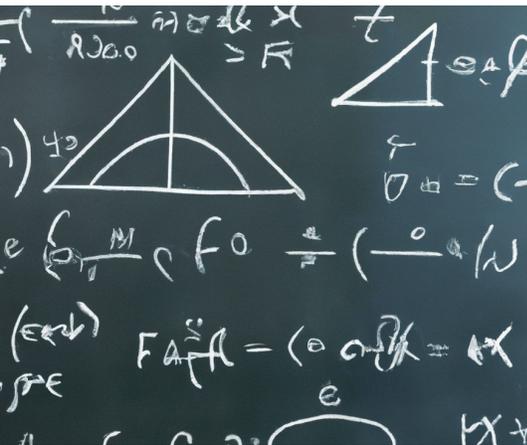




Stanford
OPHTHALMOLOGY

BYERS EYE INSTITUTE

VISION MATTERS



THE PATHS TO CLINICAL CARE



ANNUAL REPORT 2023



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A note from our Chair



The end of the year is a time for reflection that I look forward to. Each December, I am more proud than the last to reflect on the achievements of the faculty and staff at the **Byers Eye Institute at Stanford**.

The past year was marked with the addition of several talented new faculty members (*pages 42 - 45*), including **Dr. Mary Elizabeth Hartnett**, our inaugural **Michael F. Marmor Professor of Retinal Science and Diseases**, who is building comprehensive clinical, research and educational programs in pediatric retina (*pages 16 - 18*).

Our talented faculty made groundbreaking research discoveries and advancements at the **Mary M. and Sash A. Spencer Center for Vision Research at the Byers Eye Institute at Stanford** (*pages 10 - 15*) that earned them prestigious grants, awards, and recognition from peer institutions, and reflect the impact of their hard work embedded in a supportive culture of innovation and collaboration (*pages 40 - 41*).

We're also rolling out amazing technical advances using state-of-the-art equipment and leveraging artificial intelligence **to make care more accessible around the world now and in the future** (*pages 19 - 25*).

But what I'm most proud of this year is our **continued dedication** to the improvement of patients' vision through research and clinical care. The pathway from idea to discovery, from proof-of-concept to validation, from clinical testing to broad implementation, is the work we have highlighted as our cover story in this annual report (*pages 4 - 9*). I'm constantly inspired by how our faculty find innovative and creative ways to fill gaps in medical care locally and abroad, proactively develop programs to meet new patient needs and grow our clinical practice.

We would not be able to do this work without the support of philanthropic donors, many of whom have seen firsthand the impact of our mission to eradicate blindness and preserve sight (*pages 26 - 33*).

With immense gratitude, I want to honor those donors, colleagues, staff, alumni, patients and community for helping build a department of ophthalmology that we can all take pride in.

Jeffrey L. Goldberg, MD, PhD

Blumenkranz Smead Professor and Chair of Ophthalmology
Byers Eye Institute at Stanford University



