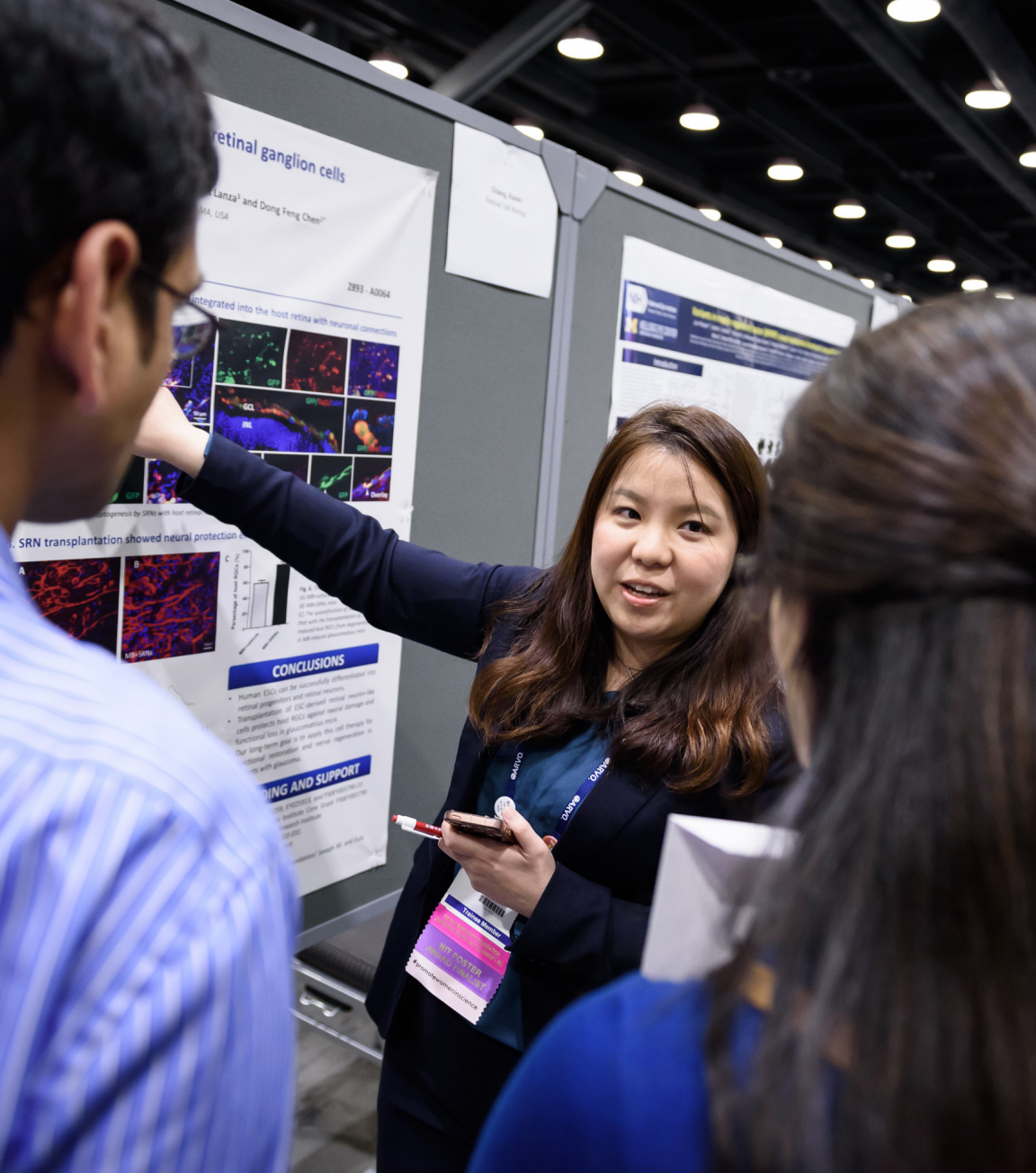




2021

ANNUAL REPORT



Our purpose

The ARVO Foundation for Eye Research serves as a global catalyst for innovation, workforce development and collaboration in the field of vision research. We raise funds through corporate grants, fundraising events and the generosity of ARVO members who wish to support the next generation of eye and vision researchers.

