

20 | Annual 22 | Report

for Eye Research_®

New Dowling Society members Mary Ann Stepp, PhD, FARVO (left), and Sheila West, PhD, FARVO, show off their medals received during the Dowling Society reception

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 partnerships, grants and the generosity of ARVO members to support the next generation of eye and vision researchers.

Cover: Developing Country Eye Researcher Travel Fellow Yuniar Ningtiyas and her mentor Vikas Khetan, DO DNB FMRF

The numbers



462 Early-career researchers supported by travel grants



\$437,225

invested in research grants and fellowships



415

Number of ARVO members and friends who supported the Foundation



28

Travel grants were provided to trainees from 28 countries





Invested in career development program to support junior researchers



Eegacy Society inaugural members

New members of the Dowling Society



encourage innovative research

From the Chair



Joel S. Schuman, MD, FARVO



This year was especially notable in the Foundation's furthering efforts to support ways in which young researchers can present their science. Since its inception in 2001, the ARVO Foundation has supported scientists worldwide who are engaged in sight-saving research. The uncertainties due to the pandemic have significantly affected many in our eye and vision field. Through the generous and continued support of our community, the Foundation experienced some important successes — and reasons to celebrate — in 2022.

Funds raised through corporate grants, sponsorships, fundraising events and the generosity of ARVO members illustrate the eagerness of our community to support early-career researchers. This year was especially notable in the Foundation's furthering efforts to support ways in which young researchers can present their science. The 2022 ARVO Annual Meeting saw the highest number of travel grants awarded, with 462 researchers receiving support. The Publication Financial Assistance Program helped authors to publish in ARVO's three open access journals, the Developing Country Eye Researcher Fellowships brought researchers from across the globe to the meeting in Denver and the Women's Leadership Development Program continued to attract the best in our field.

The much-anticipated return to in-person events was a particular bright spot in 2022. The collaboration, networking, and presentations of the latest research were a welcome change from the previous two years. We were especially grateful to Dr. Sally Atherton for making a generous \$12,000 commitment, challenging the ARVO community to raise \$25,000 in the Matching Donor Campaign. Our community never disappoints, and you all responded with unprecedented generosity by giving over \$61,400 to the Campaign. These funds will provide travel grants for young researchers to attend the ARVO 2023 Annual Meeting in New Orleans.

I ask each of you to 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. Together, we can support and advance the future of eye and vision research.

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

Retina Research Foundation/Joseph M. and Eula C. Lawrence travel grant recipients at the ARVO 2022 Annual Meeting

Travel grants

The ARVO Foundation awarded 462 travel grants through 34 named funds in 2022, benefitting trainees from 28 countries. 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.

- American Macular Degeneration Foundation
- Association for Research in Vision and Ophthalmology (ARVO)
- ARVO Foundation
- Elizabeth Anderson
- Joanne G. Angle
- Grant Wood Balkema
- Robert B. Barlow, Jr.
- Roger Beuerman, PhD
- IRCCS-Fondazione G. B. Bietti per lo Studio e la Ricerca in Oftalmologia-ONLUS
- BrightFocus Foundation
- Ramon F. Dacheux II
- M. Velma Dobson
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- Lions Eye Institute for Transplant and Research
- Friederike Mackensen
- Richard Newton Lolley
- Robert F. Miller, MD
- NIHR Moorfields Biomedical Research Centre
- David R. Pepperberg
- Retina Research Foundation/Joseph M. and Eula C. Lawrence
- Societa Italiana Laser in Oftalmologia
- Josh Wallman
- Women in Eye and Vision Research (WEAVR)
- Gerhard Zinser

2022 DCERF recipients – Back row, from left: Maria Constanza Tripolone, Onur Olcucu, Carla Gonzalez Arocha, William Rojas-Carabali and Soner Guven. Front row, from left: Yuniar Ningtiyas, Rebecca Sumalini Chakram, Goutham Pyatla, Barbara Dalmaso, Huy Tran and Loubna Radwan

Developing Country Eye Researcher Travel Fellowships

The Developing Country Eye Researcher Travel Fellowships program brings aspiring scientists from developing nations to the ARVO Annual Meeting. Each recipient is paired with a volunteer mentor who guides them through ARVO's large scientific meeting. Idris Saka, MBBS, MBChB, MBBCh Lagos State University Teaching Hospital Ikeja, Lagos, Nigeria

