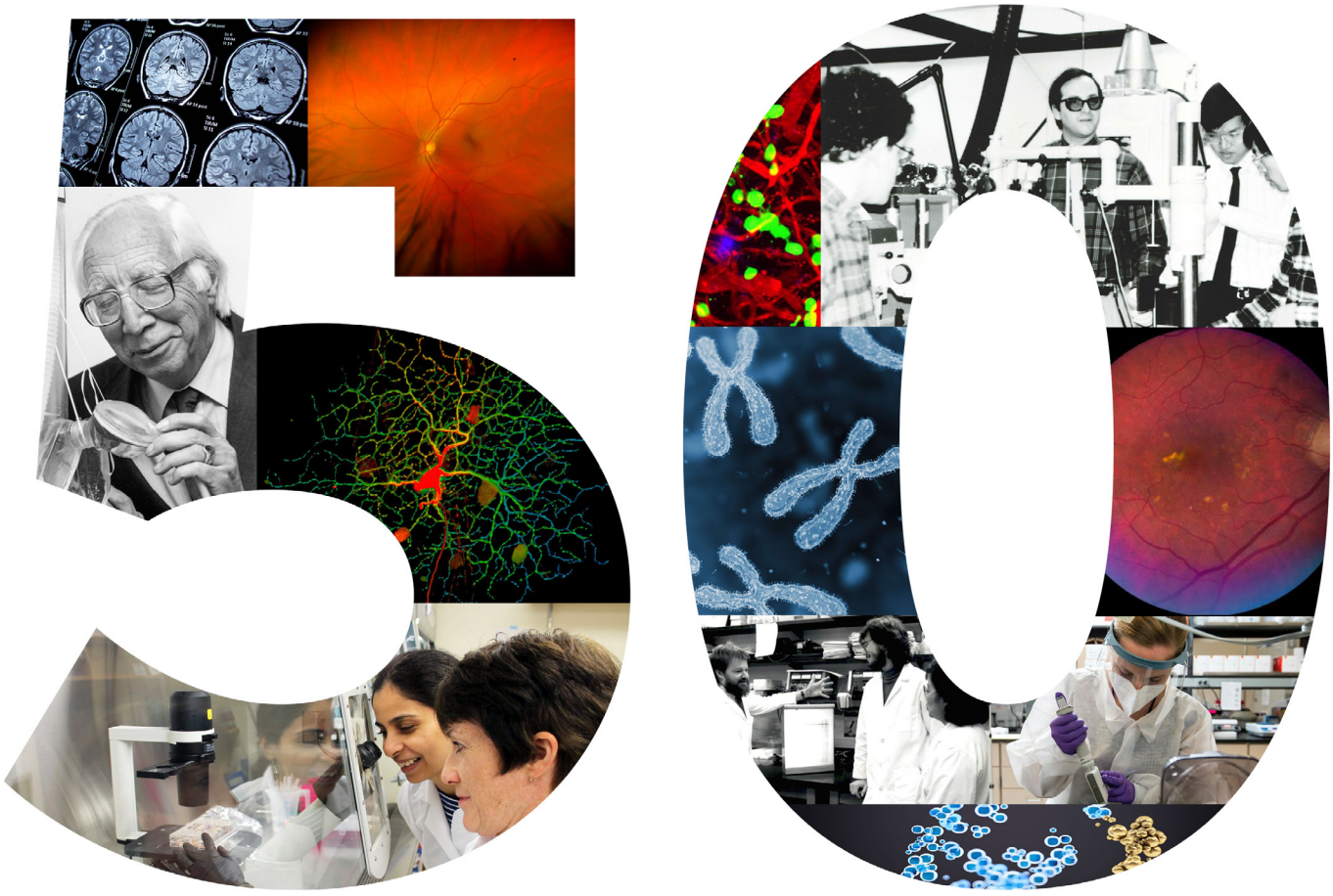
BrightFocus® Foundation
Cure in Mind. Cure in Sight.

Alzheimer's Disease Research
Macular Degeneration Research
National Glaucoma Research



50 YEARS OF **BOLD RESEARCH**

2023 ANNUAL REPORT

Message from Leadership

Dear Friends,

As we look back over the past half-century of BrightFocus Foundation, we celebrate our commitment to funding research that has brought us closer to finding cures and cast a vision for what's to come.

BrightFocus Foundation continues to expand its reach and impact across the globe. Over the past 50 years, we have nurtured and supported thousands of brilliant minds and renowned scientists across 25 countries, including two Nobel laureates, leading to new discoveries that help shape the field and launching Alzheimer's research programs in four countries. Through our educational programs, we have provided invaluable information and multilingual resources with millions of affected families, the general public, and scientists.

This year marks a significant milestone as we celebrate our 50th anniversary and five decades of fueling the most promising and innovative biomedical research. The eye is the window to the brain, and through funding cross-disease research and the most promising and accomplished of the next generation of scientists, we have developed a better understanding of these diseases, leading to treatments and diagnostic tools that improve lives.

In 1982, BrightFocus funded research supporting the artificial heart, a long-pursued holy grail of modern medicine, by providing critical early funding to Dr. Willem Kolff, a Dutch physician known as the father of artificial organs. Since then, we've funded numerous advancements, including discovering novel genetic risk factors for Alzheimer's, macular degeneration, and glaucoma; pioneering blood-based screening tests for Alzheimer's disease; and developing the first optical test to potentially diagnose Alzheimer's—innovations that are making a lasting impact for generations to come.

This remarkable scientific impact is made possible because of gifts from half a million individuals and families supporting science to defeat Alzheimer's disease, macular degeneration, and glaucoma. Together, we're unstoppable. Thank you.

With hope and gratitude,

Stacy Pagos Haller
President and CEO

Patricia McGlothlin Stewart, CFP
Chair, Board of Directors

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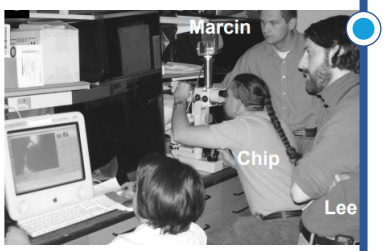
Breakthroughs

50 Years of Life-Changing Breakthroughs

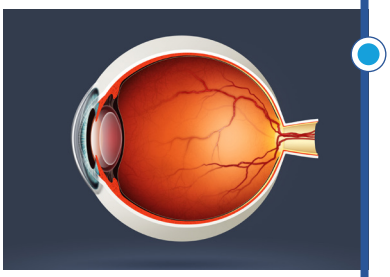
1982

BrightFocus funded early research supporting the **first permanent artificial heart transplantation** and the development of the first artificial kidney.



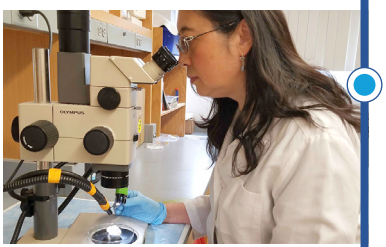
2003

Following their discovery that Alzheimer's can be detected in the lens of the eye, Dr. Lee Goldstein and team developed **new optical tests** to help better diagnose and monitor the disease from its early stages.



2005

Through our Macular Degeneration Research program, we supported fundamental research leading to the discovery of the **first anti-VEGF treatment** for wet age-related macular degeneration—still the gold standard for helping to slow or stop vision loss in wet AMD patients today.



2017

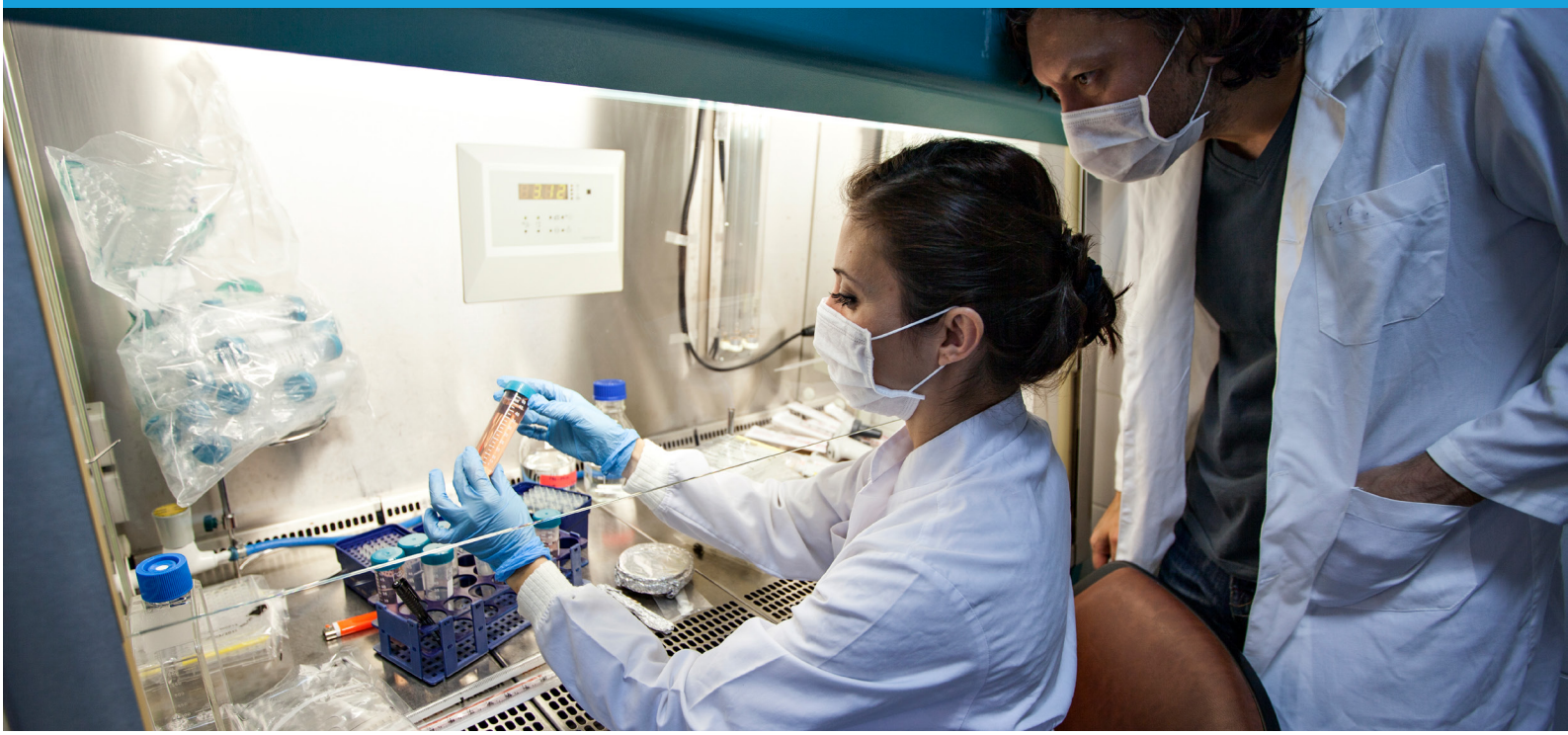
National Glaucoma Research-funded discoveries laid the foundation for the **first FDA-approved ROCK inhibitor for glaucoma**, the first new class of medications for this disease in over 20 years.

2020

Alzheimer's Disease Research funded the development of the **first commercially available blood test** in the U.S. to identify early signs of Alzheimer's disease.

Explore more breakthroughs

Impact



Our Approach to Research

BrightFocus Foundation, through our Alzheimer's Disease Research, Macular Degeneration Research, and National Glaucoma Research programs, is on a mission to cure Alzheimer's disease and related dementias and stop vision loss in its tracks.