The numbers



656

ARVO Foundation Travel
Grants awarded



434

Number of people who
supported the Foundation



\$345,730

value of research
grants & fellowships



15

International
Chapter Affiliates



\$18,000

Invested in
career development program to
support junior researchers



4

New members of the
Dowling Society



5

Publication Financial
Assistance recipients



\$79,500

Awarded to recognize and
encourage innovative research

From the Chair



Joel S. Schuman, MD,
FARVO

The ARVO Foundation helps to enable ARVO to support and recognize the membership through programs, grants, awards, education and career development. It is an honor to serve as Chair of the ARVO Foundation and to share with you the 2021 ARVO Foundation Annual Report.

The Annual Report highlights the support and growth that we have made. It is astonishing to me that throughout the pandemic and ARVO's first fully virtual Annual Meeting, our community of eye and vision scientists did not waiver. Support for existing and increased funding opportunities have never been more important. Strong commitment from our donors allows us to continue to build on these opportunities.

“

[T]hroughout the pandemic and ARVO's first fully virtual Annual Meeting, our community of eye and vision scientists did not waiver. ”

We are especially grateful to our donors that supported members in a non-conventional year. I want to thank Erik van Kuijk and his wife, Virginia van Kuijk Brooke, for their 2021 Matching Gift which raised over \$43,400 during the virtual ARVO Annual Meeting. Because of their contribution, as well as those of the individual donors, the ARVO Foundation raised over \$156,000 which will provide travel grants for researchers to attend the 2022 Annual Meeting.

ARVO Foundation supports the general membership through opportunities such as publication financial assistance, various grants and awards, the Women's Leadership Development Program and the Developing Country Eye Researcher Travel Fellowship. Please consider giving generously to continue to enhance the ARVO Foundation's mission to serve as a global catalyst for innovation, workforce development and collaboration in the field of vision research.

I look forward to seeing you May 1 – 4 in Denver, CO for the 2022 ARVO Annual Meeting.

A handwritten signature in black ink that reads "Joel S. Schuman". The signature is fluid and cursive, with a long horizontal stroke at the end.

Joel S. Schuman, MD, FARVO
Chair, ARVO Foundation Board of Governors

Travel grants

The ARVO Foundation awarded 656 travel grants through 34 named funds in 2021. These travel grants underwrite the cost of attendance for the ARVO Annual Meeting, allowing young scientists to present their research and network with other eye and vision researchers from around the world. The ARVO 2021 Annual Meeting was virtual, and the ARVO Foundation was able to award more grants.

- American Macular Degeneration Foundation
- ARVO Foundation
- ARVO Staff
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- BrightFocus Foundation
- C. Stephen and Frances B. Foster Foundation
- David R. Pepperberg
- Elizabeth Anderson
- Foster Ocular Immunology Society
- Friederike Mackensen
- G. M. Jager
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- Joanne G. Angle
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- Lions Eye Institute for Transplant and Research
- M. Velma Dobson Memorial
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- Ocular Immunology and Uveitis Foundation
- Qais Farjo, MD Memorial
- Ramon F. Dacheux II Memorial
- Reader's Digest Partners for Sight Foundation
- Retina Research Foundation/ Joseph M. and Eula C. Lawrence
- Richard Newton Lolley
- Robert B. Barlow, Jr.
- Santen, Inc.
- Sarla P. Kothary Memorial
- Women in Eye and Vision Research (WEAVR)



Travel grant recipients at the ARVO 2019 Annual Meeting.

New Awards



Ingrid Kreissig, MD

Kreissig Award for Excellence in Retinal Surgery

Ingrid Kreissig, MD is a world-renowned retina specialist and pioneer in ophthalmology. She has devoted her decades-long career to improving the understanding of retinal surgical conditions and their treatments, specifically management of retinal detachments and their resulting long-term visual function.

The Kreissig Award includes a \$30,000 honorarium and is given annually to recognize the next generation of investigators who seek to optimize functional outcomes for patients needing retinal surgery.

The inaugural award in 2021 was to a deserving recipient who has developed clinical insights into the long-term (greater than two years) surgical and functional outcomes after retinal detachment repair.

