a media company showcasing their images. "In just a few years, his photos on Flickr garnered over 1.5 million views," Barone noted. LD's vast collection spans themes including NASA and spacecraft, American flags, dinosaur fossils, national parks, bridges, sunsets, and the Delaware River in his beloved city of Philadelphia.

He also held six patents related to ophthalmology, including one for "Oppy." Collaborating once more with Roger Barone, they designed an eye chart featuring Oppy, named after the Ophthalmosaurus, aiming to make eye doctor visits more engaging for children.

LD's numerous accolades include induction into The Royal College of Ophthalmologists in London and recognition from Queens Medical Center at the University of Nottingham.

(Continued...)

REMEMBRANCE:

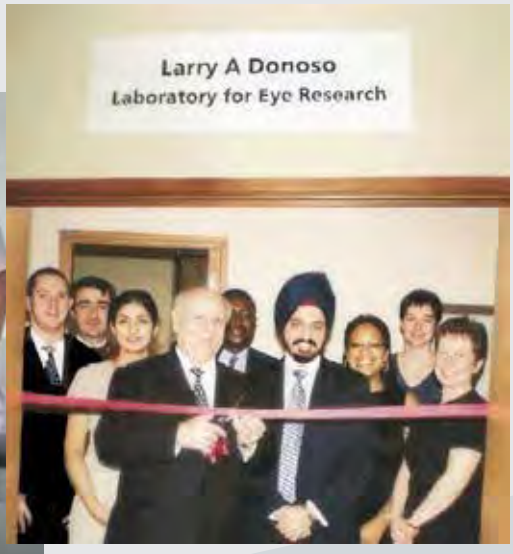
Larry Donoso was many things to many people, but all who knew him, in whatever capacity, will always remember not only his scientific achievements, but also his love of life and his joyful spirit. He will be deeply missed.

LD, Sandy Blackwood, Paul Sternberg, Woods Hole

Paul Sternberg, MD, IRRF; Larry Donoso, MD, PhD, IRRF; Maria C. Freire, PhD, President, Albert and Mary Lasker Foundation; Christopher Girkin, MD, University of Alabama at Birmingham; Alfred Sommer, MD, MHS, Chairman of the Board, Albert and Mary Lasker Foundation; Michael A. Callahan, MD, President, IRRF.

LD, Sherry Kidd, and Hugo Marx III, IRRF Treasurer. Lasker Awards, New York City

V. Hugo Marx, III, IRRF Treasurer; LD; Sandy Blackwood, IRRF. Spring 2022



LD, and Dr. Dua (Right) at opening of Larry A Donoso Laboratory for Eye Research Nottingham, England

The IRRF provides financial assistance for vision research to scientists in every corner of the world, while focusing on discovery of causes, preventions and cures of macular degeneration and diabetic retinopathy. More than ever, this support is vital to the ongoing work, which will affect the lives of many individuals and further scientific knowledge.

The following pages summarize IRRF funding commitments for scientific study. Because eye diseases affect individuals worldwide, funding internationally has always been a priority and grant recipients are a diverse group of scientists from across the United States and overseas.

PROJECT TITLE: *Development of a novel transplant-independent therapy for retinal pigment epithelium (RPE) dysfunction using epigenetic reprogramming of RPE stem cells*

2022 Alston Callahan, MD Postdoctoral Scholar Shintaro Shirahamahama, PhD
Schepens Eye Research Institute
Harvard Medical School

Dr. Shirahama has a strong background in ocular inflammatory diseases, including infectious and non-infectious uveitis. After graduating from medical school in Japan, Dr. Shirahama joined the ophthalmology department at the University of Tokyo in 2013. He continued his training as a clinical ophthalmologist at the University of Tokyo Hospital and has been primarily engaged in the outpatient and inpatient treatment of patients with ocular inflammatory disorders, including uveitis. Shirahama published 10 scientific papers from his clinical research in Japan, 6 of which as first author.

After receiving a PhD in 2021, Shirahama joined Dr. Bruce R. Ksander's lab at the Schepens Eye Research Institute of Massachusetts Eye and Ear, Harvard Medical School, where he focuses on restoring the function of aging retinal pigment epithelial (RPE) cells and/or aging ABCB5 (a known marker of stem cells). His aim is to develop a novel transplant-independent therapy for RPE dysfunction.