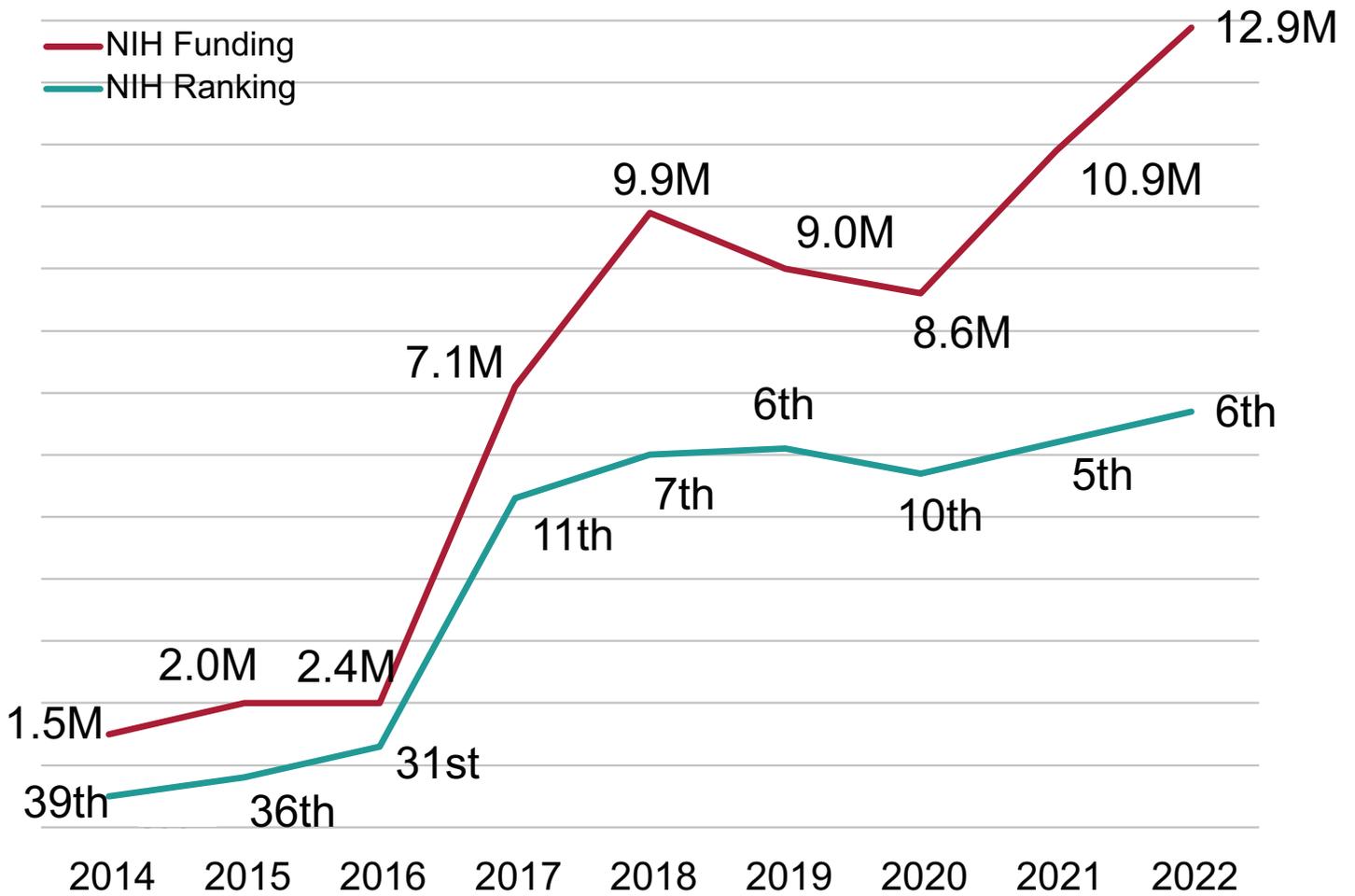
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BYERS EYE INSTITUTE AT STANFORD

Byers Eye Institute

by the numbers

RESEARCH GROWTH



Source: Blue Ridge Institute for Medical Research
2023 year-end data pending at time of publication

2023 ACTIVE AWARDS

162

2023 TOTAL NIH AWARDS

55

2023 ACTIVE CLINICAL TRIALS

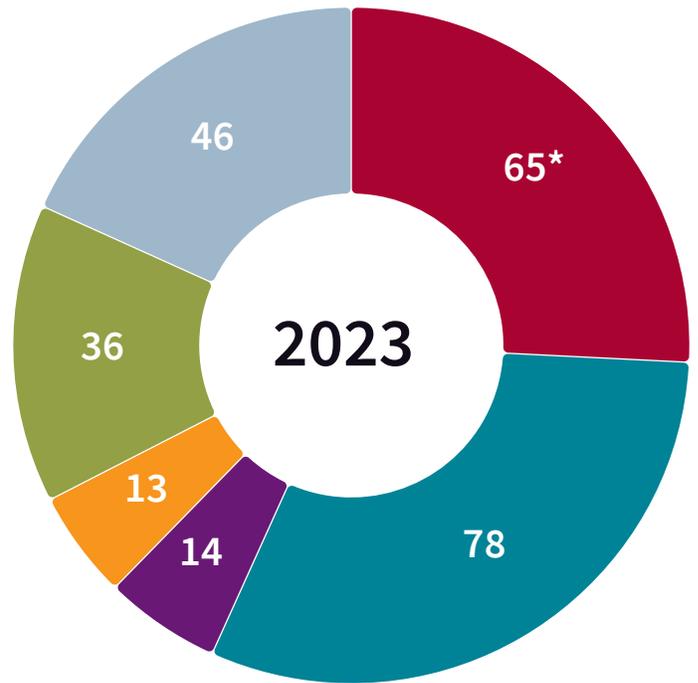
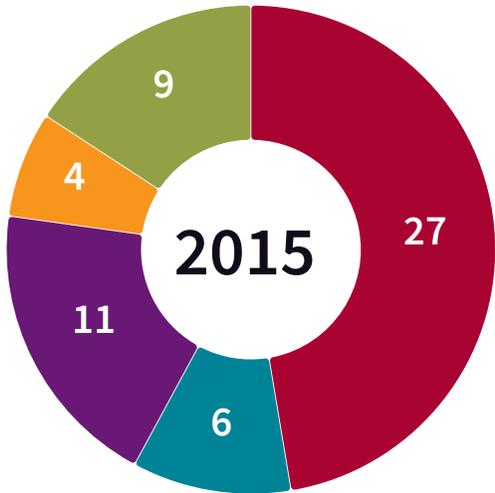
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2023 PUBLICATIONS