Subsequent awards (2022 onward) will have a broader focus, recognizing excellence in the understanding of the mechanisms of retinal disease requiring surgical management, innovative approaches to management, and/or outcomes of surgical treatment.

Inaugural Recipient

Rajeev Muni, MD

Vitreoretinal Surgeon
St. Michael's Hospital/
The Hospital for
Sick Children/
Kensington Eye Institute/
University of Toronto
Toronto, Canada



Point of View Award

The Point of View Award was established by the Fundació Punt de Vista, or Point of View Foundation, based in Spain, dedicated to advancing scientific research related to disease and injuries of the eye and visual system.

The award includes a \$20,000 honorarium and recognizes an outstanding scholarly article published in a high-impact peer-reviewed journal during the previous calendar year related to efforts to restore vision through regenerative ophthalmology, biotechnology, whole eye transplantation or other approaches to the stated problem.

The intent of the Point of View Award is to recognize and incentivize significant research that may advance the ability to restore sight to those who are blind or have significant visual impairment.

Awardees

Dasha Nelidova, MBChB, PhD

Institute of Molecular and
Clinical Ophthalmology
Basel, Switzerland

Botond Roska, MD, PhD

Institute of Molecular and
Clinical Ophthalmology
Basel, Switzerland

Award and Fellowship Recipients

ARVO/Alcon Early Career Clinician-Scientist Research Awards

These support researchers who are committed to careers as clinician-scientists. The \$3,000 award recognizes significant research being presented at the ARVO Annual Meeting.

Kim Jiramongkolchai, MD

Kaiser Permanente
McLean, Va.

Effects of Fetal Hemoglobin on Systemic Oxygenation in Preterm Infants and the Development of Retinopathy of Prematurity

Dr. David L. Epstein Award

This \$100,000 award is given in memory of David L. Epstein, MD to a well-established, senior level investigator with a documented history of conducting eye and vision research in glaucoma and a record of accomplishment in successfully mentoring clinician-scientists to independent research in academic careers.

Mentor:

Jamie Craig, MBBS, FRANZCO, DPhil

Mentee:

Owen Siggs, MD, DPhil
Flinders University
Adelaide, NSW, Australia

Investigating the utility of polygenic risk scores to prevent blindness in primary open-angle glaucoma

Bert M. Glaser, MD Award for Innovative Research in Retina

Given in memory of Bert M. Glaser, MD, this \$10,000 award recognizes an early-career investigator who has made a novel discovery of a drug, technique or disease that impacted the understanding and/or treatment of a retinal disease or condition.

Yohei Tomita, MD, PhD

Harvard Medical School
Boston, Mass.

Pfizer Ophthalmics/Carl Camras Translational Research Award

This research award gives \$12,000 to early-career researchers who exhibit excellence in research. Their discovery or observation must have led to, or have the promise of leading to, clinical applications.

Alex Huang, MD, PhD

Doheny Eye Institute,
University of California, Los Angeles
Los Angeles, Calif.

Oberdorfer Award in Low Vision Research

Named in honor of Michael D. Oberdorfer, PhD and supported by the Lighthouse Guild, this \$1,250 award is given to an invited speaker at the ARVO Annual Meeting whose presentation is on a topic related to low vision.

Caroline C.W. Klaver, MD, PhD, FARVO

Erasmus Medical Center
The Netherlands

Epidemiology of AMD: From Beaver Dam to the Three Continents.

Award and Fellowship Recipients

Ludwig von Sallmann Clinician-Scientist Award

This \$1,250 award for young clinician-scientists remembers Ludwig von Sallmann, MD, a distinguished international ophthalmologist and ophthalmic investigator, by recognizing an outstanding invited speaker at the ARVO Annual Meeting.

Sai Chavala, MD

Texas Christian University and The University of Northern Texas Health Science Center
Fort Worth, Texas

Lewis Rudin Glaucoma Prize

This prize, supported by the May and Samuel Rudin Family Foundation, provides a \$30,000 award in recognition of an outstanding scholarly article on glaucoma during the previous year

Pooja Teotia, PhD

Iqbal Ahmad, PhD

University of Nebraska
Omaha, Neb.