Shintaro Shirahama, PhD

PROJECT TITLE: *Role of retinal pigment epithelium in choroidal thickness modulation and myopia maculopathy*

So Goto, MD, PhD, has been selected as the 2022 Loris and David Rich Postdoctoral Scholar for his project, *Role of retinal pigment epithelium in choroidal thickness modulation and myopia maculopathy.* After receiving a Bachelor of Medicine (MD) from Kanazawa University School of Medicine in Ishikawa, Japan, he attended Osaka University Graduate School of Medicine Department of Ophthalmology, Osaka, Japan, earning a Doctor of Philosophy (PhD) with concentrations in ophthalmology and developmental biology.

Currently, Dr. Goto is a postdoc at University of California Berkeley School of Optometry, and retains the position of ophthalmologist at Osaka University Graduate School of Medicine in Japan. Dr. Goto's postgraduate research was focused on choroidal vascular development, and his interests are in the mechanism of myopia such as eye growth and refractive development. Currently, he is performing clinical research on the development of the new accurate IOL (intraocular lens) power calculation formula.

Dr. Goto has contributed and co-authored numerous publications, the latest being *Daily or Less Frequent Topical 1% Atropine Slows Defocus-Induced Myopia Progression in Contact Lens-Wearing Guinea Pigs*; Translational Vision Science & Technology, March 2022, Vol. 11, 26. doi:https://doi.org/10.1167/tvst.11.3.26

So Goto, MD, PhD

2022 Loris and David Rich Postdoctoral Scholar Recipient So Goto, MD, PhD

PROJECT TITLE: *The choroidal adaptive immune system is vital in the pathogenesis of retinal inflammation*

2022 Charles D. Kelman, MD Postdoctoral Scholar
James Walsh, MD, PhD

James Walsh, MD, PhD, specializing in ophthalmology and uveitis, is a clinician-scientist at Washington University in St. Louis, Missouri. He is currently working on a project with the potential to be transformative in the understanding of ocular autoimmunity. Despite being extremely productive in the lab of Jonathan Kipnis, PhD, Dr. Walsh is also an attending in the ophthalmology department and an active surgeon. Research interests include mechanisms of immune cell activation in uveitis and immune trafficking in uveitis.

Dr. Walsh earned his MD/PhD in Medicine/Neuroscience from University of Virginia, Charlottesville, Virginia, where he finished an Internship in Internal Medicine. A Residency at University of California, San Diego, California in Ophthalmology followed after which he completed a Fellowship in Uveitis at Johns Hopkins University, Baltimore. He has first author publications in the *Journal of clinical Investigation and the Journal of Immunology*.

James Walsh, MD, PhD

2022 Robert Machemer MD and International Retinal Research Foundation Fellowship

The members of the Board of The Robert Machemer Foundation awarded the 2022 Fellowship to The Shiley Eye Institute in support of Christopher Brian Toomey, MD, PhD with the mentorship of Professor Jeffrey D. Esko. Dr. Toomey's research project is entitled, *Ultrastructural Glycomics Analysis of Bruch's Membrane in Age-related Macular Degeneration (AMD).*

The Fellowship Awardee was selected based on Dr. Toomey's clear commitment to applying research to the challenges of vitreoretinal diseases and surgery, as well as a demonstration of his potential for mentored transition to independent research to improve knowledge of the causes and treatment of vitreoretinal diseases.

Dr. Toomey is an Assistant Professor of Clinical Ophthalmology at UC San Diego, Shiley Eye Institute, Viterbi Family Department of Ophthalmology and the Glycobiology Research and Training Center, who has an active medical and surgical practice specializing in adult vitreoretinal disease.