We believe that by providing initial funding for highly innovative experimental research and creative ideas, we can spark revolutionary approaches and life-saving breakthroughs for Alzheimer's disease, macular degeneration, and glaucoma.

For the last 50 years, we've funded the boldest research and what-if ideas to get us closer to cures, resulting in the novel treatments and diagnostic tools in use today. We also raise awareness and empower people with these diseases and their loved ones by sharing expert resources and information.

Our community of more than 670,000 donors is urgently investing in the research they care about the most to get us one step closer to ending these diseases—because our future depends on it.

By providing funding for highly innovative experimental research and creative ideas, we fuel revolutionary approaches and life-saving breakthroughs.

Through our grants, BrightFocus Foundation continues to advance groundbreaking eye and brain research across the globe.

By the Numbers

65
new research grants awarded in 2023

276
total active research projects

16
countries where we are currently funding research

52 million+
people impacted annually through our education and awareness efforts

Since inception

6,240
scientists supported across 25 countries

Nearly
$290 million
in research grants awarded

"Innovative research by BrightFocus offers me hope. I am hopeful that one day, researchers will discover cures for all dementia diseases. Faith and hope are my helpers."

Chris Tann
Diagnosed with frontotemporal dementia

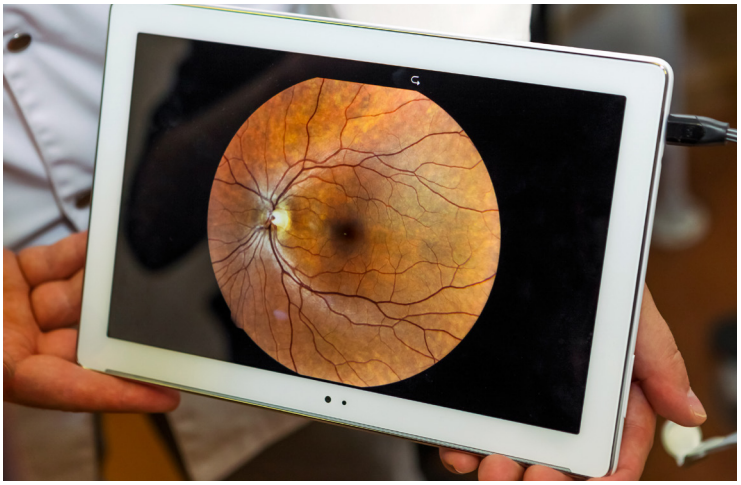
Innovative Research Leads to Breakthroughs

Our grants leave no stone unturned, exploring the full range of scientific paths toward better treatments and ultimately a cure for a disease that affects more than 55 million people worldwide and is the **seventh-leading cause of death** in the U.S.

Thanks to the generous support of our donors, Alzheimer's Disease Research has awarded more than $175 million to date to better understand and cure Alzheimer's disease.

Research is a global effort, and over the last year, researchers have tackled the disease from all angles, testing hypotheses about how Alzheimer's begins and progresses to develop earlier detection strategies and novel treatments. **Read about a few of the research breakthroughs you helped make possible.**

First-of-Its-Kind Artificial Intelligence Model for Alzheimer's Relies on a Routine Eye Scan



Most people who visit the optometrist undergo imaging of the retina, a region at the back of the eye that is directly connected to the brain through the optic nerve. The eye therefore provides a non-invasive window into disease-related processes that may reflect those in the brain.

Tiny changes in this area have been associated with Alzheimer's disease, drawing attention to the retina as an easily accessible diagnostic screening tool.

Researchers led by Alzheimer's Disease Research grantee Carol Cheung, PhD, at the Chinese University of Hong Kong's Faculty of Medicine have trained an artificial intelligence (AI) model to pick out retinal photo features associated with Alzheimer's disease. The AI they developed can quickly analyze and identify images from people with Alzheimer's disease with high accuracy, even in the presence of co-occurring eye diseases like macular degeneration and glaucoma.

Automated screening of retinal images would be much faster than current approaches and could reveal the disease in its early stages. People undergoing the scans could receive their results immediately and benefit from early treatment.

The researchers said it's their hope that in the near future, routine eye exams to look for diseases like glaucoma could also include screenings for Alzheimer's disease.

Insomnia Treatment Shows Promise as Alzheimer's Therapy

A new study has found that an FDA-approved sleeping pill may slow or stop the progression of Alzheimer's disease by reducing levels of Alzheimer's proteins in the brain.

The study involved a sleeping aid known as suvorexant, a prescription medicine marketed under the brand name Belsomra. It is in a class of medications called orexin receptor antagonists and works by blocking the action of a natural substance in the brain (orexin) that causes wakefulness.

The research team, from Washington University School of Medicine in St. Louis, was led by Alzheimer's Disease Research grantee Brendan Lucey, MD.

Although the study was small and further investigation is needed, the results are promising and have sparked further research.

Dr. Karikari

New Blood Test Detects Unique Biomarker for Alzheimer's Neurodegeneration

Although it has been shown that early detection can help delay the onset of Alzheimer's disease, there is a lack of definitive and affordable tests to do so.

The holy grail has been a blood test for Alzheimer's disease, a handful of which are now available in the U.S.

A new blood test developed by Alzheimer's Disease Research grantee **Thomas Karikari, PhD,** an assistant professor of psychiatry at the University of Pittsburgh, and his colleagues detects a new biomarker of Alzheimer's disease neurodegeneration in the blood: brain-derived tau, or BD-tau, which could enable earlier detection of the disease.

Current blood tests for Alzheimer's disease evaluate the content of three proteins—amyloid-beta, a misfolded version of tau, and neurofilament light chain—as a marker of neurodegeneration. A drawback is that neurofilament light chain can indicate many other neurodegenerative disorders and does not specify Alzheimer's disease.

Measuring brain-derived tau in the blood could specify Alzheimer's disease, improving on the less-definitive results with neurofilament light chain. Dr. Karikari and his team have met this need by developing an immune protein, or antibody, that binds only to tau derived from the brain.

Adding the measurement of BD-tau to currently available blood tests would not only increase specificity for Alzheimer's disease, but also would serve as an important research tool for tracking neurodegeneration and gaining a better understanding of the arc of Alzheimer's disease.

Green Tea Compound Opens Door to New Paths in Alzheimer's Research

Using a molecule found in green tea, a team of biochemists have identified new molecules that can destroy protein tangles in the brain linked to Alzheimer's and related brain diseases.

One of the hallmarks of Alzheimer's is tangles of tau proteins. When small phosphorus-containing molecules called phosphates attach to tau in specific places, the spiral proteins pair up and entangle inside nerve cells, interfering with their signaling.

A green tea compound, epigallocatechin gallate, or EGCG, can break up tau protein pairs in lab studies but does not pass readily from blood to brain, making it a poor drug candidate.

Yet other similar molecules might be able to pass into the brain. Banking on this possibility, investigators including Alzheimer's Disease Research grantee **Paul Seidler, PhD,** then at the University of California, Los Angeles, went on a quest for candidates. Several molecules were identified that effectively interfered with the binding and cell spread of tau.

"If we could break up these fibers, we may be able to stop death of neurons," said study co-author **David Eisenberg, PhD,** a UCLA professor of chemistry and biochemistry whose lab led the new research.

The molecules the researchers identified from their searches—currently bearing the generic names CNS-11 and CNS-17—are not confirmed therapeutics for Alzheimer's disease and will have to undergo the usual rigors of the drug development pipeline.

But this work has broader implications. Characterizing interactions between EGCG and tau allowed for automated searching among thousands of molecular candidates, furthering a drug discovery strategy for Alzheimer's disease that already is commonly used for cancers and metabolic conditions.

"The bottom line," said Dr. Eisenberg, "is we've put Alzheimer's disease and amyloid diseases in general on the same basis as cancer, namely, that structure can be used to find drugs." In this way, EGCG from green tea has opened the door to a world of possibilities.

Next-Generation Blood Test Got Its Start with Alzheimer's Disease Research Funding

A next-generation Alzheimer's blood test could facilitate a more accurate diagnosis of Alzheimer's disease in its earlier stages at a reduced cost. The new test is an update to the existing PrecivityAD blood test, which received critical early support from Alzheimer's Disease Research.

Like the current blood test, the new PrecivityAD2 blood test measures the ratio of two types of amyloid-beta protein in the blood. But the new test also measures a form of misfolded tau (tau 217/phosphorylated tau 217), another key protein involved in Alzheimer's disease.

Scientists believe that amyloid-beta and tau interact in ways to make Alzheimer's disease progress. Clinical study findings suggest that this combination performs as well as imaging and cerebrospinal fluid testing.

PrecivityAD2 got its start in studies conducted by former Alzheimer's Disease Research grantees **Randall Bateman, MD,** and **David Holtzman, MD,** both of Washington University School of Medicine in St. Louis; Dr. Holtzman also is co-chair of the BrightFocus Alzheimer's Disease Research Scientific Review Committee.

The two partnered with biotech entrepreneurs **Phillip Verghese, PhD,** and **Joel Braunstein, MD, MBA,** to form C2N Diagnostics, which developed the original iteration of the test, PrecivityAD, with Alzheimer's Disease Research support.

With PrecivityAD2, clinicians in most cases will have the option to avoid the need for additional cerebrospinal fluid or amyloid PET imaging to help promptly rule in or rule out the presence of amyloid plaques for their patients with cognitive impairment, Dr. Braunstein explained.

This could speed up diagnosis and treatment access at reduced costs.

Tau Protein Takes Center Stage as Marker of Early Disease

Recent studies highlight how tau protein and amyloid-beta interact in a snowball effect, promoting each other's disease-related behavior and confirming a key role for tau in early detection of Alzheimer's disease.

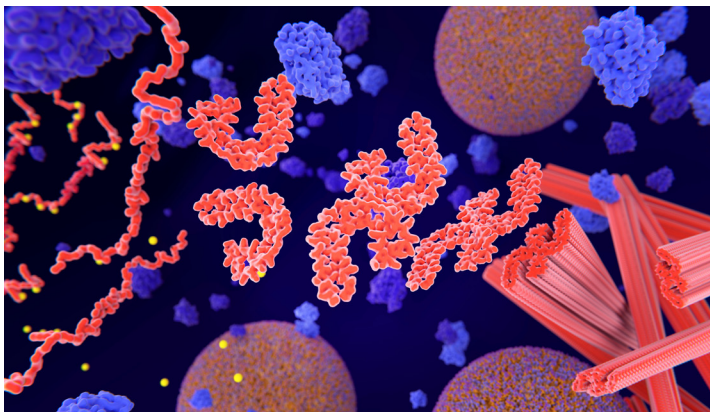
Tau has emerged as an early marker of Alzheimer's disease, potentially detectable before cognitive impairment or other symptoms arise.

The studies were conducted by Alzheimer's Disease Research grantee **Alexa Pichet Binette, PhD,** of Lund University in Malmö, Sweden.

In one study of older adults without cognitive impairment, Dr. Binette and her colleagues found that those with high accumulations of amyloid-beta and tau on brain imaging had much greater odds of later developing dementia or cognitive impairment. Intriguingly, people with no detected tau—with or without amyloid-beta—did not have this increased risk.

The implications are that tau and its interactions with amyloid-beta are central to the development of Alzheimer's disease.

A second study from Dr. Binette and her team further underscored the significance of tau and its interactions with amyloid-beta. They found a close association between tau tangle accumulation in the brain and increasing levels of disease-related tau in cerebrospinal fluid in early-stage Alzheimer's disease.



Misfolded tau proteins (red-orange) form tangles, which disrupt neurons.