Genentech Career Development Award for Underrepresented Minority Emerging Vision Scientists

Supported by Genentech, this new award provides a two-year grant of \$100,000 to an early-career underrepresented minority investigator. Recipients must have received their initial faculty appointment and are working to start an independent vision research program.

Elizabeth Zuniga-Sanchez, PhD

Baylor College of Medicine
Houston, Texas

Mallinckrodt Uveitis Research Fellowship

This fellowship provides one \$45,000 research award to support a well-conceived research project focused on an aspect of uveitis or other inflammatory condition of the eye, including the understanding of the role and interplay of infections and intraocular inflammation. This award was established in 2019 and is supported by Mallinckrodt through the ARVO Foundation.

Shilpa Kodati, MD

National Eye Institute
Bethesda, Md.

The effect of immunomodulatory therapy in non-infectious uveitis: A study of immunologic mechanisms.

ARVO Foundation Collaborative Research Fellowships

These \$10,000 fellowships promote international scientific interactions and innovative research by pairing researchers from developing countries with well-established research scientists for a one-year collaborative project.

Wanjiku Mathenge, MBChB, MMed, MSc, PhD

University of Rwanda
Kigali, Rwanda

Sudhir H. Ranganath, PhD

Siddaganga
Institute of Technology
Tumkur, India

Pablo Federico Barcelona, PhD

National University of Córdoba
Córdoba, Argentina

EyeFind Research Grantees

The EyeFind Research Grant Program provides supplemental funding of \$5,000 per project to assist researchers with procurement of human eye tissue from eye banks for use in a well-conceived research project.

Frauke Coppieters, PhD

Ghent University, Ghent, Belgium

Eye bank: Biobank of the Antwerp University Hospital

Design of a novel therapy for autosomal dominant inherited retinal diseases

Steffi Daniel, PhD

UT Southwestern Medical Center, Dallas, Texas

Determination of fibulin-3 expression and localization in human ocular tissues

Martina Kropp, PhD

University of Geneva, Geneva, Switzerland

iPS-derived RPE cell & human retina co-culture for toxicity and potency assays in intraocular medicine

Jun Liu, PhD

Ohio State University, Columbus, Ohio

Eye bank: Lions Eye Bank of West Central Ohio

Biomechanical correlations between cornea and optic nerve head

Wenlin Zhang, MD, PhD

University of California, Los Angeles Los Angeles, Calif.

Quantitative super-resolution localization of SLC4A11 variants in human corneal endothelium in its native environment

Luisa Holguin Colorado, PhD, OD

Queensland University of Technology, Brisbane, Qld., Australia

Australian Ocular Biobank

Corneal epithelial dendritic cells: An association between in vivo corneal confocal microscopy and immunohistology

Eileen Hwang, MD, PhD

University of Utah Moran Eye Center, Salt Lake City, Utah

Age-related differences in the vitreous collagen fiber network

Binapani Mahaling, PhD

Medical College of Wisconsin, Milwaukee, Wisc.

Damage-Associated Molecular Patterns in Diabetic Retinopathy

Heather Moss, MD, PhD

Stanford University, Stanford, Calif.

Characterization of novel foveal pit pathology in multiple sclerosis

Karen Peynshaert, PhD

Ghent University, Ghent, Belgium

ICG-mediated photoablation of the inner limiting membrane to enhance retinal delivery after intravitreal injection

EyeFind Research Grant Sponsors

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Research to Prevent Blindness

Silver Sponsor

BrightFocus Foundation

Founding partners

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Eye Bank Association of America

Publications Financial Assistance Program Recipients

These grants provide no-cost publication to several individuals per year who need funding assistance to publish in any of ARVO's three journals.