193

* Data as of December 6, 2023

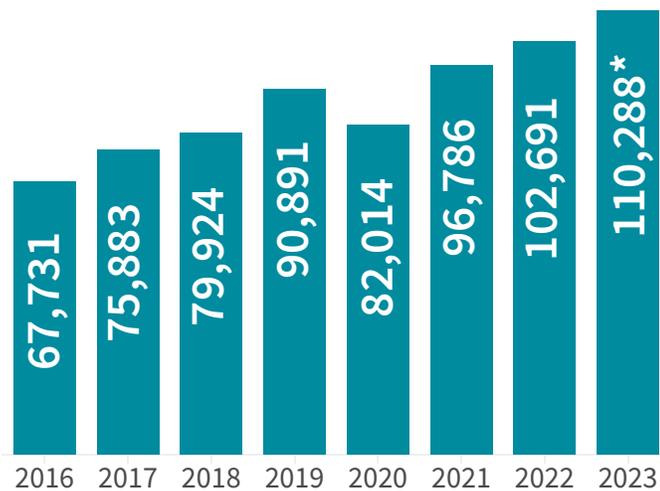
Our Growing Team



- Faculty
- Research staff
- Residents
- Clinical/Innovation fellows
- Administrative staff
- Postdoctoral researchers

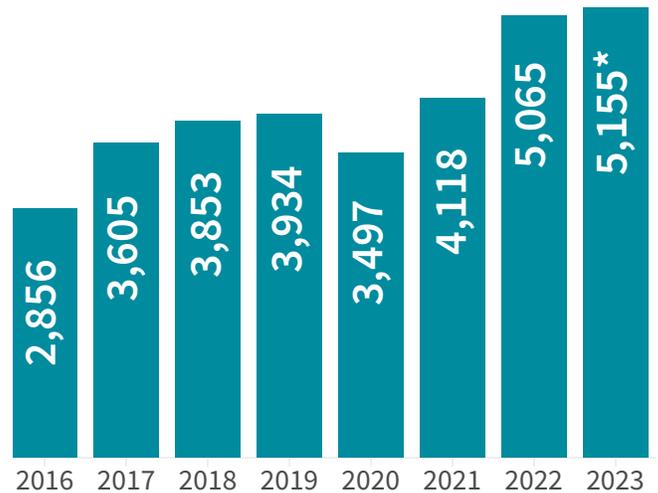
* Adjunct and affiliate faculty not included

IN THE CLINIC



Patient Visits

IN THE O.R.



Surgical Cases

*As of October 1, 2023



Dr. Caroline Fisher examines a patient at the Stanford Belize Vision Clinic.

The paths to Clinical Care

Making patient care dynamic, accessible, and innovative

In medicine, new treatments generally start with an idea, go through a laboratory stage, and seek validation in human testing, a long and rigorous process before reaching their final destination in the clinic or the operating room, where those discoveries can improve patients' lives.

In fact, at the Byers Eye Institute at Stanford, “from lab to clinic,” is practically a mantra among the innovative and award-winning researchers and doctors striving toward a shared goal of fighting blindness and preserving sight. However, laboratory discoveries are just one of the ways the team is working to expand care and make the clinical experience more effective for patients, both across the Bay Area and around the world.

“We have faculty who are leading in clinical work, bringing new therapeutics and surgical approaches to patients, all with compassion and empathy and the attitude that the patient comes first,” said **Jeffrey Goldberg, MD, PhD**, the Blumenkranz Smead professor and chair of ophthalmology at the Byers Eye Institute.

The clinical footprint

The Byers Eye Institute is comprised of a fast-growing cohort of clinician-scientists, fellows, residents, and visiting scholars and instructors from around the world as it expands ophthalmic care to an increasing number of communities and people.