William Rojas-Carabali, MD Universidad del Rosario Bogota, Colombia

Huy Tran, MD Hai Yen Vision Institute Ho Chi Minh City, Vietnam

Yuniar Ningtiyas, MD Dr. Soetomo Academic General Hospital – Universitas Airlangga Surabaya, East Java, Indonesia

Onur Olcucu, MD Istanbul Basaksehir Cam ve Sakura Sehir Hastanesi Istanbul, Turkey

Soner Guven, MD Kayseri City Hospital Kayseri, Turkey

Carla Sofia Gonzalez Arocha Fundacion Hospital Nuestra Señora de la Luz, IAP Mexico City, Mexico

2022 Recipients

Goutham Pyatla, PhD, DPhil L.V. Prasad Eye Institute Hyderabad, Telangana, India

Kofi Asiedu, OD School of Optometry and Vision Science Sydney, NSW, Australia

Barbara Dalmaso University of São Paulo São Paulo, Brazil

Loubna Radwan, MD Lebanese American University Beirut, Lebanon

Shiva Ram Male University of Hyderabad School of Medical Sciences Hyderabad, Telangana, India

Rebecca Sumalini Chakram L.V. Prasad Eye Institute Hyderabad, Telangana, India

Maria Constanza Tripolone Instituto de Investigacion en Luz Ambiente y Vision San Miguel de Tucuman, Tucuman, Argentina

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Before attending ARVO, I just knew that I wanted my PhD, but I didn't know how or what field I was interested in. After attending ARVO and seeing all these talks and posters, I knew that genetics and glaucoma would be the main field that I want to pursue. I am confident that with all of the expertise, knowledge and networking that I gained at ARVO will help me make this come true.

— Carla Gonzalez Arocha

Program supporters

ARVO Foundation Annual Meeting donors

J. Mark Petrash, PhD, FARVO and family

> University of Wisconsin–Madison

Women in Eye and Vision Research (WEAVR)

Award and Fellowship Recipients

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 mechanism that impacted the understanding and/or treatment of a retinal disease or condition.

Magdalena Renner, PhD Institute of Molecular and Clinical Ophthalmology Basel Basel, Switzerland

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.

PremNandhini Satgunam, PhD LV Prasad Eye Institute Hyderabad, India

Jee Myung Yang, MD, PhD Asan Medical Center, University of Ulsan College of Medicine Seoul, Republic of Korea

Kreissig Award for Excellence in Retinal Surgery

Established by Ingrid Kreissig, MD, this award of \$30,000 is given annually to recognize excellence in the understanding of the mechanisms of retinal disease requiring surgical management, innovative approaches to management, or outcomes of surgical treatment.

Rajeev Muni, MD University of Toronto Toronto, ON, Canada

Point of View Award

Supported by the Fundació Punt de Vista, this \$20,000 award recognizes an outstanding scholarly article published in a high-impact peer reviewed journal during the previous year related to efforts to restore vision through regenerative ophthalmology, biotechnology, whole eye transplantation or other approaches to the restoration of sight.

Dasha Nelidova, MBChb, PhD, and Botond Roska, MD, PhD Institute of Molecular and Clinical Ophthalmology Basel Basel, Switzerland

Restoring light sensitivity using tunable near-infrared sensors

Mallinckrodt Uveitis Research Fellowship

This fellowship provides one \$45,000 research award to support a wellconceived 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.

Paulo Jose Martins Bispo, PhD Massachusetts Eye and Ear, Harvard Medical School Boston, Mass.

Rapid and Unbiased Detection of Uveitis Pathogens by Nanopore Metagenomic Sequencing

Award and Fellowship Recipients

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.

Joanne Wood, PhD Queensland University of Technology Brisbane, QLD, Australia

Spotlight on macular disease: Impact on everyday function and wellbeing

Genentech Career Development Award for Underrepresented Minority Emerging Vision Scientists

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

Cammi Valdez, PhD Northeastern State University Tahlequah, Okla.