High cerebrospinal levels were linked to rapid tau tangle accumulation during this early stage and to amyloid-beta's effects on tau buildup. In later Alzheimer's disease stages, though, levels of the disease-related tau in cerebrospinal fluid plateaued, and cognitive decline started to track with tau accumulation in the brain.

"Overall, tau pathology is playing an increasingly central role in improving prognosis accuracy and disease mechanisms," Dr. Binette said.

These discoveries not only position tau as a major marker of Alzheimer's disease stage but also draw focus to it as a potential target for treatments.

Some of the key discoveries highlighted in this year's annual report reinforce tau's centrality to Alzheimer's.

"Tau pathology is playing an increasingly central role in improving prognosis accuracy and disease mechanisms."

Alexa Pichet Binette, PhD

"More funding for bold research that becomes available for macular degeneration will help to save the vision of people as they age. Saving one's vision leads to a much more prudent, successful, and independent life."

Jill Adelman, RN
Diagnosed with age-related macular degeneration in 2014

Advancing Novel Findings About Macular Degeneration

We accelerate groundbreaking research to better understand the root causes of and prevention strategies for macular degeneration, the **leading cause of blindness** in people over age 50 worldwide.

Through the generous support of our donors, Macular Degeneration Research has awarded nearly $50 million to date to fund critical research on the disease's causes and potential prevention, treatment, and cure.

Our grantees have explored numerous promising avenues of research that cover a broad array of innovative scientific approaches. **Read about a few of the research breakthroughs you helped make possible over the last year.**

Is Inflammation the Answer? A Potential Future Treatment for Age-Related Macular Degeneration

There is strong evidence that inflammation plays a role in the development and progression of age-related macular degeneration. Now, a drug approved to treat autoimmune diseases such as psoriasis and multiple sclerosis has shown promise in blocking inflammation linked to age-related macular degeneration.

This eye condition involves the retinal pigment epithelium, a layer of cells that bridges messaging between light receptors in the retina and a network of retinal blood vessels.

Research has implicated an inflammatory protein called tumor necrosis factor-alpha, or TNF-alpha, in this disease, along with dysfunctional mitochondria, which package energy for cells.

Discovering how inflammation and mitochondrial dysfunction interact in age-related macular degeneration could open the door to potential treatments. Macular Degeneration Research grantee **Daisy Yao Shu, PhD,** then at Massachusetts Eye and Ear/Harvard Medical School, went straight to the tissues themselves to find out.

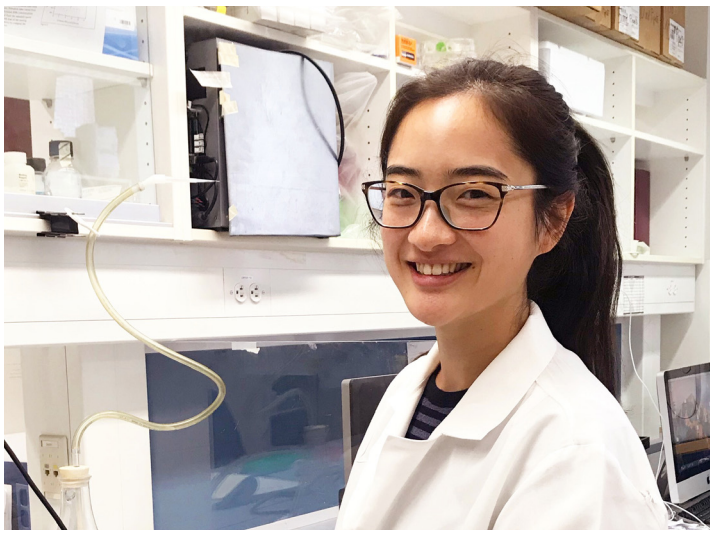
She and her colleagues exposed retinal pigment epithelium to TNF-alpha and tracked how the tissue responded. They found that exposure to the inflammatory protein triggered production of inflammatory molecules in the tissue and affected mitochondrial function.

The team also looked close-up at the mitochondria themselves and found them swollen and damaged after the exposure.

Dimethyl fumarate, or DMFu, is a drug that inhibits TNF-alpha. When Dr. Shu and her colleagues pretreated retinal pigment epithelium cells with DMFu before adding in TNF-alpha, DMFu dampened the inflammatory response, and the mitochondria remained healthy and intact.

The results point to the exciting possibility that DMFu, a drug already approved for other conditions, could be repurposed as therapy in age-related macular degeneration. Approved drugs have a known safety profile, and how they behave in the body has been thoroughly studied, making their approval for other conditions more straightforward.

Much work remains before DMFu could be used for macular degeneration, however, including laying the groundwork for testing in clinical studies.



Dr. Shu

The results point to the exciting possibility that DMFu, a drug already approved for other conditions, could be repurposed as therapy in age-related macular degeneration.

Patient Stem Cells Become Pioneering Therapy for Geographic Atrophy

In fall 2022, surgeons at the National Institutes of Health (NIH) Clinical Center performed a successful implantation of lab-grown retinal pigmented epithelial cells into a patient with geographic atrophy, an advanced form of dry age-related macular degeneration. The surgery represents the first-ever use of patient-derived stem cells for eye disease.

It was the first use in the U.S. of autologous stem cell therapy to replace eye tissue. That's when samples from an adult patient's own tissue, usually skin or blood cells, are converted into stem cells in the laboratory using induced pluripotent stem cells (iPSC) techniques. The stem cells are then "coaxed" into developing into RPE and retinal cells for transplantation into the eye.

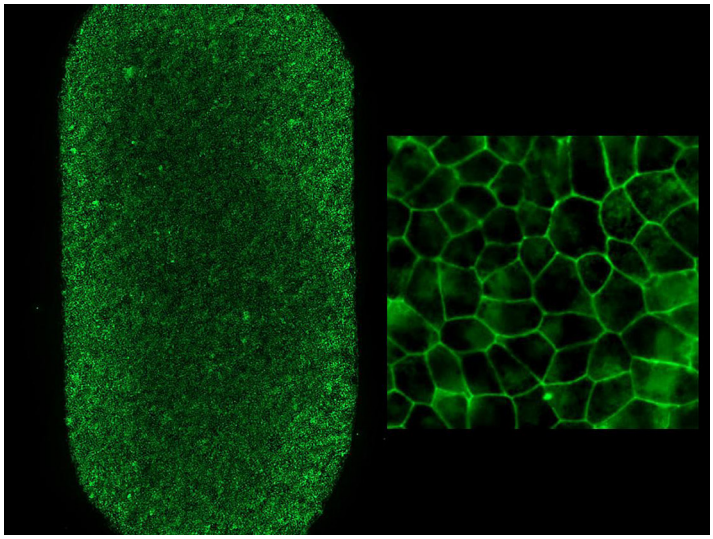
Two of the researchers involved in the groundbreaking operation at NIH are also BrightFocus grantees.

Lead surgeon **Amir Kashani, MD, PhD,** of Johns Hopkins is an Alzheimer's Disease Research grantee who works on new eye-related methods for detecting and tracking vascular dementia. Senior investigator **Kapil Bharti, PhD,** of NIH received a Macular Degeneration Research grant to create a three-dimensional retina using adult stem cell technology.

The surgery was the culmination of a decade of research and development at the National Eye Institute and was made possible due to the contributions of numerous research institutions and funders, including BrightFocus, which has supported research projects to study the potential of stem cell-derived retinal pigment epithelium replacement therapy.

Dr. Kashani

Dr. Bharti



Left: The full-RPE patch. Each dot is an RPE cell with the borders stained green. Each patch contains approximately 75,000 RPE cells. Right: Patch RPE cells at higher magnification. Photo courtesy of Kapil Bharti, PhD.

Lab-Grown Light-Responsive Retinal Cells Offer Breakthrough Potential

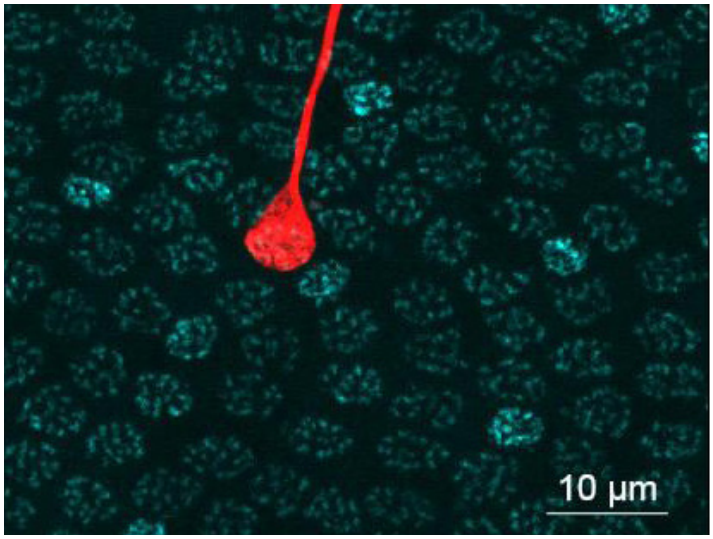
In a breakthrough that could mean potential new treatments, a Macular Degeneration Research-funded team has created first-of-its-kind lab-grown photoreceptors that can respond to light, just as they do in the eye. The result could be a potential treatment for vision loss.

Cone photoreceptors are special cells that provide color vision and are responsible for converting light into signals that are sent to the brain. They are located in an area of the retina called the fovea. Death of the foveal cone cells is the cause of blindness in many diseases, including age-related macular degeneration. This has been known for a long time that cone cells are lost in AMD.

> "By providing the first detailed insight into how the sensors in the fovea work, we can devise treatments for eye diseases that affect the fovea and restore eyesight."

To create the cells, Macular Degeneration Research grantee **Raunak Sinha, PhD,** professor of neuroscience at the University of Wisconsin School of Medicine and Public Health, and his colleagues used cells taken from adult donors.

They chemically rebooted the donated cells as stem cells that could develop into different tissue types. Using targeted conditions, the team succeeded in driving the cells to develop into a three-dimensional patch of retinal tissue known as a retinal organoid. The breakthrough signals the advent of a potential treatment for vision loss if the system can someday be used to replace damaged tissue. It also marks the creation of an important new tool for studying age-related macular degeneration.