PROJECT:
Ultrastructural Glycomics Analysis of Bruch's Membrane in Age-related Macular Degeneration (AMD)

Christopher Brian Toomey, MD, PhD

Frontiers in Aging Neuroscience

(30 June 2022)

Authors: Daniela Intartaglia[1], Giuliana Giamundo[1,2], Federica Naso[1], Edoardo Nusco[1], Simona Di Giulio[1], Francesco Giuseppe Salierno[1], Elena Polishchuk[1], and **Ivan Conte**[1,2]

[1]Telethon Institute of Genetics and Medicine, Pozzuoli, Italy, [2]Department of Biology, University of Naples Federico II, Naples, Italy

Autophagy is a critical metabolic process that acts as a major self-digestion and recycling pathway contributing to maintain cellular homeostasis. An emerging field of research supports the therapeutic modulation of autophagy for treating human neurodegenerative disorders, in which toxic aggregates are accumulated in neurons. Our previous study identified Ezrin protein as an inhibitor of autophagy and lysosomal functions in the retina; thus, in turn, identifying it as a potential pharmacological target for increasing retinal cell clearance to treat inherited retinal dystrophies in which misfolded proteins have accumulated. This study aimed to verify the therapeutic inhibition of Ezrin to induce clearance of toxic aggregates in a mouse model for a dominant form of retinitis pigmentosa (i.e., $RHO^{P23H/+}$). We found that daily inhibition of Ezrin significantly decreased the accumulation of misfolded RHOP23H aggregates. Remarkably, induction of autophagy, by a drug-mediated pulsatile inhibition of Ezrin, promoted the lysosomal clearance of disease-linked RHOP23H aggregates. This was accompanied with a reduction of endoplasmic reticulum (ER)-stress, robust decrease of photoreceptors' cell death, amelioration in both retinal morphology and function culminating in a better preservation of vision. Our study opens new perspectives for a pulsatile pharmacological induction of autophagy as a mutation-independent therapy paving the way toward a more effective therapeutic strategy to treat these devastating retinal disorders due to an accumulation of intracellular toxic aggregates.

To access this article:

https:///frontiersin.org/articles/10.3389/fnagi.2022.878958/full

This study was conducted with IRRF funds – Ivan Conte, PhD, Telethon Institute of Genetics and Medicine, Pozzuoli, Italy. Department of Biology, University of Naples Federico II, Naples, Italy.

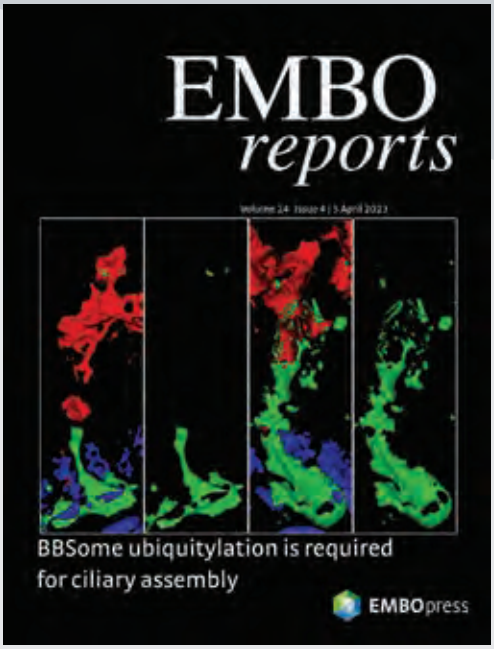
Project Title: *Ubiquitylation of BBSome is required for ciliary assembly and signaling*

ABSTRACT: Bardet-Biedl syndrome (BBS) is a ciliopathy characterized by retinal degeneration, obesity, renal abnormalities, postaxial polydactyly, and developmental defects. Genes mutated in BBS encode for components and regulators of the BBSome, an octomeric complex that controls the trafficking of cargos and receptors within the primary cilium. Although both structure and function of the BBSome have been extensively studied, the impact of ubiquitin signaling on BBSome is largely unknown. We identify the E3 ubiquitin ligase PJA2 as a novel resident of the ciliary compartment and regulator of the BBSome. Upon GPCR-cAMP stimulation, PJA2 ubiquitylates BBSome subunits. We demonstrate that ubiquitylation of BBS1 at lysine 143 increases the stability of the BBSome and promotes its binding to BBS3, an Arf-like GTPase protein controlling the targeting of the BBSome to the ciliary membrane. Downregulation of PJA2 or expression of a ubiquitylation-defective BBS1 mutant (BBS1K143R) affects the trafficking of G-protein-coupled receptors (GPCRs) and Shh-dependent gene transcription. Expression of BBS1K143R in vivo impairs cilium formation, embryonic development, and photoreceptors' morphogenesis, thus recapitulating the BBS phenotype in the medaka fish model.