Ludwig von Sallmann Clinician-Scientist Award

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

Robert P. Finger, MD, MIH, PhD University of Bonn Bonn, Germany Spotlight on macular disease: Impact on everyday function and wellbeing

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.

Research Fellow

Diana Pérez-Ibave, PhD Universidad Autónoma de Nuevo León, School of Medicine and University Hospital, Monterrey Nuevo León, Mexico

Collaborating Researcher

Genaro Ramírez, MD, PhD University of Rio Grande Valley Edinburg, Texas

Research Fellow

Shikha Gupta, MD India Institute of Medical Sciences Ansari Nagar, New Delhi, India

Collaborating Researcher

Alex Huang, MD, PhD University of California, San Diego San Diego, Calif.

Research Fellow

Ali Al-Timemy, PhD University of Baghdad Baghdad, Iraq

Collaborating Researcher

Siamak Yousefi, PhD University of Tennessee Health Science Center Memphis, Tenn.

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.

Ta Chen Peter Chang, MD Bascom Palmer Eye Institute Miami, Fla. RNA Sequencing-Based Transcriptomic Profile of Fresh Normal Human Lens.

Miguel Flores-Bellver, PhD University of Colorado Centenniel, Colo. *Extracellular vesicles enrichment from postmortem human retina and RPE tissue*

Elena Gofas Salas, PhD Institut de la Vision Paris, France Detection and identification of retinal cellular biomarkers for the study of the role of inflammation in neurodegenerative diseases.

Martina Kropp, PhD University of Geneva Geneva, Switzerland

Animal product-free culture of human transfected Retinal (RPE) and Iris Pigment Epithelial (IPE) cells for cell therapy

Tasneem Sharma, PhD Indiana University School of Medicine Indianapolis, Ind.

Therapeutic targeting of pressure induced glaucomatous degeneration

EyeFind Research Grant Sponsors

Gold Sponsor BrightFocus Foundation

Founding partners ARVO Eye Bank Association of America Maria Vinas-Pena, PhD and Sangyeon Cho, PhD Massachusetts General Hospital Wellman Center Boston, Mass.

A novel gold-assisted plasmonic nanoscopy method to investigate mechanical and structural changes in Myopia

Mor Dickman, MD, PhD Maastricht University Medical Center The Netherlands

Determining the quality of primary cultured corneal endothelial cells through a single cell RNA-sequencing analysis

Jami Gurley, PhD OUHSC/Dean McGee Eye Institute Oklahoma City, Okla.

Assessment of Retinal Arteriolar Smooth Muscle Cell Coverage in Aged Human Retinas

Imre Lengyel, PhD The Queen's University Belfast Belfast, UK Central and peripheral retinal changes in Alzheimer's disease

Navita Lopez, PhD University of Utah Salt Lake City, Utah The role of TGFbeta signaling in retinal microglia in glaucoma.

Michael Risner, PhD Vanderbilt University Medical Center Nashville, Tenn. Investigating Mechanisms Controlling

Retinal Ganglion Cell and Axon Excitability During Glaucoma: A Pilot Study

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.

Translational Vision Science & Technology

July 2022, Volume 11, Issue 7 Virulence Genes of Staphylococcus aureus Associated With Keratitis, Conjunctivitis, and Contact Lens– Associated Inflammation

Corresponding author: Madeeha Afzal

Sept. 2022, Volume 11, Issue 9 Etiology of Macular Edema Defined by Deep Learning in Optical Coherence Tomography Scans

Corresponding author: Daniel Fabio

*Corneal biomechanics after SMILE, femtosecond-assisted LASIK, and photorefractive keratectomy: a matched comparison Corresponding author: Asgari Soheila

Journal of Vision

*Perceptuo-Cognitive Analysis of The Iconic Painting La Condition Humaine (1933) By René François Ghislain Magritte Corresponding author: Hamer Russell

Investigative Ophthalmology & Visual Science

*Ocular surface characteristics and in situ measurement of blinking using a wearable eye tracking headset: establishing a gold standard for spontaneous blinking

Corresponding author: Chidi-Egboka Ngozi

*Impact of temporal variations in optical defocus on high-contrast visual acuity: Empirical results and modeling outcomes Corresponding author:

Bharadwaj Shrikant

* Pending publication

The Legacy Society



The new Legacy Society for Planned Giving provides an opportunity for individuals to continue to advance research far beyond their career journey. Eye and vision scientists need help now more than ever with resources and support that allow them to continue to innovate. Consider being part of this exciting opportunity by including a generous gift to the ARVO Foundation in your financial and estate planning. Your gifts, large or small, are critical to our mission.