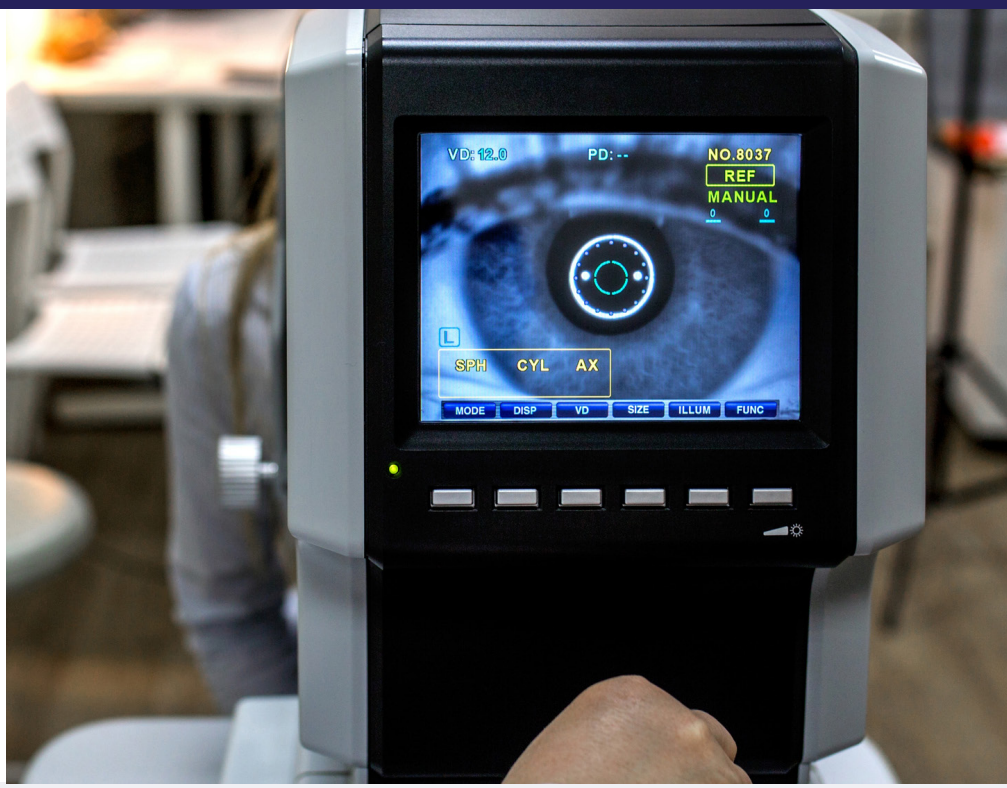
Cone photoreceptors (in red) are responsible for high-definition central vision, the kind lost in macular degeneration. Photo courtesy of Mrinalini Hoon, PhD & Raunak Sinha, PhD, University of Wisconsin-Madison.

Dr. Sinha

National Glaucoma Research

"Research is the answer to finding new treatments and a cure for glaucoma and gives me hope for a brighter future."

Florence "Flip" McDonald
Diagnosed with glaucoma at age 42, now 100



Uncovering the Root Causes of Glaucoma

We are one of the world's premier nonprofit funders of research on glaucoma, the leading cause of blindness in the U.S. and worldwide.

National Glaucoma Research has invested nearly $50 million to date in scientific grants exploring root causes, prevention strategies, and treatments for glaucoma, a group of eye diseases that can damage the optic nerve and result in vision loss and blindness.

National Glaucoma Research-funded scientists are advancing new and innovative ways of detecting, preventing, and curing this "sneak thief of sight" impacting 80 million people worldwide. **Read about a few recent scientific breakthroughs made possible through generous donor support.**

Protective Implant Shows Promise in Glaucoma, New Trial Enrolling

Dr. Goldberg

An experimental eye implant for glaucoma has done so well in its first formal trial outing that enrollment for the next trial phase has begun, funded in part by National Glaucoma Research.

The implant, dubbed NT-501 in clinical trials, releases a growth factor, ciliary neurotrophic factor, that protects the optic nerve against glaucoma-related damage.

In glaucoma, pressure from fluid buildup destroys the retinal ganglion cells, which receive visual information and transfer it via the optic nerve to the brain. The growth factor already has been tested in studies for other eye diseases.

In the trial, 11 people with the condition were implanted in one eye with a tiny package of cells that produce the growth factor. Their other eye served as control.

In this trial, intended to flag any safety issues, researchers detected no serious side effects, and none of the participants needed the implant removed. During the 18-month trial, eyes with the implant improved compared with the control eyes.

This finding led researchers to move NT-501 into the next testing stage, a midstage trial with more participants. In this currently enrolling trial, investigators will further assess safety and evaluate the effects of having one versus two implants in an eye.

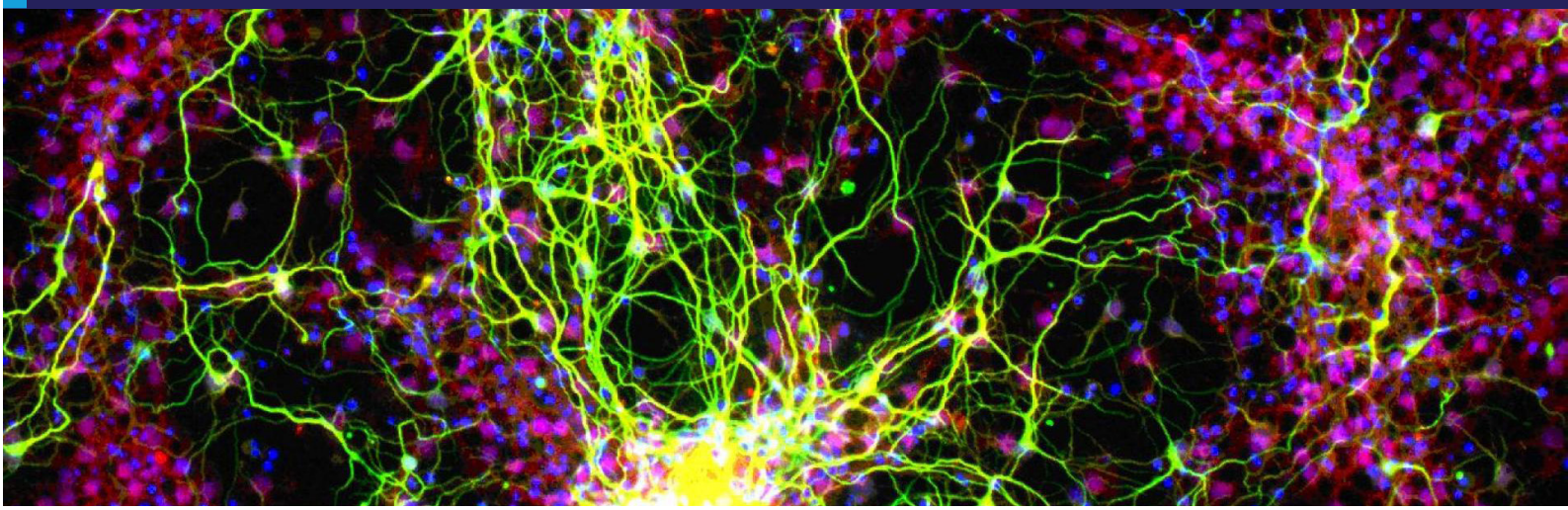
The primary investigator in these studies is National Glaucoma Research grantee **Jeffrey Goldberg, MD, PhD,** professor and chair of ophthalmology at the Byers Eye Institute at Stanford University. His team is looking at two possible outcomes in these studies—neuroprotection, or preserving existing vision in glaucoma, and neuroenhancement, which is actually improving vision.

Dr. Goldberg's research over the past two decades has focused on understanding retinal ganglion cells degeneration and failure to regenerate and discovering the molecules and treatments that can successfully intervene.

In the clinic, he's focused on moving promising therapies from the lab into human trials that have a chance of benefiting patients.

"Maintaining vision in glaucoma is too often not achieved with current approaches that focus on lowering eye pressure," he said. "Whether using eye drops, lasers, or even surgeries, in some patients the vision or visual field continues to get worse. We need new approaches that directly treat the retinal ganglion cells and/or the optic nerve.

Dr. Goldberg's team is looking at two possible outcomes in these studies—neuroprotection, or preserving existing vision in glaucoma, and neuroenhancement, which is actually improving vision.



Hundreds of Glaucoma-Linked DNA Regions Identified in AI-Based Study

In an innovative new study, an international research team has harnessed the power of artificial intelligence (AI) to identify new gene-based targets for glaucoma treatment and prevention.

Researchers conducted an extensive analysis of data from multiple genetic data banks to identify DNA regions, or genetic loci, linked to glaucoma.

Their analysis included data for thousands of eye exam images that had been evaluated using AI. This work is the first to incorporate AI approaches to investigate the genetic basis of glaucoma.

Some of the 312 genetic loci pinpointed in the study influence glaucoma risk. Although pressure from fluid buildup causes much of the optic nerve and other damage in glaucoma, factors independent of this pressure are involved, too.

But no treatments have been developed for damage unrelated to fluid pressure, and preventive or protective therapies remain elusive. Neuroprotective gene candidates offer hope that this situation may change.

In addition to AI, the research relied on an approach called multiomics, which involves analysis of huge gene sequence datasets, along with other large datasets that capture how the genes are used, yielding a multilayered picture of their role in disease.

This approach enables a more comprehensive understanding of how molecular changes in the body are linked to disease.

> The findings "could rapidly advance effective treatment to finally prevent retina and optic nerve damage."
>
> **Stuart MacGregor, PhD**

The findings "could rapidly advance effective treatment to finally prevent retina and optic nerve damage," said National Glaucoma Research grantee **Stuart MacGregor, PhD,** lead researcher for the study.

National Glaucoma Research grantee **Puya Gharahkhani, PhD,** who also was involved in the work, expects to incorporate the strongest candidates as part of a genetic risk assessment panel. Both researchers are affiliated with the Queensland Institute of Medical Research Berghofer in Brisbane, Australia.

Support Cells in the Eye May Offer New Paths to Glaucoma Treatments

Dr. Meyer

Dr. Gomes

The pressure from fluid buildup in glaucoma directly affects retinal ganglion cells, which are neurons that bridge the eye and the brain.

But research also shows that a supporting cast of star-shaped cells called astrocytes also harm these cells if they bear a specific glaucoma-linked mutation.

National Glaucoma Research grantees **Jason Meyer, PhD,** and **Cátia Gomes, PhD,** of Indiana University School of Medicine uncovered this role for astrocytes in glaucoma.

They guided adult-derived stem cells into becoming astrocytes and showed that astrocytes bearing the mutation functioned in ways that harmed the retinal ganglion cells. In contrast, astrocytes without this mutation could repair some of the damage of glaucoma.

The usual role of astrocytes is to "feed" and support neurons. If these support cells malfunction, then the neurons they support may be harmed.

> "We can now start addressing some of these problems, not just by one approach, but by multiple approaches," Dr. Meyer noted, "and hopefully get to therapeutics or cures a lot faster."

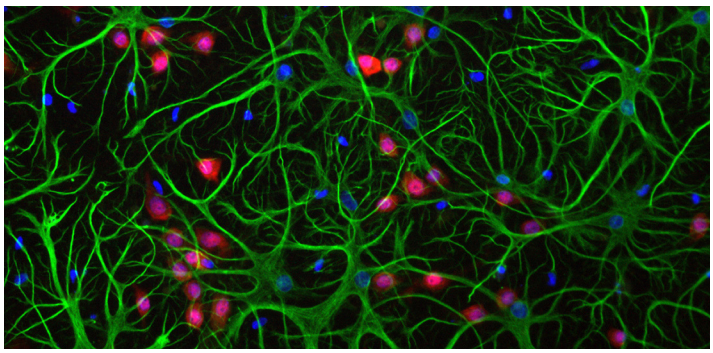
Many glaucoma-related studies home in on nerve cells that sustain damage from fluid-buildup pressure. But relieving this pressure won't necessarily stop progression of the disease, and some eyes with normal pressure will nonetheless develop glaucoma. These irregularities hinting at factors beyond fluid pressure in glaucoma drew researchers' attention to astrocytes.

Their findings, which were derived from cells created in a dish, offer a tool for exploring astrocytes' role in detail.

"When we turn these donated cells into stem cells, they become a very powerful model for us to study the disease in a dish," said Dr. Meyer. "We look at the cells in close detail—long before a patient would develop symptoms—and ask, 'What's leading to those early changes?'"

Identifying a mutation in astrocytes that contributes to glaucoma-related damage offers a target for drug development beyond the retinal ganglion cells themselves.

"We can now start addressing some of these problems, not just by one approach, but by multiple approaches," Dr. Meyer noted, "and hopefully get to therapeutics or cures a lot faster."