Author Contributions: Ivan Conte, PhD: Supervision, funding acquisition; investigation; writing – original draft; writing – review and editing.

This study was conducted with IRRF Funds: Ivan Conte, PhD

Ivan Conte, PhD



Francesco Chiuso, Rossella delle Donne, Giuliana Giamundo, Laura Rinaldi, Domenica Borzacchiello, Federica Moraca, Daniela Intartaglia, Rosa Iannuci, Emanuela Senatore, Luca Lignitto, Carrodo Garbi, Paolo Conflitti, Bruno Catalanotti, **Ivan Conte**, & Antonio Feliciello

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Access article: https://www.embopress.org/doi/full/10.15252/embr.202255571

Daily or Less Frequent Topical 1% Atropine Slows Defocus-Induced Myopia Progression in Contact Lens-Wearing Guinea Pigs

Qiurong Zhu; **So Goto**; Sarah Singh; Josue A. Torres; Christine F. Wildsoet

University of California, Berkeley, California, USA

Translational Vision Science & Technology March 2022, Vol.11,26. doi:https://doi.org/10.1167/tvst.11.3.26

This study was co-authored by So Goto, 2022 IRRF Charles D. Kelman, MD Postdoctoral Scholar.

ABSTRACT

Purpose: This study compared the efficacy of topical 1% atropine applied daily versus every 3 days for controlling myopia progression in guinea pigs.

Methods: To induce myopia, pigmented guinea pigs (New Zealand strain, n = 38) wore monocular -10 D rigid gas-permeable (RGP) contact lenses, which were replaced after 3 weeks with -15 diopter (D) contact lenses. Animals were treated with 1% atropine either daily (Atr-QD; n =12), or every three days (Atr-Q3D; n = 11), with artificial tears (control group; n = 15). Spherical equivalent refractive error (SER) and axial length (AL) data, as well as retinal and choroidal thickness data were collected weekly.

Results: Whereas mean (+SEM) interocular differences (treated – fellow) in both SER and AL at week 0 (baseline) were similar for all groups, significant differences between the atropine-treated eyes of the control groups were evident by week 6 (SER and AL, P <0.001). The treated eyes of the control group showed relatively more axial elongation and myopia progression than both the Atr-QD and Atr-Q3D groups. Choroidal blood vessel area also decreased over time in the treated eyes of the control group, coupled with choroidal thinning overall, with these changes being attenuated by atropine. Retinal thickness showed a developmental decrease over the treatment period but was unaffected by atropine.

Conclusions: For this defocus-induced guinea pig model of myopia, application of 1% topical atropine slows myopia progression, even when applied every 3 days.

Translational Relevance: The results from this study suggest that the frequency of dosing for topical atropine may be reduced from the widely used daily dosing regimen without loss of myopia control efficacy.

Funding Partnerships that Provide Opportunities to Young Investigators

Ramon Dacheux II Travel Award: *New Orleans, Louisiana*

Suva Roy, PhD, from Duke University, School of Medicine, Durham, North Carolina, received the 2023 Ramon Dacheux II Memorial Travel Grant. This award has allowed him to attend the annual meeting of the Association for Research in Vision and Ophthalmology (ARVO) held in New Orleans, Louisiana. The Dacheux Travel Award is an annual grant funded by a donation from the International Retinal Research Foundation and presented through the ARVO Foundation.

Travel grants provide partial travel support to investigators who have an accepted abstract with a high score for the annual ARVO meetings and whose research findings in the abstract are considered to be of high interest to the vision and ophthalmology research community. The ARVO annual meeting provides a unique opportunity for trainees and early career investigators to discuss their research with leaders in their fields and receive encouragement to continue their work.