Over the past eight years, the number of faculty members at the Byers Eye Institute has more than doubled, and the number of trainees, research, and administrative staff in the department has increased from about 30 to 187 since 2015.

As the team has grown, so too, has the physical footprint. In July 2023, the department's brick-and-mortar network opened its latest addition in Livermore, Califor-

nia, a suburb 35 miles east of the Byers Eye Institute's primary Palo Alto location. The new offices, part of Stanford Health Care Tri-Valley, offers a full range of diagnostic and therapeutic care in the clinic and operating room. “There is nowhere on the planet that will be able to give the same kind of ophthalmology care unless you drive across the bridge to Palo Alto,” **Rick Shumway**, president and CEO at Stanford Health Care Tri-Valley told a group of supporters and journalists during the clinic's unveiling last summer.

The Livermore addition joins other Byers Eye Institute clinics, two in Palo Alto and one in Los Gatos for pediatric care. Byers Eye Institute clinicians also see patients at Palo Alto VA Medical Center and Santa Clara Valley Medical Center, a large public healthcare system in San Jose.

And leaning into the digital revolution, Byers Eye Institute's top-notch ophthalmologists also consult over video link with patients in the privacy of their homes and get remote imaging and interpretation for diabetic eye care or examination of infants around the country (see AI Revolution, page 22).

In short, the Byers Eye Institute's “clinic” is wherever the Stanford Ophthalmology department's research and training, and its experience and expertise, meet the patient. It's a place of care and hope for thousands of people each year.

Vision, meet performance

Meanwhile, on Stanford's Palo Alto campus, the university's first Vision Performance Center (VPC) clinic opened in 2023 at the Arrillaga Center for Sports and Recreation. “The clinic serves Stanford athletes with injuries that may affect their eyes, vision, or cognitive function, and those who are looking to improve their

performance and up their game,” said **Khizer Khaderi, MD, MPH**, clinical associate professor at the Byers Eye Institute and founder and director of the Stanford Vision Performance Center and the Stanford Human Perception Laboratory.

More VPC clinics are in development around the Bay Area, extending the VPC's technology and innovative practices to the broader public. There, doctors will focus on helping people reach their highest possible level of performance in whatever they do—whether that be excelling in sports, helming a Fortune 500 company, or anything in between, Khaderi said.

“We wanted to create a new kind of clinic where patients proactively learn about their health and how to augment their lives to reach peak performance,” Khaderi said. “People are living longer, but that doesn’t mean they are living healthier. We will treat people looking to grow not just their lifespan but their healthspan.”

(Read more about the VPC on page 19.)

Myopia Center of Excellence

One of the newest clinical initiatives underway at the Byers Eye Institute is the launch of the Myopia Center of Excellence.

When most people think about myopia, also known as near-sightedness, they might imagine a kid who has trouble seeing the blackboard in class. Actually, the prevalence of myopia in young people is growing fast, and those with severe cases are more likely to struggle with serious complications—like retinal detachment and glaucoma—as they age.

Around 42% of Americans are nearsighted, according to NIH data published in 2017, up from just 25% of the U.S. population in 1971. The World Health Organization estimates that nearly half of the world will be myopic, or nearsighted, by 2050.

Meanwhile, doctors and researchers aren’t certain why more people are struggling with nearsightedness, says **Ann Shue, MD**, clinical assistant professor at the Byers Eye Institute. Genetics contribute, and lifestyle likely plays a role as well, but more research is needed to

“We’re trying to gather everyone’s expertise together at the Myopia Center for Excellence so that we can reach this problem from every angle.”

Ann Shue, MD

know for sure, Shue says.

It was this growing worldwide need for research, along with more access to medication and specialized care, that prompted the efforts to launch the Myopia Center of Excellence, where a multi-disciplinary team of doctors will work together to collect data, conduct research, and, most importantly, help patients.

“The team is made up of optometrists, pediatric ophthalmologists, retina specialists, glaucoma specialists, and more, all in one place,” Shue said. “We’re bringing together everyone’s expertise together at the Myopia Center for Excellence so that we can reach this problem from every angle.”

Going virtually anywhere

Just as the physical clinic footprint has expanded, so too have the Byers Eye Institute’s virtual treatment options. In fact, in the future, some faculty at the Byers Eye Institute would like to come to the patient.