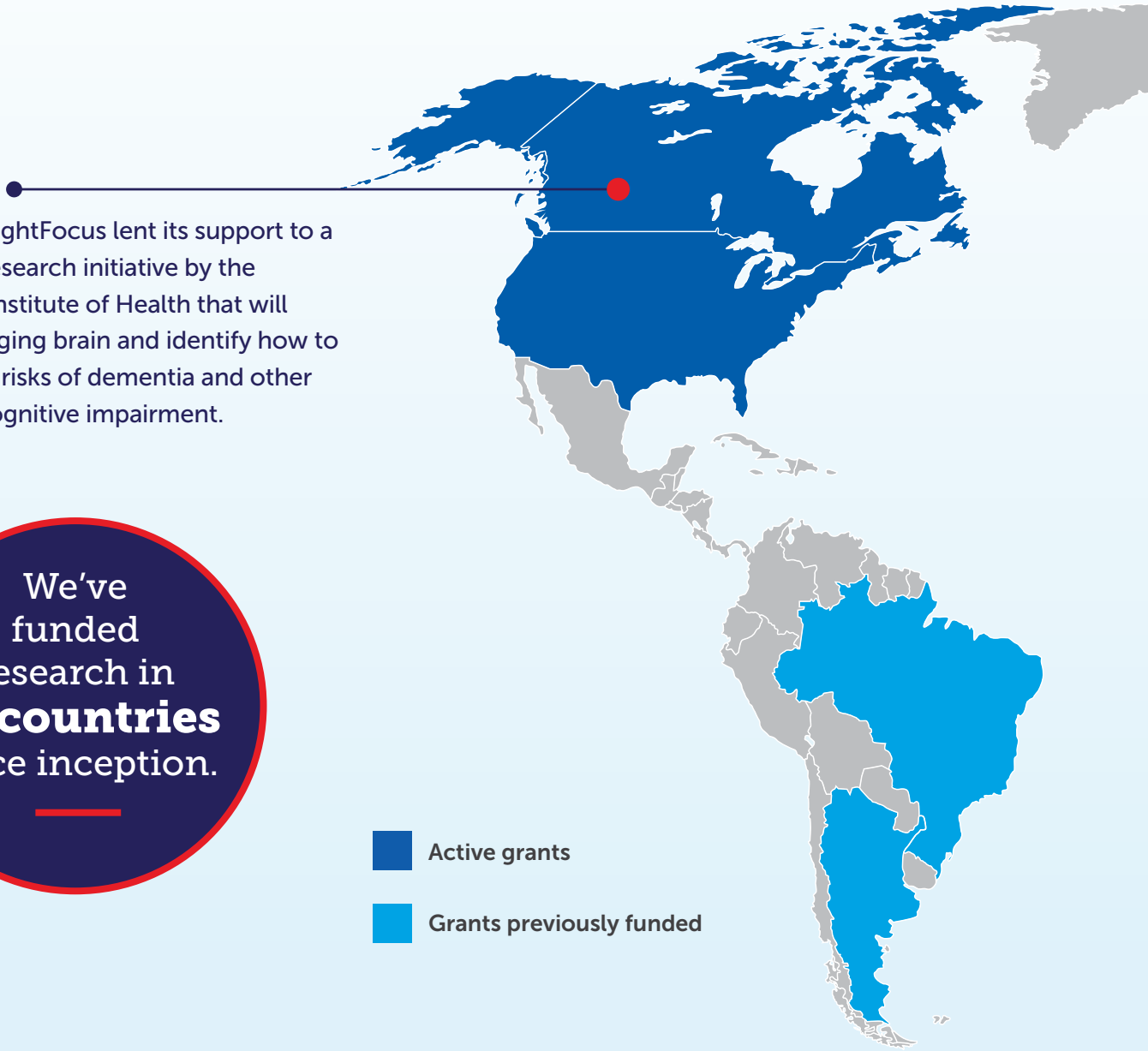
Astrocytes (shown in green) play a vital role in the maintenance of retinal ganglion cells, with these interactions adversely affected in glaucoma.

Expanding Impact Across the Globe

Age-related brain and vision diseases have no borders, and neither does our work. With partnerships around the world spanning government, nonprofit, and corporate partners, we are fostering cross-border collaborations to unlock future discoveries and deepen collective expertise. Twenty percent of this year's grants were awarded to scientists at leading institutions outside the U.S. in 16 countries.

In 2023, BrightFocus lent its support to a five-year research initiative by the Canadian Institute of Health that will study the aging brain and identify how to reduce the risks of dementia and other forms of cognitive impairment.

We've funded research in **25 countries** since inception.



BrightFocus Research Grants by Country

In partnership with the U.K. nonprofit Action Against Age-Related Macular Degeneration, BrightFocus is funding a first-of-its-kind database of donated eye scans from healthy volunteers to enable early detection and next-generation treatment of retinal conditions.

BrightFocus helped established international funding partners in the Netherlands (1993), Germany (1995), Belgium (1995), and France (2005) to broaden philanthropic support for Alzheimer's research.

Pictured, left: Representatives of these organizations with BrightFocus President and CEO Stacy Pagos Haller (third from left).

2023 Grant Awards

BrightFocus 2023 Grants at a Glance

16% clinical research grants

53% basic research grants

31% translational research grants

Clinical
Research involving volunteer participants to test the safety and effectiveness of drugs, devices, or other treatment candidates.

Basic
Research that aims to better understand how a disease happens and to obtain new ideas of how to stop the disease.

Translational
Research to move findings from the lab to the bedside by testing potential treatments.

2023 Research Grants

Awardees are listed by program in alphabetical order by last name.

Alzheimer's Disease Research

Do Tau Deposits Affect Blood Oxygen Supply to the Brain?
Sung Ji Ahn, PhD
Weill Cornell Medicine

Visualizing How Amyloid-Beta Strands Interact in Alzheimer's Disease
David Boyer, PhD
University of California, Los Angeles
This award is supported by Alzheimer's Los Angeles.

Imaging Markers of Blood Clotting in the Alzheimer's Disease Brain
Marta Casquero-Veiga, PhD
Jiménez Díaz Foundation Health Research Institute (Spain)

Novel Molecules to Tackle Toxic Amyloid-Beta Production in Alzheimer's
Lucía Chávez-Gutiérrez, PhD
Flanders Institute for Biotechnology (Belgium)

Spreading of Harmful Proteins by Support Cells in Alzheimer's Disease
Olga Chechneva, PhD
Shriners Children's Northern California

Disrupted Sleep Cycles and Alzheimer's Disease Risk
Jingyuan Chen, PhD
Massachusetts General Hospital

Does the Little-Studied Big Tau Protect Against Alzheimer's Disease?
Daheun Chung, PhD
Baylor College of Medicine

Disrupted Nuclear Protein Trafficking in Frontotemporal Dementia
Alyssa Coyne, PhD
Johns Hopkins University School of Medicine

Understanding How Newly Approved Anti-Amyloid Drugs Affect Blood Vessels
Kate Emily Foley, PhD
Indiana University School of Medicine

Tracking Immune Cells in Alzheimer's Disease Brains
David Gate, PhD
Northwestern University Feinberg School of Medicine
Recipient, Distinguished Investigator Award for Alzheimer's Disease Research.

Identifying Brain-Wide Network Disruptions That Underlie Alzheimer's Disease
Ariel Gilad, PhD
Hebrew University of Jerusalem (Israel)

Imaging the Rescue of Memory in Alzheimer's Disease Mice
Matthew Isaacson, PhD
Cornell University

A Newly Discovered Version of Toxic Tau as a Therapeutic Target in Alzheimer's Disease
Daniel C. Lee, PhD
University of Kentucky Research Foundation

Exploring the Origins of Tau Pathology in the Human Brainstem Locus Ceruleus
Meaghan Morris, MD, PhD
Johns Hopkins University School of Medicine

Characterizing the Range of Tau Forms Linked to Different Brain Diseases
Henry Pan, PhD
University of California, San Francisco

The Role of the Basal Forebrain in Early Detection of Alzheimer's Disease
Joost Michiel Riphagen, MD, PhD
Massachusetts General Hospital

Targeting Brain Immune Cells as a Novel Therapeutic in Alzheimer's Disease
Carla Rothlin, PhD
Yale University
Co-Principal Investigator: Sourav Ghosh, PhD

Preclinical Testing of a CRISPR-Based Alzheimer's Gene Therapy
Subhojit Roy, MD, PhD
University of California, San Diego

Testing Candidate Therapies Targeting Dysfunction of Support Cells in Alzheimer's Disease
Maria Virtudes Sanchez Mico, PhD
Massachusetts General Hospital

Unfolding Alzheimer's Tau Therapies: Near- and Long-Term Approaches
Paul Seidler, PhD
University of Southern California
Co-Principal Investigator: Daryl Davies, PhD
This award is supported by Alzheimer's Los Angeles.

The Role of White Matter Injury in Alzheimer's Disease
Zahra Shirzadi, PhD
Massachusetts General Hospital
Recipient, Dr. Edward H. Koo Postdoctoral Fellowship Award.

Pinning Down How Alzheimer's Risk Gene BIN1 Controls Brain Immune Responses
Ari Sudwarts, PhD
University of South Florida

Identifying Therapeutic Targets to Prevent Amyloid Accumulation
Arun Upadhyay, PhD
Northwestern University Feinberg School of Medicine

Following the Spread of Iron Through the Brain in Alzheimer's Disease
Louise Van der Weerd, PhD
Leiden University Medical Center (Netherlands)
Co-Principal Investigator: Boyd Kenkhuis, PhD

Testing a Mitochondria-Targeting Compound in Alzheimer's Disease
Qi Wang, PhD
Swiss Federal Institute of Technology (Switzerland)

How the Brain's Support Cells Interact with and Contribute to Alzheimer's Disease
Till Zimmer, PhD
Weill Cornell Medicine

In addition to the grants above that were recommended by our Scientific Review Committee, Alzheimer's Disease Research awarded eight grants to support other ongoing scientific efforts, including the continuation and expansion of the International Down Syndrome Biobank Consortium, exploring interventions like yoga and meditation, strengthening international research collaborations, and funding training opportunities for early-career investigators.

2023 Grant Awards

Macular Degeneration Research

The Role of Mitochondrial Dysfunction in Age-Related Macular Degeneration
Navdeep Gogna, PhD
The Jackson Laboratory
Recipient, Helen Juanita Reed Award for Macular Degeneration Research.

Getting to the Root of Fat Transport Dysfunction in Age-Related Macular Degeneration
Catharina Grubaugh, PhD
University of Pennsylvania

Imaging Tiny Blood Vessels in the Eye for Markers of Age-Related Macular Degeneration
Yali Jia, PhD
Oregon Health & Science University

What Squirrels Can Teach Us About Treating Age-Related Macular Degeneration
Sangeetha Kandoi, PhD
University of California, San Francisco

Uncovering Immune-Related Factors Driving Retinal Pigment Epithelium Repair
Lyndsay Leach, PhD
The University of Texas at Austin

Interactions of Immune Proteins and Glucose Breakdown in Severe, Hereditary Age-Related Macular Degeneration
Rayne Lim, PhD
University of Washington

Tracking How Rare Eye Immune Cells Respond to Damage in Age-Related Macular Degeneration
Abdelilah Majdoubi, PhD
Yale University

How Age-Related Macular Degeneration Risk Factors Interact in Disease Development
Freya Mowat, PhD
University of Wisconsin-Madison
Recipient, Dr. Joe G. Hollyfield New Investigator Award for Macular Degeneration Research.