The Dacheux Travel Award was established in 2006 to recognize not only Dr. Dacheux's scientific achievements, but also his willingness to share his knowledge with other scientists.

Suva Roy, PhD

Project Title: *Aberration in myeloid-derived pro- implication for diabetic retinopathy?*

Mahnaz Shariatzadeh[1], Trishka R.R. Binda[1], Conny van Holten-Neelen[2], Josianne C. ten Berge[2], Jose P. Martinez Ciriano[4], King T. Wong[4], **Willem A. Dik[2]** and Pieter J.M. Leenen[2]

[1]Department of Immunology, Erasmus University Medical Center, Rotterdam, Netherlands. [2]Department of Immunology, Erasmus University Medical Center, Rotterdam, Netherlands. [3]Department of Ophthalmology, Erasmus University Medical Center, Rotterdam, Netherlands. [4]Rotterdam Eye Hospital, Rotterdam, Netherlands.

Purpose: Diabetic retinopathy (DR) is a major microvascular complication of type 2 diabetes mellitus (T2DM). Myelomonocytic proangiogenic cells (PAC) have been implicated in DR pathogenesis, but their functional and developmental abnormalities are unclear. In this study we assessed PAC characteristics from healthy controls. T2DM patients with DR and without (NoDR) in order to determine the consequence of the diabetic condition on PAC phenotype and function, and whether these differ between DR and NoDR patients.

Methods: PAC were generated by culturing PBMC on fibronectin coating and then immunophenotyped using flow cytometry. Furthermore, cells were sorted based on CD14, CD105, and CD133 expression and added to an in vivo 3-D endothelial tubule formation assay, containing GFP-expressing human retinal endothelial cells (REC), pericytes, and pro-angiogenic growth factors. Tubule formation was quantified by fluorescence microscopy and image analysis. Moreover, sorted populations were analyzed for angiogenic mediator production using a multiplex assay.

Results: The expression of CD16, CD105 and CD31, but not CD133, was lower in PAC from T2DM patients with or without DR. Myeloid and non-myeloid T2DM-derived sorted populations increased REC angiogenesis in vivo as compared to control cultures. They also showed increased S100AB secretion, decreased VEGF-A secretion, and similar levels of IL-8, HGF, and IL-3 as compared to healthy control (HC)-derived cell populations.

Left to Right: Dr. Pieter Leenen, Dr. Mahanz Shariatzadeh and ***Willem Dik, PhD***

angiogenic cells in type-2 diabetes mellitus;

Conclusion: T2DM PAC are phenotypically and functionally altered compared to Pac from HC. Differences between DR and NoDR PAC are limited. We propose that impaired T2DM PAC provide inadequate vascular support and promote compensatory, albeit pathological, retinal neovascularization.

This study was supported by a grant from The International Retinal Research Foundation,
Willem Dik, PhD.

Read the article:
https://frontiersin.org/articles/10.3389/foph.2023.1119050

IRRF Announces New Partnership Initiatives Providing Sustained Research Funding:

The International Retinal Research Foundation is pleased to announce a new partnership with The Retina Society that will provide research funding for three consecutive years. This partnership presents opportunities that leverage the power of matching grants from more than one source.

The Retina Society Research & Education Fund Retina Society/IRRF Award

The main mission of the Retina Society is to advance knowledge and education in the field of retina. Consistent with that mission, the Retina Society established a research and education grant program, with the objective of funding several annual research grants to support innovative research by Retina Society members. In their inaugural year, two grants of $25,000 each were funding. In 2022, The Retina Society and the IRRF partnered to fund three grants of $50,000 each per year for three years.

Eligibility: Only active and associate members of The Retina Society may apply for grants. For further information and funding guidelines, go to www.retinasociety.org.