Geoffrey Tabin, MD, Fairweather Foundation professor of ophthalmology and global medicine, envisions a mobile facility van in which clinicians perform laser treatments and cataract surgeries targeting low-income

patients, unhoused people, rural communities in Northern California, and others with limited access to high quality care.

“Many patients aren’t able to come to a clinic, so we want to bring care to them,” Tabin said. The department is currently seeking funding for the initiative.

STATUS

One particularly high-tech form of remote care at the Byers Eye Institute at Stanford is the Stanford Automated Teleophthalmology Autonomous Testing and Universal Screening (STATUS) program, which evaluates patients for diabetic retinopathy at their community primary care clinics and lets them avoid an extra trip to the ophthalmologist.

More than 400 million people worldwide have diabetes, which puts them at risk of diabetic retinopathy, the leading cause of blindness in working-age American adults, according to the Centers for Disease Control and

Prevention (CDC).

Despite the prevalence of the disease, many diabetic patients—as many as 50%, the CDC estimates—don’t make it to their critically important annual eye exam. That means many people with diabetic retinopathy go undiagnosed or get diagnosed too late for effective treatments.

STATUS is about reaching those who might otherwise miss eye screenings by bringing technology to their primary care doctors, whom they may see more often.

(Read more about the STATUS program on page 23.)

SUNDRUP

Among the institute’s most established remote screening initiatives is the Stanford University Network for Diagnosis of Retinopathy of Prematurity (SUNDRUP), launched in 2005 by **Darius Moshfeghi, MD**, professor of ophthalmology and retina division chief at the



Dr. David Myung explains how the STATUS program's AI-enabled camera works.

COVER STORY

Horngren Family Vitreoretinal Center, a part of the Byers Eye Institute.

The SUNDROP program operates out of a dozen neonatal intensive care units in an increasing number of states around the U.S., helping doctors swiftly identify a serious disease known as retinopathy of prematurity (ROP) in infants born prematurely.

Infants born at less than 30 weeks' gestation or weighing less than 3.3 pounds are at the highest risk for ROP, which can impair vision or cause lifelong blindness due to abnormal blood vessels in the retina. Early diagnosis and treatment of the disease, however, can dramatically improve long-term outcomes.

During the SUNDROP screening, specialized cameras photograph babies' eyes and retinas, and then transmit those images to a Byers Eye Institute pediatric vitreo-

retinal surgeon for evaluation. The program reaches fragile patients at a critical time when it may be challenging to be seen by an ophthalmologist.

Global reach

One of the Byers Eye Institute's most established international support and education programs sits more than 3,300 miles away from its Palo Alto campus at the the Stanford Belize Vision Clinic, where an AI-enabled camera has been operating since 2017 on the tropical island of Ambergris Caye, an area that lacks ophthalmic providers.

When clinicians arrive, they see the patients recommended for further examination, said **Stephen Binder, OD**, one of the faculty volunteers, reached by email during a week he was volunteering on the island.

Clinical Care Snapshot

BAY AREA

3,000+

patients assessed using AI-enabled STATUS cameras since 2018.

10

AI-enabled STATUS cameras in Stanford-affiliated primary care clinics.

5

Byers Eye Institute locations.
(Including our newest offices in Livermore and Portola Valley. See back page for more information.)

ABROAD

1,700+

patients seen at the Stanford Belize Vision Clinic since 2017.

13

U.S.-based clinicians saw patients at the Stanford Belize Vision Clinic in 2023.
(Including seven Byers Eye Institute faculty and trainees.)