Identifying Signals That Draw Immune Cells to Damaged Tissues in Age-Related Macular Degeneration
Kelly Mulfaul, PhD
University of Iowa

Stem Cell Therapy for Early Age-Related Macular Degeneration
Narendra Pandala, PhD
University of Iowa

Immune Cell Traps in Inflammation and Wet Age-Related Macular Degeneration
Matthew Rutar, PhD
University of Canberra (Australia)

The Potential Role of the Cell's Sugar Coat in Age-Related Macular Degeneration
Jaclyn Swan, PhD
University of California, San Diego Health Sciences
Recipient, Elizabeth Anderson Award for Macular Degeneration Research.

A Newly Discovered Eye Immune Environment in Age-Related Macular Degeneration
James Walsh, MD, PhD
Washington University in St. Louis

In addition to the grants above that were recommended by our Scientific Review Committee, Macular Degeneration Research awarded five grants to support ongoing scientific efforts, including providing travel fellowships for early-career investigators from underrepresented groups to share their work with the world at scientific conferences.

National Glaucoma Research

Boosting Neuronal Energy to Improve Vision in Glaucoma
Adriana Di Polo, PhD
University of Montreal Hospital Center (Canada)

Defining the Role of a New Protein Target in Fluid Buildup in Glaucoma
Rupalatha Maddala, PhD
Duke University School of Medicine
Co-Principal Investigators: Pratap Challa, MD & Vasantha Rao, PhD

An Effective Tool for Understanding Dysfunctional Eye Drainage in Glaucoma
Weiming Mao, PhD
Indiana University

An Optimal Form of Nerve Growth Factor as a New Neuroprotective Drug for Glaucoma
Silvia Marinelli, PhD
European Brain Research Institute (Italy)
Co-Principal Investigator: Francesca Malerba, PhD

Targeting Eye Immune Cells to Prevent Glaucoma-Induced Nerve Damage
Shubham Maurya, PhD
University of California, Berkeley
Recipient, Thomas R. Lee Award for Glaucoma Research.

Repurposing an Approved Diabetes Drug for Glaucoma
Kazuya Oikawa, PhD, BVSc
University of Wisconsin-Madison

Building a Better Model to Screen for Intraocular Pressure-Lowering Glaucoma Drugs
Darryl Overby, PhD
Imperial College London (UK)

Using Laser Pulses to Smooth the Way for Transplanted Retinal Ganglion Cells in Glaucoma
Karen Peynshaert, PhD
Ghent University (Belgium)

Long-Lasting, Nonsurgical Treatment for Eye Pressure in Glaucoma
Mark Prausnitz, PhD
Georgia Institute of Technology

Mapping the Pathways of Neurodegeneration in Glaucoma Using Artificial Intelligence
Karthik Shekhar, PhD
University of California, Berkeley
Recipient, Dr. Douglas H. Johnson Award for Glaucoma Research.

Harnessing Artificial Intelligence to Improve Glaucoma Clinical Trials
Jithin Yohannan, MD, MPH
Johns Hopkins University School of Medicine

In addition to the grants above that were recommended by our Scientific Review Committee, National Glaucoma Research awarded two grants to support ongoing scientific efforts, including providing travel fellowships for early-career investigators from underrepresented groups to share their work with the world at scientific conferences.

All grants will be awarded pending conclusion of contract negotiations. Co-principal investigator institutions are listed if different from that of the principal investigator.

Special Thanks to Donors Supporting Ongoing Awards

Alzheimer's Disease Research

Revealing Early Biomarkers in Alzheimer's
Uri Ashery, PhD
Tel Aviv University (Israel)
Co-Principal Investigator: Shahar Alon, PhD, Bar-Ilan University (Israel)
This award is supported by the Luminescence Foundation.

The Impact of Midlife Cardiovascular Health on Brain's Well-Being
Marta Cortes-Canteli, PhD
Spanish National Centre for Cardiovascular Research (Spain)
Co-Principal Investigators: Valentine Fuster, PhD & Juan Domingo Gispert, PhD
This award is supported by the Sephardic Foundation on Aging.

A Novel Test for Alzheimer's Disease Based on DNA Circulating in Blood
Yuval Dor, PhD
Hebrew University of Jerusalem (Israel)
This award is supported by the Sephardic Foundation on Aging.

Macular Degeneration Research

Regenerative Response in Spiny Mice
Manas R. Biswal, PhD
University of South Florida
This award is supported by the Free Family Foundation.

Identifying FDA Approved Drugs to Reverse Dry AMD
Steffi Daniel, PhD
University of Texas Southwestern Medical Center
This award is supported by the Ivan Bowen Family Foundation.

How Does Mechanical Stress Injure the Retinal Pigment Epithelium in AMD?
Aparna Lakkaraju, PhD
University of California, San Francisco
Recipient of the Lorraine Maresca Award.

Scientific Review Committees

World-Class Scientific Review Committees Accelerate Research Impact

Composed of renowned leaders in their fields, our Scientific Review Committees recommend new research opportunities for BrightFocus to advance its goal of defeating Alzheimer's, macular degeneration, and glaucoma. The following experts have served on each committee within the preceding five years:

Alzheimer's Disease Research

CO-CHAIRS:

David M. Holtzman, MD WASHINGTON UNIVERSITY SCHOOL OF MEDICINE
Hui Zheng, PhD BAYLOR COLLEGE OF MEDICINE

Committee Members:

Beau Ances, MD, PhD WASHINGTON UNIVERSITY SCHOOL OF MEDICINE
Rhoda Au, PhD BOSTON UNIVERSITY SCHOOL OF MEDICINE
David R. Borchelt, PhD UNIVERSITY OF FLORIDA
Guojun Bu, PhD Hong Kong University of Science and Technology
Laura Cox, PhD HARVARD MEDICAL SCHOOL, BRIGHAM AND WOMEN'S HOSPITAL
Carlos Cruchaga, PhD WASHINGTON UNIVERSITY SCHOOL OF MEDICINE
Mark Ebbert, PhD UNIVERSITY OF KENTUCKY
Steven Estus, PhD UNIVERSITY OF KENTUCKY
Douglas Galasko, MD UNIVERSITY OF CALIFORNIA, SAN DIEGO
Charles G. Glabe, PhD UNIVERSITY OF CALIFORNIA, IRVINE
Alison M. Goate, PhD ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI
Todd E. Golde, MD, PhD Emory University
John Hardy, PhD, FMedSci, FRS UNIVERSITY COLLEGE LONDON (UK)
S. Abid Hussaini, PhD COLUMBIA UNIVERSITY
Joanna Jankowsky, PhD BAYLOR COLLEGE OF MEDICINE
Lance Johnson, PhD UNIVERSITY OF KENTUCKY
Martin Kampmann, PhD UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
Aimee Kao, MD, PhD UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
Edward Koo, MD UNIVERSITY OF CALIFORNIA, SAN DIEGO
Ksenia Kastanenka, PhD MASSACHUSETTS GENERAL HOSPITAL
Cynthia A. Lemere, PhD HARVARD MEDICAL SCHOOL, BRIGHAM AND WOMEN'S HOSPITAL
Allan I. Levey, MD, PhD EMORY UNIVERSITY
Yueming Li, PhD MEMORIAL SLOAN- KETTERING CANCER CENTER
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Eduardo Marcora, PhD MT SINAI SCHOOL OF MEDICINE
Matthew Rowan, PhD EMORY UNIVERSITY
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Melanie Samuel, PhD BAYLOR COLLEGE OF MEDICINE
Gerard Schellenberg, PhD UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE
Aristeidis Sotiras, PhD WASHINGTON UNIVERSITY SCHOOL OF MEDICINE
Russell Swerdlow, MD KANSAS UNIVERSITY MEDICAL CENTER
Malu Tansey, PhD University of Florida
Gopal Thinakaran, PhD UNIVERSITY OF South Florida
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Donna Wilcock, PhD Indiana University school of medICINE
Benjamin Wolozin, MD, PhD BOSTON UNIVERSITY MEDICAL CENTER
Riqiang Yan, PhD UNIVERSITY OF CONNECTICUT
Xiongwei Zhu, PhD CASE WESTERN RESERVE UNIVERSITY

Macular Degeneration Research

CHAIR:
Michael B. Gorin MD, PhD
UNIVERSITY OF CALIFORNIA, LOS ANGELES

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John D. Ash, PhD University of Pittsburgh
Catherine Bowes-Rickman, PhD DUKE UNIVERSITY
Milam Brantley, MD, PhD VANDERBILT UNIVERSITY MEDICAL CENTER
Itay Chowers, MD HADASSAH MEDICAL CENTER (ISRAEL)
Karl Csaky, MD, PhD RETINA FOUNDATION OF THE SOUTHWEST
Sarah Doyle, PhD TRINITY COLLEGE (IRELAND)
Steven J. Fliesler, PhD RESEARCH FOUNDATION FOR SUNY/BUFFALO STATE COLLEGE
Joelle Hallak, PhD UNIVERSITY OF ILLINOIS
Joe G. Hollyfield, PhD CLEVELAND CLINIC FOUNDATION
Sudha Iyengar, PhD CASE WESTERN RESERVE
Aparna Lakkaraju, PhD UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
Theodore Leng, PhD STANFORD UNIVERSITY
Alfred S. Lewin, PhD UNIVERSITY OF FLORIDA
Martha Neuringer, PhD OREGON HEALTH & SCIENCE UNIVERSITY
Nancy J. Philp, PhD THOMAS JEFFERSON UNIVERSITY
Florian Sennlaub, MD, PhD INSTITUT DE LA VISION (FRANCE)
Lois Smith, MD, PhD BOSTON CHILDREN'S HOSPITAL

National Glaucoma Research

CO-CHAIRS:
Adriana Di Polo, PhD UNIVERSITY OF MONTREAL (CANADA)
John C. Morrison, MD OREGON HEALTH & SCIENCE UNIVERSITY

Committee Members:
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C. Ross Ethier, PhD GEORGIA INSTITUTE OF TECHNOLOGY AND EMORY SCHOOL OF MEDICINE
Brad Fortune, OD, PhD DEVERS EYE INSTITUTE
Thomas F. Freddo, OD, PhD Massachusetts College of Pharmacy and Health Sciences
Michael Hauser, PhD DUKE UNIVERSITY
Dennis Inman, PhD UNIVERSITY OF NORTH TEXAS
Tatiana Jakobs, MD SCHEPENS EYE RESEARCH INSTITUTE, MASSACHUSETTS EYE AND EAR AND HARVARD MEDICAL SCHOOL
Rachel Kuchtey, MD, PhD VANDERBILT UNIVERSITY MEDICAL CENTER
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Nicholas Marsh-Armstrong, PhD UNIVERSITY OF CALIFORNIA, DAVIS
Colleen McDowell, PhD UNIVERSITY OF WISCONSIN-MADISON
Stuart J. McKinnon, MD, PhD DUKE UNIVERSITY
Gillian McLellan, BVMS, PhD UNIVERSITY OF WISCONSIN-MADISON
Robert W. Nickells, PhD UNIVERSITY OF WISCONSIN-MADISON
Rebecca Sappington, PhD WAKE FOREST UNIVERSITY
Ian Sigal, PhD UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE
Arthur J. Sit, MD MAYO CLINIC, ROCHESTER
W. Daniel Stamer, PhD DUKE UNIVERSITY
James N. Ver Hoeve, PhD UNIVERSITY OF WISCONSIN-MADISON
Monica Vetter, PhD UNIVERSITY OF UTAH
Darrell WuDunn, MD, PhD UNIVERSITY OF FLORIDA JACKSONVILLE

Community Engagement and Events

1a

1b

2a

2b

3

4a

4b

BrightFocus® Chats

4c

1 50 Years of Research Impact and Advancements

BrightFocus' 50th Anniversary Celebration and Awards, held June 14, 2023, at the Smithsonian's National Museum of the American Indian in Washington, D.C. (pictured on previous page, 1a, 1b), honored four exemplary scientists and advocates working to end Alzheimer's, macular degeneration, and glaucoma while celebrating the strides made over the last 50 years toward discovering cures for these three diseases.