The 2022 Retina Society/IRRF Awardees

RAJENDRA S. APTE, MD, PHD
Paul A. Cibis Distinguished Professor of
Ophthalmology and Visual Sciences
Washington University
St. Louis, Missouri USA

PROJECT TITLE: *Elucidating the Roles of AMP Kinase Catalytic Isoforms in Photoreceptors*

AJAY KURIYAN, MD
Assistant Professor of Ophthalmology
Sidney Kimmel Medical College at
Jefferson University
Philadelphia Pennsylvania USA

PROJECT TITLE: *Investigating the Role of Monocarboxylate Transporter 4 (MCT4) and Lactate in Proliferative Vitreoretinopathy*

ADRIENNE WILLIAMS SCOTT, MD
Clinic Director
Bel Air Associate Professor of Ophthalmology
Wilmer Eye Institute
Johns Hopkins University
Baltimore, Maryland USA

PROJECT TITLE: *Automated Detection of Proliferative Sickle Cell Retinopathy in Ultra-Widefield Fundus Images*

Strategic Philanthropy at Work
A Vision Realized

Since 2000, the International Retinal Research Foundation (IRRF) has been dedicated to supporting eye research directly around the world. To date, approximately $26 million has been awarded to further research for all structures of the human eye with emphasis on discovering the causes, preventions and cures of macular degeneration of the retina and diabetic retinopathy.

In 2021, it became evident that rather than continuing a major focus on research funding through individual grants, a more impactful and targeted approach was paramount. It was also recognized this needed to be a strategic move that would not only further the mission of the Foundation as set out by Founder Alston Callahan, MD, but would also address the wishes of long-time friend and patron, Mrs. Loris Rich. Mrs. Rich helped to establish the independent International Retinal Research Foundation in 1997. Further, she stipulated in her Will that upon her death the bulk of her estate would go to the IRRF to provide support for the Foundation well into the future.

After months of discussion and brainstorming, and with the acknowledgement that the Foundation must become a stronger impetus for scientific research, it was decided that a two-prong targeted approach would be adopted. The strategic plan would include a directorship to support a physician-scientist leader in the Department of Ophthalmology and a vision research center dedicated to retinal vision research.

For many years, the IRRF had had the tremendous good fortune of having Dr. Paul Sternberg, Jr. (G.W. Hale Professor and Chair, Vanderbilt Eye Institute), on the board of directors serving as Director of Research Funding. Dr. Sternberg's dedication to IRRF interests and his never-ending efforts to support the goals and mission, led to the recommendation that the proposed directorship be named for him. The IRRF/Sternberg Directorship was created in 2021 and includes a $2 million gift to be paid out at $500,000 annually until 2024. The Directorship will support a senior retina faculty member engaged in

IRRF Executive Director Sandra Blackwood with Vanderbilt's Paul Sternberg Jr., MD, left and David Calkins, PhD., Denis M. O'Day Professor of Ophthalmology and Visual Sciences, assistant vice president for VUMC Research. (Photo by Chad Driver)

research, teaching and patient care with an emphasis on collaborative work that will help bring discovery from the bench to the bedside.

Next, it was recognized that a major focus of a research center must encompass a group of scientists with a proven record for success, as well as dedicated lab space. Because the board was already aware that the Vanderbilt Eye Institute was one of the fastest-growing ophthalmology programs in the country and the recipient of consistent transformational funding from the National Eye Institute, the Vanderbilt Eye Institute became the overwhelming choice.

In late 2022, IRRF Board members, under the leadership of President Michael A. Callahan, MD, announced an additional $8 million gift to establish a vision research center, whose purpose will be to promote retinal vision research designed to achieve clinical solutions for patients suffering from retinal and optic nerve diseases. The IRRF/Vanderbilt Vision Research Center, housed at Vanderbilt Eye Institute (VEI), will allow a select core of scientists to develop new therapies, and will serve as a catalyst for groundbreaking science in diseases of the retina while bringing new treatments to patients with debilitating eye conditions.

The distribution of funds is broken down as follows:

$3,000,000 will fund the **David and Loris Rich Research Fund** to support research in age-related macular degeneration and other retinal degenerative diseases.

$3,000,000 will fund the **International Retinal Research Foundation Research Fund** to support research in diabetic retinopathy and other retinal vascular diseases.

$2,000.000 will fund the **International Retinal Research Foundation Capital Fund** to support physical space and equipment necessary for the work of the Vision Research Center.

In addition, Vanderbilt Eye Institute will provide an additional $2,000,000 endowed institutional investment to be divided evenly between the first two funds so that each of the research funds will total $4,000,000 for direct research support.