Investigative Ophthalmology & Visual Science

Nov. 2021, Volume 62, Issue 14

An Atlas of Heparan Sulfate Proteoglycans in the Postnatal Rat Lens

Corresponding authors:
Frank J. Lovicu and Tayler F. L. Wishart

Investigative Ophthalmology & Visual Science

February 2021, Volume 62, Issue 2

Contrast Rivalry Paradigm Reveals Suppression of Monocular Input in Keratoconus

Corresponding author:
Shrikant R. Bharadwaj

Translational Vision Science & Technology

May 2021, Volume 10, Issue 6

Generative Adversarial Network Based Automatic Segmentation of Corneal Subbasal Nerves on In Vivo Confocal Microscopy Images

Corresponding author:
Erdost Yildiz

Translational Vision Science & Technology

April 2021, Volume 10, Issue 4

Intraocular Pressure Reduction Effect of 0.005% Latanoprost Eye Drops in a Hyaluronic Acid-Chitosan Nanoparticle Drug Delivery System in Albino Rabbits

Corresponding author:
Ana Marie L. Rubenicia

Translational Vision Science & Technology

October 2021, Volume 10, Issue 12

Risk Assessment of Aerosol Generation During Vitreoretinal Surgery Using High Speed Imaging Amidst the COVID-19 Pandemic

Corresponding author:
Chaitra Jayadev

Matching Gift Campaign

In 2021, Erik van Kuijk, MD, PhD, FARVO, and Virginia van Kuijk Brooke, RN, PhD, encouraged the ARVO community to help researchers by matching their generous gift of \$20,201.

Erik van Kuijk made his first gift to the ARVO Foundation in memory of his friend Elizabeth Anderson, whose husband, Robert Eugene (Gene) Anderson, MD, PhD, FARVO, is a longtime ARVO member.

After his initial donation, van Kuik purchased a table at the ARVO Foundation and Dowling Society Gala at the invitation of then Foundation Chair Nicolas G. Bazan, MD, PhD, FARVO.

He then decided to become more involved in the ARVO Foundation by becoming a Dowling Society member. He asked for his donation to specifically go toward the Elizabeth Anderson Travel Grant, so that an additional student could attend the ARVO Annual Meeting. At the time, the grant supported two young researchers.

A member of the ARVO Biochemistry/Molecular Biology (BI) Section, van Kuijk serves as professor and chair of the Department of Ophthalmology and Visual Neurosciences at the University of Minnesota. Elizabeth Anderson Travel Grantees present abstracts reviewed and accepted by the BI or Retinal Cell Biology Sections of ARVO.

With an interest in raising more funds, the van Kuijk's designated their latest gift to go to the ARVO Foundation's Matching Gift Campaign. During the ARVO 2021 Annual Meeting, \$43,470 was raised from their donation and Matching Gift campaign contributors.



Erik van Kuijk, MD, PhD, FARVO, and Virginia van Kuijk Brooke, RN, PhD

The Dowling Society

Dowling Society members have made a commitment to the ARVO Foundation of \$10,000 or more. The ARVO Foundation welcomed four new members to the Dowling Society in 2021.