Honorees (pictured on previous page, 1a, left to right)**:**

Michael Kass, MD, Washington University in St. Louis: Helen Keller Prize for Vision Research

Debra Tann, EdD, Reminiscent: Community Impact Award

Mae Gordon, PhD, Washington University in St. Louis: Helen Keller Prize for Vision Research

Gerard D. Schellenberg, PhD, University of Pennsylvania Perelman School of Medicine: Scientific Impact Award

2 Building Trust Through Community Engagement

In January 2023, BrightFocus partnered with dementia nonprofit Reminiscent to host a free walk-up community health screening fair in Valdosta, Georgia, sponsored in part by AARP. Local volunteers performed memory screenings, vision tests, and blood pressure exams for community members (pictured on previous page, 2a, 2b).

The event was one of BrightFocus' many grassroots touchpoints designed to build trust, raise awareness, and provide meaningful information and services related to age-and-brain health to underresourced communities and set the stage for sustained and scalable outreach efforts to come.

3 Congressional Briefing on Health Equity

As part of our 50th anniversary celebration, BrightFocus hosted a bipartisan congressional briefing on June 14, *Health Equity Begins in the Lab: Future Breakthroughs in Alzheimer's, Macular Degeneration, and Glaucoma Research Depend on Robust Funding and Clinical Trial Diversity*. A panel of scientists, thought leaders, and advocates joined policymakers to discuss the importance of research funding for these diseases, educational outreach, and increased clinical trial participation by underrepresented groups.

4 Expanding Access to Brain and Eye Health Information

This year, BrightFocus launched **Zoom in on Dementia & Alzheimer's**, a free, virtual discussion program where medical experts share the latest research breakthroughs and news from the field (pictured on previous page, 4a). Hosted by BrightFocus' Nancy Lynn, each episode includes a live Q&A where participants can ask their questions directly to the experts. Since the program's launch in April 2023, *Zoom in* has reached thousands of people from across the country. All previous episodes are available at **brightfocus.org/ZoomIn**.

BrightFocus Chats, our popular audio series connecting people with vision diseases to doctors and researchers, expanded this year to include glaucoma topics as well as macular degeneration (pictured on previous page, 4b). All past episodes are available at **brightfocus.org/chats**.

Brain Info Live, multilingual educational programs customized for diverse communities across the U.S., has helped raise awareness about brain health and opportunities to participate in clinical trials. This year, the first episode in Haitian Creole was broadcast live on Haitian Creole radio in south Florida and screened publicly in Haiti (pictured on previous page, 4c).

Community Engagement and Events

Health Equity Starts in the Lab

Unlocking Scientific Discoveries That Work for Everyone

Every population is impacted by Alzheimer's, macular degeneration, and glaucoma, but they are not impacted equally. These disparities are a public health problem that must be solved to better prevent, treat, and cure mind and sight diseases.

Without considering the unique needs of all populations, tomorrow's medical milestones may leave millions behind.

BrightFocus' research portfolio includes the most promising and innovative research to approach these diseases from a diverse range of angles. Such a diverse approach stands the best chance of defeating these diseases for good.

Our grantees are studying the genetic variants and sex-based differences that increase the risk of Alzheimer's, risk factors for primary open-angle glaucoma in people of African descent, and how the incidence of Alzheimer's, macular degeneration, and glaucoma varies by race, ethnicity, gender, and genetic makeup.

> **Of the Foundation's 287 actively funded grants, nearly 45% are led by women and scientists of a non-white racial background.**

Health Disparities

African Americans are **3-4 times more likely** to be diagnosed with glaucoma than white populations.

Glaucoma is a **leading cause of blindness** among African Americans and Hispanics in the U.S.

Women comprise **two-thirds** of all Alzheimer's patients and are **twice as likely** to develop the disease.

White patients make up **92%** of clinical trial participants.

Fostering the Next Generation of Innovators

In addition to raising public awareness about Alzheimer's, macular degeneration, and glaucoma, BrightFocus also educates and trains the next generation of brain and vision scientists through its Fast Track programs. Taught by experts in the field, these programs have accelerated the careers and transformative ideas of thousands of early-career scientists from around the world.

"Attending Alzheimer's Fast Track was a milestone for me. My interactions with the other participants have already expanded my project and provided me with a unique take on our working hypothesis and methods that we implement. Being part of this program reminds me why I'm in science in the first place: to carry the beacon of knowledge forward for all."

Atalay Ata
PhD Student
MDI Biological Laboratory

Broadening Access to Science

Scientific conferences are important avenues for scientists to present their research to the wider community, gain valuable advice and mentoring, and spark collaborations on projects, but cost is often a deterrent for many early-career scientists. In 2022, BrightFocus funded 91 travel fellowships to allow scientists from diverse backgrounds to attend conferences to share their research and facilitate global collaboration.

"I connected with numerous researchers who either suggested some interesting ideas to incorporate in our project and/or introduced me to mentors for further discussion and potential collaboration. As a medical student dedicating a year off to glaucoma research, this year has been challenging financially. The travel grant alleviated some of this financial burden, which I deeply appreciate."

Anna Mueller
Medical Student
Florida International University/Bascom Palmer Eye Institute
Recipient of a 2023 BrightFocus travel grant to attend the annual meeting of the Association for Research in Vision and Ophthalmology (ARVO), the premier gathering for eye and vision scientists.

Our Donors

Our Supporters Make Research Possible

BrightFocus extends its deep appreciation to our donors for their generosity toward our three scientific and public awareness programs:

Alzheimer's Disease Research, Macular Degeneration Research, and National Glaucoma Research. The support of individual donors, family foundations, and corporate partners makes our work possible. A wide range of contribution opportunities is available to accommodate resources and charitable goals. Each gift is important and needed to help us find a cure for these diseases of mind and sight.

BrightFocus donors often have special connections to the scientific research programs they support. We are honored to share three of these stories with you.

DONOR SPOTLIGHT

Sharing Hope for Families Affected by Alzheimer's

Monica Vierling Hall with her father.

Monica Vierling Hall's journey through her father Jerome's battle with Alzheimer's disease is an inspiring story of love, compassion, and resilience. Despite his declining cognitive abilities, Monica was able to maintain a loving relationship with her father by staying present and engaged.

Monica's desire to make a meaningful impact for other families in the Alzheimer's community led her to discover Alzheimer's Disease Research (ADR). After Jerome's passing six years ago, Monica sought a purposeful way to channel the support that had poured in. The word "research" resonated with her, sparking hope in a realm often overshadowed by fear. She became an annual donor to ADR, inspired by the dedicated researchers who work tirelessly to conquer this mind-robbing disease.

"Knowing about these researchers committing their lives to finding a cure for Alzheimer's gives me reassurance for the future," she said.

In 2020, Monica wrote her first book, *Pouf: A True Story About Love, Life, and Alzheimer's*, which chronicles the unique beauty she found in her father's journey. During their regular visits, she was struck by many of the things he said. "He became more artistic with his words, and I wanted to capture them," she said.

Her notes became the basis of her book, which reflects on the challenges she and many other caregivers face when trying to communicate with a loved one with Alzheimer's. For her, finding the human connection—what creates a sparkle in the eye—matters more than the words spoken.

"As a caregiver, you take off your shoes of normalcy and walk in their world," she said.

With her firsthand understanding of the disease's nuances, Monica hopes her story can be a bridge between the world of caregivers and people with Alzheimer's. She continues to donate to ADR to invest in a future free from the clutches of Alzheimer's.

"Alzheimer's is a fearful word, but research is hopeful," she said. "I feel good that I'm contributing to that hope and helping to ensure a better future for the next generation."

DONOR SPOTLIGHT

Having Fun While Doing Good

Barbara Cheatham doesn't always sport electric pink hair, but when she does, it's for a good cause.

Her hair transformation came about through a fundraiser she and some 20 others in the low-vision support group at the Timber Ridge at Talus Life Services Community in Issaquah, Washington, conducted. They raised $2,700 in support of BrightFocus' Macular Degeneration Research and National Glaucoma Research programs.

Most members of the low-vision group have macular degeneration or glaucoma.

"I joined the low-vision support group because I wanted to be with fellow sufferers to try to help one another share our feelings about losing our sight," said Barbara, who has both macular degeneration and glaucoma and has lost nearly all her vision in one eye.

In thinking of ways to raise money for a cause that was meaningful to them, Barbara thought back to something her son told her on her 90th birthday: "Now that you're 90, don't be dignified. Stay silly."

So she came up with the "undignified" idea of holding a raffle where the winners would get to choose the color of her hair. While there were some initial skeptics, "They were overruled," she said, laughing.

When the fundraising committee, of which Barbara served as chair, discovered the free resources and innovative research funded by Macular Degeneration Research and National Glaucoma Research, they knew that they had found the right fit for their project.

Word of the fundraiser spread quickly around Timber Ridge, and soon there were three volunteers to dye their hair—Barbara, resident Martha Martin, and Heather Turner, the executive director of Timber Ridge. Members of the low-vision group sold raffle tickets in the lobby, which gave committee members an opportunity to share information about their support group with other residents who opened up about their own vision challenges.

Barbara Cheatham (left) and Martha Martin, members of the low-vision support group at Timber Ridge at Talus Life Services Community in Issaquah, Washington.

Raffle winners were notified with a knock on their apartment door and balloons before they were asked to choose their desired hair color for the volunteers. A group of amused residents watched the transformation take place at the beauty salon—Barbara and Heather's hair to pink, Martha's hair to green.

While the temporary hair dye has worn off, Barbara's enthusiasm for fundraising hasn't. She's already thinking of the next fundraising project for the low-vision group to take on.

"I was excited about the idea that, as a group, we weren't just insular, talking about our own problems, but that we could make lemonade out of lemons. We could do something that would have broader significance—not just go about our own problems." she said. "We had so much fun with it."

Our Donors

DONOR SPOTLIGHT

A Life of Generosity

Meet **Florence McDonald,** a woman whose life has been nothing short of extraordinary. A retired naval officer, Florence, affectionately known as Flip, has dedicated herself to helping others, making a positive impact on countless lives along the way.

In 1963, after serving as a commander in the U.S. Navy, Flip embarked on a new chapter of her life as a civilian. It was during her annual physical at the age of 42 that she received the life-changing news – she had glaucoma. This early diagnosis allowed her to maintain her vision for a significant period, but as the years passed, the pressure in her left eye could not be reduced to a healthy level and she gradually lost vision in one eye.

Over the next 50 years, Flip faced the challenges of glaucoma head-on. Daily eye drops, laser treatments, and multiple surgeries became part of her routine. Despite her struggles, she remained resilient, never letting her condition dampen her spirits or deter her from helping others. In 2021, Flip faced a new challenge, losing her sight completely in one eye and having only a small amount of vision left in the other. However, she refused to be disheartened and found hope in the advancements being made in glaucoma research.

Now, at 100 years old, Flip is legally blind but remains determined to make a difference. Her commitment to discovering a cure for glaucoma led her to become a dedicated supporter of National Glaucoma Research for over two decades, supporting research that she believes holds the key to finding a cure and providing hope for a better future. And in 2022, Flip became a member of BrightFocus Foundation's prestigious de la Cuesta Legacy Society by establishing a planned gift to ensure her legacy of support for National Glaucoma Research lives on for generations to come.