Dr. Paul Sternberg, Jr., MD, chair of the Department of Ophthalmology and Visual Sciences and director of the Vanderbilt Eye Institute, commented that, "This is truly a transformational gift for our retina research program."

This bold investment totaling $10 million represents a pivotal, new direction for the IRRF and is strongly supported by the Foundation staff and board members. "The International Retinal Research Foundation Board and our committed executive director, Sandra Blackwood, have been honored to work alongside VEI and Dr. Paul Sternberg, Jr. through the years in our shared mission to advance vision research," said Michael Callahan, MD, IRRF Board President. "This support enables us to make a significant difference in the lives of so many people, especially in the Southeast U.S., who are impacted by age-related macular degeneration and diabetic retinopathy."

Michael A. Callahan, MD has led the IRRF Board of Directors since 2004.

THE IRRF BOARD OF DIRECTORS

MICHAEL A. CALLAHAN, MD,

has served as President since 2004 and gives generously of his time. Since 1998, Dr. Callahan has held a faculty position as Professor of Ophthalmology in the Department of Ophthalmology at the University of Alabama at Birmingham (UAB), and teaches the intricate surgical procedures of phacoemulsification and intraocular lens insertion. In addition, Dr. Callahan lectures on ophthalmic plastic surgery. Dr. Callahan is also very involved in providing ophthalmic care in the U.S. and countries worldwide, where medical care is not readily available.

JOHN S. PARKER, MD,

serves as Vice President while devoting himself to private ophthalmology practice and teaching responsibilities in the UAB Department of Ophthalmology where he trains ophthalmology residents and donates time and expertise caring for indigent patients. Dr. Parker has served as Director of the Corneal Service and as Director of the Residency Training Program in the UAB Department of Ophthalmology.

V. HUGO MARX, III,

serves as Treasurer and has been a member of the IRRF Board since 2004. Mr. Marx operates several corporations, which represent various industries, including health care, investment banking and venture capital. Through his numerous businesses, Mr. Marx has provided charitable donations as medical supplies, food and support items used in multiple, extreme emergency situations in and outside the U.S.

PAUL S. STERNBERG, JR., MD,

serves as Director of Research Funding for the Foundation in addition to his many other responsibilities at Vanderbilt University in Nashville, Tennessee, where he is Associate Dean for Clinical Affairs and Assistant Vice Chancellor for Adult Health Affairs at the Vanderbilt School of Medicine. He also serves as professor and chairman of the Department of Ophthalmology and the Vanderbilt Eye Institute. With a special interest in age-related macular degeneration, Dr. Sternberg oversees a cell biology and biochemistry laboratory that carries out studies into the causes of the disease.

CYNTHIA A. TOTH, MD

was invited to join the IRRF Board of Directors in 2019 and assists in grant-funding determinations. Dr. Toth is a professor of ophthalmology at Duke Eye Center in Durham, North Carolina. She is the Joseph A.C. Wadsworth Distinguished Professor of Ophthalmology, Vice Chair of Clinical Research and is a professor of biomedical engineering. Dr. Toth specializes in the evaluation and surgical treatment of vitreoretinal disease in infants, children and adults, and in novel research resulting in the clinical application of optical coherence tomography (OCT) imaging in surgery and at the bedside. Her clinical interests and skills include the surgical treatment of macular diseases (as macular hole, epiretinal membrane and vitreomacular traction), retinal detachment, proliferative diabetic retinopathy, proliferative vitreoretinopathy (PVR), and retinopathy of prematurity (ROP).

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Today's scientists play a crucial role in the universal struggle against debilitating eye diseases, but financial funding is needed to facilitate and sustain their efforts. As of year-end 2022, the IRRF had granted more than $26 million in support of scientific investigations targeting all structures of the human eye, with emphasis on finding the causes, prevention and cure of degenerative diseases. If you would like to help with this challenge, please send your tax deductible contribution to:

The International Retinal Research Foundation, Inc.
Attn.: Sandra Blackwood, MPA, Executive Director
1720 University Boulevard
Birmingham, AL 35233 www.irrf.org