Inaugural Members

Israella Bash*

Claude F. Burgoyne, MD, FARVO and Vicki Smith

- Emily Y. Chew, MD, FARVO and Robert P. Murphy, MD
- Cheryl Mae Craft, PhD, FARVO

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J. Mark Petrash, PhD, FARVO and Kelly Cope Petrash

Stella M. Robertson, PhD, FARVO and James D. Robertson, PhD

Joel S. Schuman, MD, FARVO and Carole Miner Schuman

*deceased

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Through my decision to use planned giving to support the ARVO Foundation, I will have a vehicle to help me help others find a way to live out their passion for research and desire to treat and prevent blindness.

> - J. Mark Petrash, PhD, FARVO ARVO Executive Vice President

Matching Gift Campaign

In 2022, Sally Atherton, PhD, FARVO, made a generous \$12,000 gift to the ARVO Foundation, and challenged the ARVO community to match her donation and raise \$25,000 during the Annual Meeting.

Since her first committee volunteer experience in the mid-1990s as a member of the Annual Meeting Program Committee, Atherton has been a steadfast advocate of ARVO. She has served as president and executive vice-president of the Board of Trustees, as well as executive director of the Association. Still an active member of the IM Scientific Section, she is also an associate editor of Investigative Ophthalmology & Visual Science (IOVS). In 2021, Atherton received the Joanne G. Angle Award — the highest service honor bestowed by ARVO to recognize an outstanding leader who has made significant and continuous contributions in support of the Association's mission.

Presently, Atherton is Regents Professor and Chair Emerita at the Medical College of Georgia, Augusta University. She is senior associate at Health Research Associates where she coaches investigators writing grant applications for peer-reviewed external funding.

During the Meeting, the ARVO community responded to Atherton's challenge and generously donated over \$61,400 to the Matching Gift Campaign. These funds will provide travel grants for young researchers to attend the ARVO 2023 Annual Meeting in New Orleans, Louisiana. \$47,400 raised during the ARVO Annual Meeting in Denver

ARVO President Maureen G. Maguire, PhD, FARVO, announcing the campaign progress during the closing keynote session



Sally Atherton, PhD, FARVO

ARVOFoundation.org

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The Dowling Society

Dowling Society members have made a commitment to the ARVO Foundation of \$10,000 or more. The ARVO Foundation welcomed six new members to the Dowling Society in 2022.

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

2022 Dowling Society members

Donald C. Hood, PhD, FARVO

Alan M. Laties, MD, FARVO* and Deena Gu

David Laties

Cynthia A. Toth, MD, FARVO

Kazuo Tsubota, MD, PhD, MBA, FARVO

> Sayoko Eileen Moroi, MD, PhD

- 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. Bito, PhD
- Janet C. Blanks, PhD, FARVO
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- Patrick Burke, MD, PhD
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- Stanley Chang, MD, FARVO

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- 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
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David R. Williams, PhD, FARVO and Inger M. Williams, PhD

George A. Williams, MD, FARVO

Terri L. Young, MD, MBA, FARVO

Thomas Yorio, PhD, FARVO and Elena Yorio

*deceased

Corporate donors

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
- Knights Templar Eye Foundation
- Retina Research Foundation

\$25,000 to \$49,999

- BrightFocus Foundation
- The Severus Foundation Corp.

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- Eye Bank Association of America
- EyeCRO
- Novartis
- Point of View Foundation

\$5,000 to \$9,999

- Harvard Department of Ophthalmology
- NIHR Moorfields Biomedical Research Centre
- Striatech GMBH
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- New York Eye and Ear Infirmary of Mount Sinai
- Sue Anschutz-Rodgers Eye Center, University of Colorado School of Medicine

- The John A. Moran Eye Center
- The Ohio State University Department of Ophthalmology and Visual Science
- University of Alabama at Birmingham, Department of Ophthalmology and Visual Sciences
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- Upstate Medical University, Department of Ophthalmology and Center for Vision Research
- USC Roski Eye Institute
- Wills Eye Hospital

\$1,000 to \$2,499

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ARVO/Alcon Keynote Series

The opening and closing keynote presentations at the ARVO Annual Meeting are supported generously by Alcon through the ARVO Foundation.