Flip McDonald

"Research is the answer to finding more treatments and a cure for glaucoma. If I can in any way help somebody else avoid what happened to me, I certainly wanted to be able to do that," she said.

Flip's passion for funding innovative research is fueled by her desire to spare others from experiencing the challenges she has faced. Because glaucoma often has no early symptoms, she encourages everyone to get their eyes checked regularly through a comprehensive, dilated eye exam.

> "Research is the answer to finding more treatments and a cure for glaucoma. If I can in any way help somebody else avoid what happened to me, I certainly wanted to be able to do that."
>
> **Flip McDonald**

Partnerships

Our Valued Partners

BrightFocus works closely with nonprofit and corporate partners on issues of common concern.

Action Against AMD
AARP
AgeWave
ALEXION
Alliance for Aging Research
Alzheimer's Los Angeles
antidote
AOPT
Apellis
ARVO
astellas
Biogen
BIRAX
Boehringer Ingelheim
CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada
Delta Gamma Foundation
Dementia Friendly America
Drusolv Therapeutics
Eisai
FNIH Foundation for the National Institutes of Health
Gates Ventures
Genentech A Member of the Roche Group
GHR Foundation
Glaucoma Research Foundation
Helen Keller Foundation
IQVIA
ISER International Society for Eye Research
ISMND
IVERIC bio
LEAD
Lilly
Milken Institute
Molecular Neurodegeneration
MTEC Medical Technology Enterprise Consortium
NAEVR National Alliance For Eye And Vision Research — Serving as Friends of the National Eye Institute
National Eye Health Education Program NEHEP
National Institute on Aging
National Institute of Neurological Disorders and Stroke
NOVARTIS
Outlook Therapeutics
PCH Films
PhRMA
Platform Education
RD Meeting — International Symposia on Retinal Degeneration
REGENERON
REGENXBIO
Rendia
Research to Prevent Blindness
RKD Group
Samsara Vision
Sandy Spring Bank
tgf The Glaucoma Foundation — Our Vision. Your Sight
The Nancy Peery Marriott Foundation
The Sephardic Foundation on Aging
UsAgainstAlzheimer's
Women's Health Access Matters

Global Alzheimer's Collaborations Foster Scientific Growth

BrightFocus has worked with partners worldwide to advance research and raise public awareness of Alzheimer's disease:

BELGIUM
Stichting Alzheimer Onderzoek

GERMANY
Alzheimer Forschung Initiative e.V.

FRANCE
Fondation Vaincre Alzheimer

THE NETHERLANDS
Alzheimer Nederland

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Financial Highlights

BrightFocus is a nonprofit organization designated under Section 501(c)(3) of the Internal Revenue Code. All contributions to BrightFocus and its programs are tax deductible to the extent allowed by law. The Foundation is supported entirely by voluntary private contributions.

BrightFocus received in-kind donations to expand public health information outreach, and these are included in Program Services expenses. This allowed the organization to reach millions of people with information about risk factors, treatments, and caregiving.

BRIGHTFOCUS FOUNDATION AND SUBSIDIARIES

CONSOLIDATED STATEMENT OF FINANCIAL POSITION 2023

As of March 31, 2023 (in thousands of dollars)

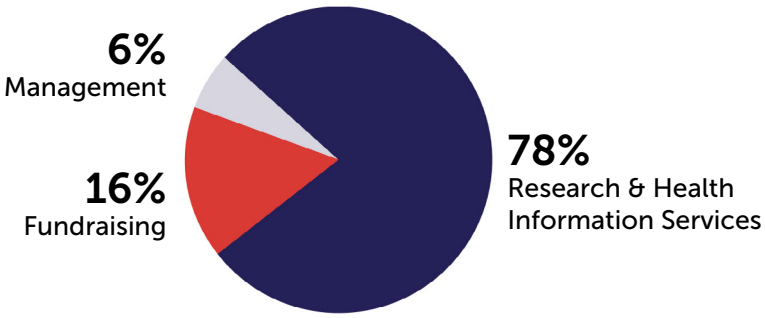
Assets	
Cash and Investments	$43,637
Charitable Trusts and Bequests Receivable	$5,539
Rental Property	$3,636
Fixed Assets, Net	$4,493
Other Assets	$1322
TOTAL ASSETS	$58,626
LIABILITIES	
Accounts Payable and Other Liabilities	$1360
Grants Payable	$33,120
Charitable Gift Annuities	$585
TOTAL LIABILITIES	$35,065
NET ASSETS	
Without Donor Restriction	$10,360
With Donor Restriction	$13,201
TOTAL NET ASSETS	$23,562
TOTAL LIABILITIES AND NET ASSETS	$58,626

CONSOLIDATED STATEMENT OF ACTIVITIES

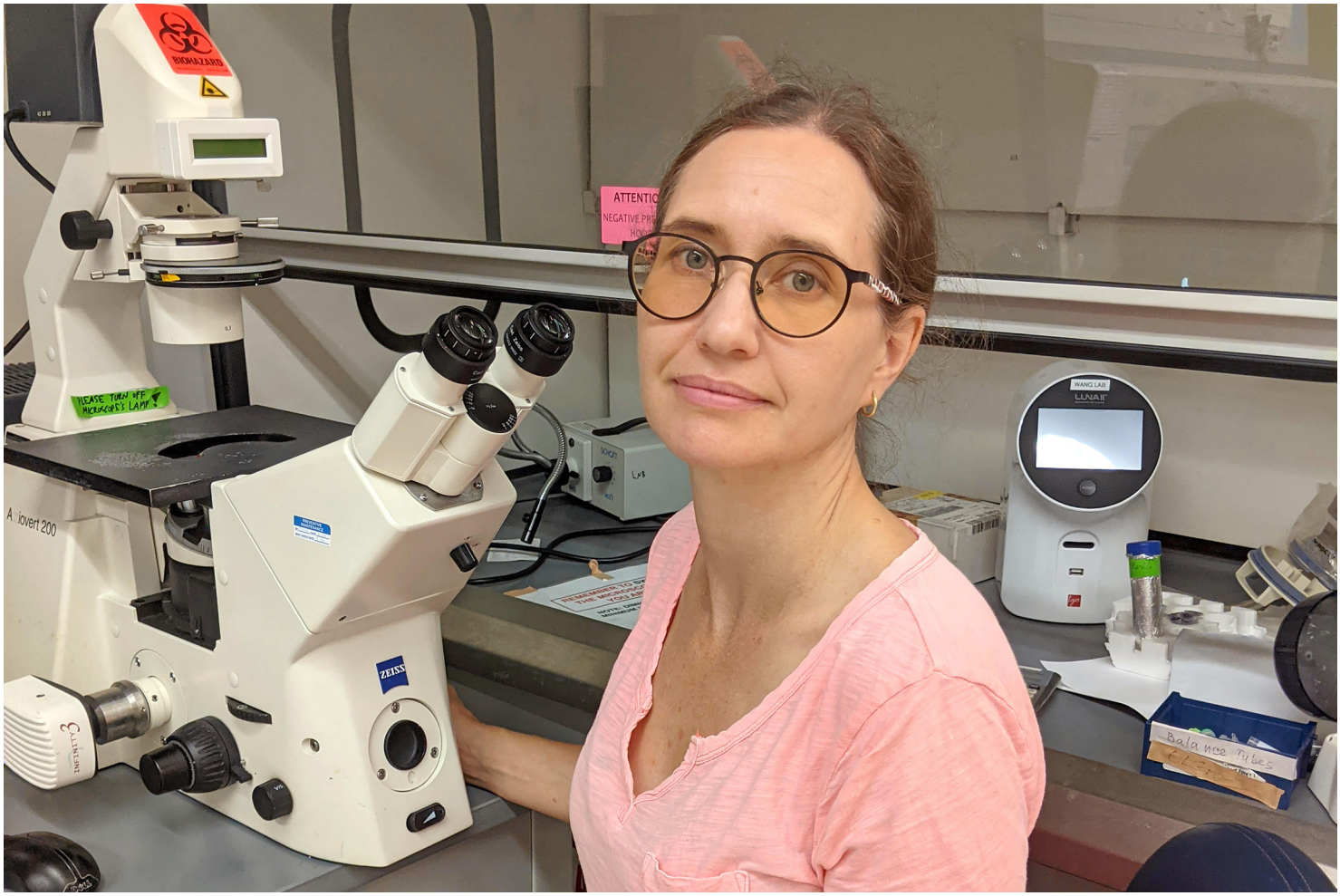
For the Fiscal Year Ended March 31, 2023

(in thousands of dollars)

SUPPORT AND REVENUE	
Contributions and Grants	$36,497
Bequests	$6,712
Donated Services	$25,309
Investment Income	($2,735)
Rental & Other Income	$2,050
TOTAL SUPPORT AND REVENUE	$67,833
EXPENSES	
Program Services	
Research	$19,471
Health Information Services	$38,005
Total Program Services	$57,476
Supporting Services	
Fundraising	$11,445
Management and General	$4,370
Total Supporting Services	$15,815
TOTAL EXPENSES	$73,291
CHANGE IN NET ASSETS	($5,458)



A complete copy of financial statements audited by Marcum, LLP, is available upon request from BrightFocus Foundation, 22512 Gateway Center Drive, Clarksburg, MD, 20871, or at ***www.brightfocus.org****.*



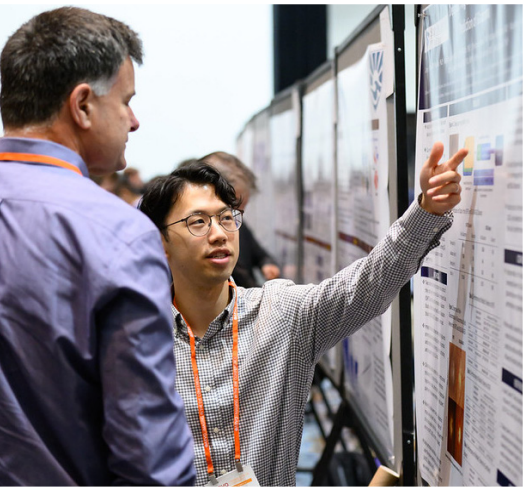
"Every day, I am energized by the joy of discovering new things and the hope that our efforts will lead to a future where we can improve the lives of those affected by neurological disorders. With your support, we can transform the field, bringing us closer to effective treatments and a brighter future for individuals and families impacted by these debilitating conditions."

Olga Chechneva, PhD, Alzheimer's Disease Research grantee

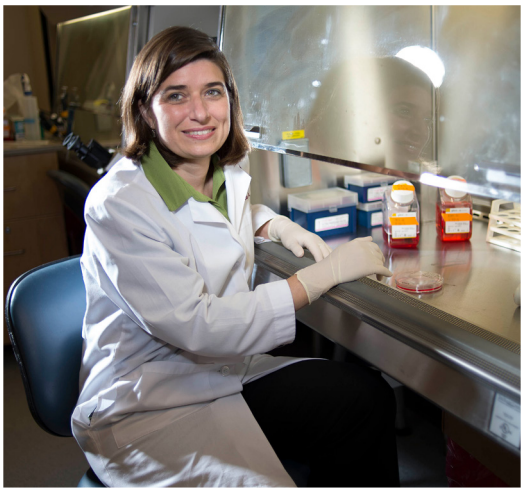
Bold research needs you.

Join our community at brightfocus.org








MIND SIGHT CURE

BrightFocus® Foundation

Cure in Mind. Cure in Sight.

CELEBRATING 50 YEARS

Alzheimer's Disease Research

Macular Degeneration Research

National Glaucoma Research

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