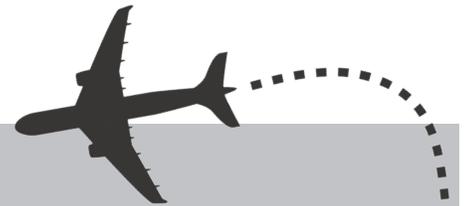
UNITED STATES

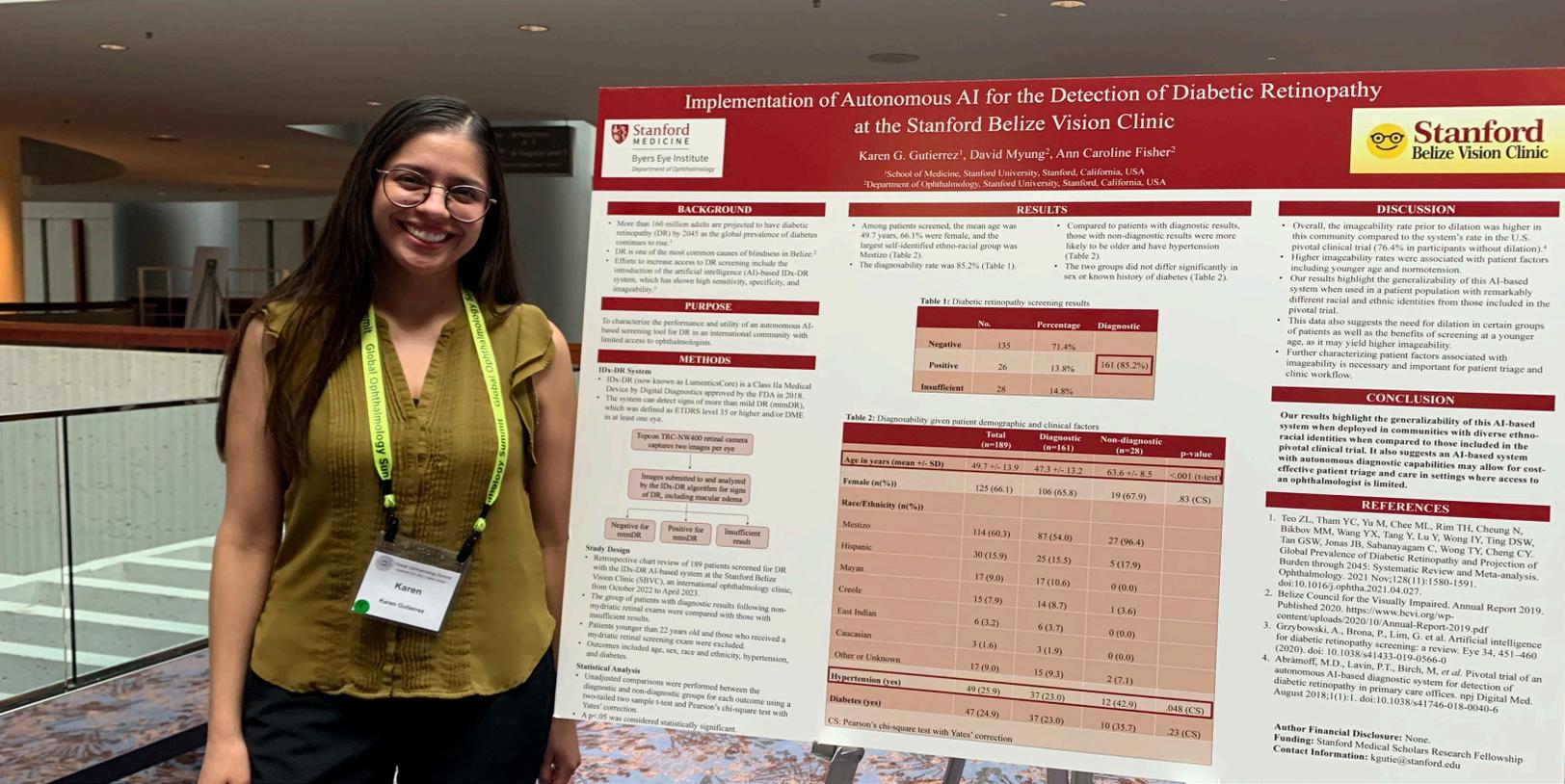
12

health system neonatal intensive care units monitored in SUNDROP

42%

of Americans are near-sighted, prompting the development of the Myopia Center for Excellence.





Medical student Karen Gutierrez spent a month at the Stanford Vision Clinic in Belize collecting data that she presented at the Global Ophthalmology Summit in Atlanta, Georgia in September.

“The patient population is very appreciative and easy to work with,” Binder said. “The children are especially cooperative, even volunteering to have us put eye drops in their eyes.”

The Belize clinic was founded by Don Listwin, co-founder of belizekids.org with his wife, Hilary Valentine. The clinic has been supported by belizekids.org and the Ferroni Foundation.

Caroline Fisher, MD, clinical associate professor of ophthalmology, also helped found and runs the partnership between the clinic and Stanford. The Belize facility is staffed by Stanford residents and clinicians and has treated more than 1,700 patients since its opening.

In 2023, seven Byers Eye Institute faculty and trainees and another six clinicians invited from other institutions around the U.S. traveled to the clinic to see patients, train local care providers, and collect data.