2021 Dowling Society members

Thomas A. Ciulla, MD, MBA

Leslie Hyman, PhD

SriniVas R. Satta, MD, FARVO

Mary Ann Stepp, PhD, FARVO

David C. Beebe*, PhD, FARVO and Mrs. Betsy Beebe, PA-C

Paul S. Bernstein, MD, PhD, FARVO and Ann Bernstein

Eliot L. Berson*, MD, FARVO and Kyra Kaplan-Berson

Roger W. Beuerman, PhD, FARVO

Laszlo Z. Bitó, PhD

Janet C. Blanks, PhD, FARVO

Jeffrey H. Boatright, PhD, FARVO

William J. Brunken, PhD, FARVO and Dale D. Hunter, PhD, JD

Claude F. Burgoyne, MD, FARVO and Vicki Smith

Patrick Burke, MD, PhD

R. V. Paul Chan, MD and Ann-Marie Lobo-Chan, MD

Stanley Chang, MD, FARVO

Steve T. Charles, MD, FACS, FICS

Emily Y. Chew, MD, FARVO and Robert P. Murphy, MD

Michael F. Chiang, MD

Bruce E. Cohan, MD

Lancey B. Cowan, JD, CAE

Cheryl M. Craft, PhD, FARVO

Patricia A. D'Amore, MBA, PhD, FARVO

Reza Dana, MD, MPH, MSc, FARVO

Paulus T. V. M. de Jong, MD, PhD, FARVO, FEBOPhth, FRCOphth and Marij de Jong

John E. Dowling, PhD, FARVO and Judith F. Dowling

Joseph L. Dowling, MD

Melinda K. Duncan, PhD, FARVO

David L. Epstein*, MD, FARVO and Susan M. Epstein, RN, JD

Rafal Farjo, PhD and Krysten M. Farjo, PhD

Paul T. Finger, MD

Malinda E. C. Fitzgerald, PhD, FARVO

Steven J. Fliesler, PhD, FARVO

Robert N. Frank, MD, FARVO

Ronald E. P. Frenkel, MD

Juan E. Gallo, MD, PhD, FARVO

Ronnie Glaser and Bert M. Glaser*, MD, FARVO

Israel A. Goldberg, PhD and Diane Goldberg

Dowling Society members

Gary W. Abrams, MD, FARVO and Jane C. Werner, MD

Anthony P. Adamis, MD, FARVO

Jayakrishna Ambati, MD, FARVO

Robert E. Anderson, MD, PhD, FARVO

Joanne Angle*, MLS, MPA

Sally S. Atherton, PhD, FARVO and Robert Atherton

Robert B. Barlow*, PhD, FARVO and Patricia Barlow

Haydee E. P. Bazan, PhD, FARVO and Nicolas G. Bazan, MD, PhD, FARVO

Bernard Becker*, MD, FARVO

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	Lawrence J. Singerman, MD, FACS	*deceased
	Gregory L. Skuta, MD	
	Alfred Sommer, MD, MHS	

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Through our numerous projects and activities, the ARVO Foundation continues to make significant strides within eye research. Our ability to collaborate with corporate and foundation partners strengthens the impact of the ARVO Foundation in the vision community.

\$100,000 and above

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\$75,000 to \$99,000

- Alcon Laboratories

\$25,000 to \$49,999

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- Novartis
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- University of California Los Angeles
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ARVO Foundation Gala

The ARVO Foundation hosted its first virtual Gala during the ARVO 2021 Annual Meeting. All meeting attendees were invited to join the live, virtual event. Emceed by Julia Haller, MD, FARVO, of the Wills Eye Institute, the Gala provided an opportunity to welcome the Foundation's new chair, Joel Schuman, MD, FARVO, and to thank the outgoing chair, Paul Sternberg, MD, FARVO.

The Foundation was pleased to recognize the 2021 honorees, who made outstanding commitments to ARVO and the ARVO Foundation. The following honorees were recognized :

- Cheryl M. Craft, PhD, FARVO
- Chi Pui Calvin Pang, BSc, DPhil, FARVO
- Al Sommer, MHS, MD
- NIH National Eye Institute

Attendees received live updates on the progress toward the Matching Gift Campaign, made possible by a generous donation from Erik van Kuijk, MD, PhD, FARVO, and Virginia van Kuijk Brooke, RN, PhD.

ARVO Foundation was pleased to acknowledge and welcome new Dowling Society members. To welcome Dr. Schuman to his new board position, Dr. Sternberg arranged for Grammy nominated country musician Brandy Clark to perform. The ARVO's Got Talent contest winner, Sohaib Rufai, BMBS, BMedSC, MRes, of the NIHR, London, UK, was announced during the Gala.



Foundation Gala emcee
Julia Haller, MD, FARVO



New ARVO Foundation chair
Joel Schuman, MD, FARVO, during the
virtual Gala.

ARVO Foundation Honorees



Cheryl M.
Craft, PhD,
FARVO



Chi Pui Calvin
Pang, BSc,
DPhil, FARVO



Al Sommer,
MHS, MD



NIH National
Eye Institute



Grammy-nominated Country
musician Brandy Clark
performed her hit "Like Mine."



ARVO's Got Talent winner
Sohaib Rufai playing his guitar
rendition of the Eagles' "Hotel
California."

WEAVR Event

The Women in Eye and Vision Research (WEAVR) initiative was established to further develop and strengthen women seeking or pursuing careers in the visual sciences. WEAVR



Katherine High, MD

raises philanthropic dollars to support women through its annual event that's held at the ARVO annual meeting. The featured speaker of the 2021 virtual event was Katherine High, MD, co-founder and former president of Spark Therapeutics, Inc. She presented on the topic of "Merging Discovery and Entrepreneurship" where she described her transition from being a professor and HHMI investigator to being a leader of a biotech company.