ARVO 2022 welcomed opening keynote speaker Susan Weiss, PhD, who is the Vice-Chair and Professor, Department of Microbiology Perelman School of Medicine University of Pennsylvania. Weiss spoke on the History and biology of coronaviruses: The Story behind Covid-19.

The closing keynote focused on accelerating ophthalmic discovery and technology translation through team science and included panelists Cynthia A. Toth, MD and Joseph A. Izatt, PhD both of Duke University.



ARVO Foundation Gala and Dowling Society Reception

The ARVO Foundation Gala and Dowling Society Reception is the largest fundraising event hosted by the ARVO Foundation. The 2022 Foundation Gala in Denver, Co. returned to an in-person event after being held virtually in 2021. Proceeds support its sight-saving programs while honoring individuals for their dedication and commitment to ARVO and the ARVO Foundation.

Honorees are recognized for their commitment to ARVO and the ARVO Foundation through financial support, exemplary leadership of a Foundation initiative or dedication to endeavors that represent the mission of the ARVO Foundation. The following honorees were recognized at the 2022 Gala:

Aerie Pharmaceuticals, Inc.

In recognition of their generous partnership in supporting career advancement for women through ARVO's Leadership Development Program.

Susan M. Epstein, RN, JD

In recognition of her generous philanthropic support of the ARVO Foundation, including the establishment of the Dr. David L. Epstein Award in memory of her late husband.

Ingrid Kreissig, MD

In recognition of her generous philanthropic support of the ARVO Foundation, including the establishment of the Kreissig Award for Excellence in Retinal Research and also several travel grants.

Paul Sternberg, Jr., MD, FARVO

In recognition of his dedicated leadership and service to the eye and vision research community as ARVO Foundation Chair and ARVO Vice President, as well as his generous philanthropic support of the ARVO Foundation.





WEAVR Event

The Women in Eye and Vision Research (WEAVR) annual event was held at the ARVO Annual Meeting in Denver on May 3. All proceeds from the WEAVR event support women in the visual sciences by providing funds to support travel grants and Developing Country Eye Researcher Travel Fellowships for female scientists to attend the ARVO Annual Meeting. Funds are also used to Proceeds also underwrite the Women's Leadership Development Program.

The featured speaker was Kimberly Muller who's titled talk was Women in Leadership: Driving Transformation Through Innovation. Muller is the executive director of CU Innovations where she leads innovation for the University of Colorado Anschutz Medical Campus. Muller shared her business development experience, including investing, company creation, innovation management, forming key strategic industry partnerships, and licensing.

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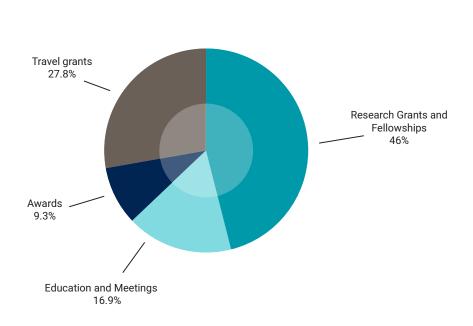
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| Assets | |
|---------------------------------------|------------------|
| Cash and equivalents | \$725,665.29 |
| Investments | \$ 6,325,214.64 |
| Receivable, net | \$47,943.41 |
| Total assets | \$7,098,823.34 |
| | |
| Liabilities and Net Assets | |
| Liabilities | |
| Accounts payable and accrued expenses | \$896,846.85 |
| Deferred revenue | \$ 111,528 |
| Total liabilities | \$ 1,008,374,.85 |
| | |
| Net Assets | |
| Without donor restrictions | \$2,542,553.36 |
| With donor restrictions | \$3,547,895.13 |
| Total net assets | \$6,090,448.49 |
| Total Liabilities and Net Assets | \$7,098,823.34 |

As of December 31, 2022



Program expenses

Thank You



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