In India, the Byers Eye Institute has developed strong

relationships with the L.V. Prasad Eye Institute in Hyderabad and Aravind Eye Care in the southern state of Tamil Nadu. Clinicians and residents at the Indian clinics regularly come to Stanford to observe, learn, and assist in the classroom or clinic. In turn, faculty and trainees from Byers Eye Institute visit those clinics to do the same, and to foster collaborations in research as well.

“It is important to see how care is done at a high-quality, but lower-resource center in a developing nation,” Tabin said. “Hopefully, they will make that kind of work a portion of their own careers in the future.”

The department is also building education and research programs with eye hospitals in Bahir Dar, Ethiopia, and Cape Coast, Ghana, and pursuing partnerships to build eye care facilities and help train clinicians in Syria and Lebanon. A strong collaborative relationship with one of the leading foundations for global eye care, CureBlindness.org, has facilitated opportunities to deliver high quality, low cost care across the world.

BY LOUISE LEE

Louise is a freelance writer for the Byers Eye Institute at Stanford



Dr. Vinit Mahajan co-created the Byers Eye Institute's biorepository.

Precisely Yours

Precision health is growing and patients benefit the most

Precision health is the latest buzzword in medicine, promising to help doctors better tailor care to the individual and allow people to proactively address potential health issues before they become a problem. But it's not always clear what that looks like in practice.

At the Byers Eye Institute at Stanford, precision health is more than just a buzzword. Many of the precision health initiatives at Byers hold the promise of preventing—or even curing—diseases of the eye, staving off or reversing vision loss for patients. The innovative programs range from new data collection procedures that make diagnosing disease faster and more accurate to developing revolutionary imaging technologies and expanding access.

When **Vinit Mahajan, MD, PhD**, professor of ophthalmology, talks about precision health, you can practically feel the excitement radiating from him. Many patients are perfectly healthy except for their vision problems, he says, but “vision is our primary way of engaging with the world around us. Loss of vision can lead to depression

and isolation—there is a lot of empathy here.”

Diving into Data

A key pillar of the Mary M. and Sash A. Spencer Center for Vision Research is the Byers Eye Institute Biorepository, which Mahajan helped create and now co-directs. This collection includes blood samples, cheek swabs, liquid from tears, and tissues and fluids taken from patients' eyes during surgery. Once in the biorepository, research teams can sequence DNA and measure several thousand proteins to mine for data overlooked in the past.

“With eye fluid samples, we can get a very precise picture of which cells inside the eye are being affected,” Mahajan said. “These are fluids that would otherwise be thrown away, but by analyzing them, we can diagnose diseases much better in our patients. We also learn which molecules we should design therapies for.”

Careful review of a patient's medical history, combined with aids like the data from the biorepository, can nar-



Loss of vision can lead to depression and isolation—there is a lot of empathy here.

Vinit Mahajan, MD, PhD

row the search for appropriate treatments, according to **Quan Dong Nguyen, MD, MSc**, professor of ophthalmology, and by courtesy, of medicine and pediatrics. Nguyen's biorepository studies have proven invaluable for the diseases he manages.

"Now that we can detect the proteins that our medicines are targeting, we can detect disease and individualize treatments," he said. "This is a major avenue to advance both research and patient care."

Nguyen, who specializes in uveitis and ocular inflammatory diseases as well as retinal disorders, also looks for signs of diseases that could lead to eye inflammation. "We are now better able to detect and define local eye disease and systemic rheumatic diseases, caring for the whole patient, not just their eyes," he said.

Precision health can also reduce cultural bias in health care, Nguyen added. Tailoring tests to specific patients across races and ethnicities can offer important information about predispositions and inflammatory markers that might otherwise be overlooked.

Enhancing the image

Meanwhile, **Alfredo Dubra, PhD**, professor of ophthalmology, is developing imaging techniques that provide sharper images of the eye in a way that goes far beyond other current imaging technology.

Dubra is focused on early diagnosis and treatment, which are especially important in eye diseases because most cells in the retina can't reproduce; once they're gone, they're gone for good.

"Current ophthalmoscopes provide views of wide retinal areas," Dubra said. "This approach is quick, but not very

sensitive," Dubra said. "Many cells could die before any changes can be detected. We are trying to develop novel instrumentation to image the retina as if we were looking through a microscope, seeing individual cells, and even their movement."

More precise measurements could reveal pathological changes over weeks instead of months to years, allowing physicians to adjust treatments faster.