High started her career as a researcher of hemophilia/HIV at UNC Chapel Hill. She then set up a lab studying gene therapy for hemophilia at the University of Pennsylvania and then later set up a gene and cell therapy vector production facility at the Children's Hospital of Philadelphia. Her program expanded its research to include AAV administration to gene mutations in inherited blindness, skeletal muscle, and the liver. After successful consultations with biotech, High was recruited to the startup company Spark Therapeutics and faced with the difficult decision to leave her research and her renewed HHMI grant.

Concerned with whether her research products would ever cross the finish line, High took the position as president and chief scientific officer of Spark. She went on to acknowledge her outstanding recruits at Spark and detailed her AAV manufacturing and licensing to the production of the novel gene therapy Luxturna. In 2019, Luxturna won the Prix Galien USA Best Biotech Product Award.

High concluded the WEAVR event by citing stark statistics of women vs. men in biotech:

- Less than 2% of start-up funding went to companies founded by women.
- Only 8.4% of venture principals are women.
- Harvard Business School reports that generally male entrepreneurs are asked about all the ways their company can succeed, while women are asked about all the ways they can fail.
- Faculty thinking: "most founders of the past have been men, so most successful startups are led by men, and thus the safe bet is to invest in men."

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WEAVR chair Stella Robertson, PhD, FARVO, talking with 2019 WEAVR Luncheon attendees.

Financials

Assets

Cash and equivalents	\$1,100,839
Investments	\$ 6,797,515
Receivable, net	\$104,849
Total assets	\$8,003,203

Liabilities and Net Assets

Liabilities

Accounts payable and accrued expenses	\$636,168
Deferred revenue	\$ 87,100
Total liabilities	\$ 723,268

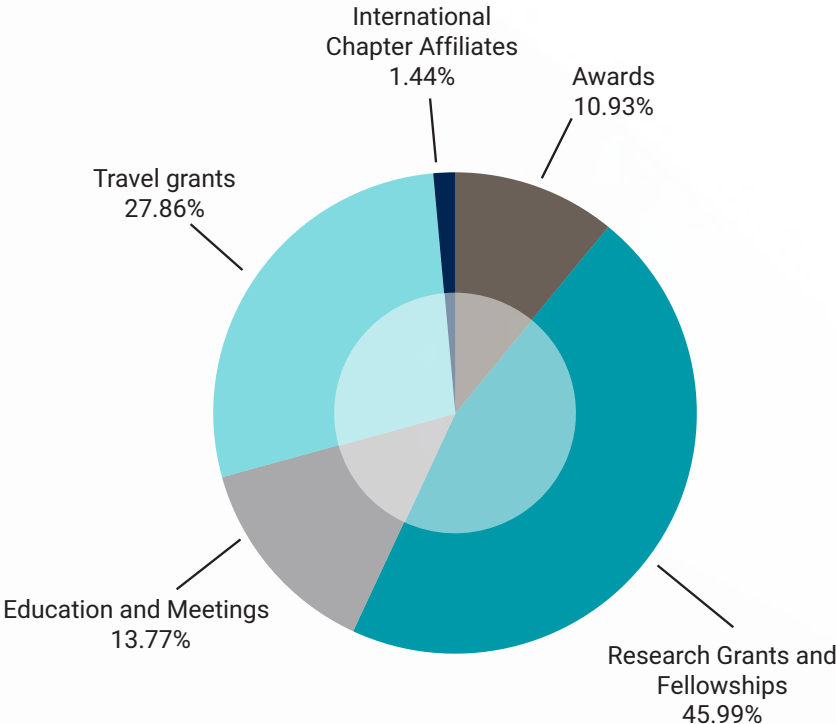
Net Assets

Without donor restrictions	\$4,090,471
With donor restrictions	\$3,189,464
Total net assets	\$7,279,935

Total Liabilities and Net Assets **\$8,003,203**

As of December 31, 2021

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5515 Security Lane, Suite 500
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