Another problem Dubra's lab is targeting is how to capture retinal images in people with nystagmus, an extreme form of involuntary eye movement where the eyes flicker back and forth. "By developing new eye tracking and movement correction technology in real-time, we can capture retinal images and improve care for these patients who are not benefiting from any form of today's retinal imaging," he said.

Indeed, early diagnosis is the key to most effectively treating or preventing disease in the first place. "The goal of precision health is to detect patients at risk and keep them from developing vision loss in the first place," says **Jeffrey Goldberg, MD, PhD**, Blumenkranz Smead professor and chair of ophthalmology at Stanford.

"One advantage we have is that the eye is right out there in front, and we can leverage high-resolution imaging and novel technologies to actually see very fine cell structures, even cell metabolism, and use these as biomarkers of health and disease," he said.



BY BARBARA EGBERT

Barbara is a freelance writer for the Byers Eye Institute at Stanford.



Joellen Leonen, clinical research lab manager, assesses an infant study participant in the Vision Development and Oculomotor Lab.

Improving Vision

Understanding visual development and recovery after head injuries

Many people don't know that when babies are born, they don't see well. In fact, it takes months for the average infant to see colors and begin recognizing faces. For the first 12 months of life, their vision, perception, and coordination change rapidly, passing important milestones that help them take in the world around them.

But sometimes a child doesn't follow that trajectory, and it's often not obvious that something has gone awry until well into their critical learning years, leaving them at a significant disadvantage.

That's what **Tawna Roberts, OD, PhD**, associate professor of pediatrics and ophthalmology, is trying to head off in her research at Stanford. Her Vision Development and Oculomotor Lab studies several under-researched areas that intersect with the eye and brain, including early vision development and amblyopia (sometimes called "lazy eye") in children, and traumatic brain injuries (TBI), like concussions, in adolescents and adults.

One element that brings these two together is binocular vision—the ability to get both eyes to work together.

Roberts' goal is to solve a key problem in eye medicine: the lack of clinical evidence to guide personalized treatments for these conditions.

"Clinicians don't have the highest level of evidence for every patient care decision," Roberts said. "Being able to push forward this research as a clinician-scientist and contribute to that body of evidence has been really satisfying."

Roberts' team knows first-hand the impact such research and treatments can have, especially on young people.

Gayathri Srinivasan, OD, MS, clinical associate professor at the Byers Eye Institute, often comes back to a special case when she recalls why she wanted to work with the Vision Development and Oculomotor Lab, where she could add to such research and offer treatment to children and those struggling after a brain injury.

Early in her career, Srinivasan treated a young boy, whose mother said always seemed to look through her

rather than at her. A free eye exam and a glasses prescription later, she received a photo of the boy wearing his glasses and smiling. His mother's note read, "This was the first time he actually saw me and smiled at me."

Srinivasan often thinks of that child, as he highlights the importance of the kind of work that she and other clinician-scientists do for children and families, she says.

"It was such a touching moment for all of us and underscored the importance of vision in overall child development," Srinivasan said.

Current studies

Today the lab is conducting research on vision development and adaptations in infants and preschoolers, as well as the effects of concussions on the visual system in adolescents and adults. The group is seeking participants for those studies, in which people can get an eye exam free of charge and a thank-you gift for their time.

What Roberts and her team have found so far is that some symptoms that concussion patients suffer, such as dizziness and brain fog, both affect and are affected by a person's visual system.

"These kids often have a lot of headaches and other symptoms that override the visual system," Roberts said.

A key part of the research is tracking the "natural history" of the improvement, stagnation, or decline of each patient's visual system during early development or following a brain injury.

When it comes to concussions, for instance, she and her team of researchers track patients' progress as close to the time of the injury as possible and then observe which patients heal on their own and which patients need intervention to get back to a good baseline.

"This way, we can start to clinically home in on the patients who really need our help," Roberts said.

Roberts has also received funding from the U.S. Department of Defense to study how to rapidly repair soldiers' vision and prepare them to re-enter combat. Many soldiers who fought in the Iraq War suffered TBIs, and studying how these soldiers' eyes react to visual stimuli can help identify crucial gaps in their care, Roberts says.



Dr. Tawna Roberts holds an infant study participant.

SHINING A LIGHT ON DISPARITIES

Roberts and her team will also explore health disparities and barriers to access to eye care, including how politics, geography, and economic inequality impact patient outcomes.

WHY?

Not all states require vision screenings for school-aged children, so some may be quietly suffering a visual impairment that can disrupt their ability to learn. When a student is screened, a family may struggle to afford follow-up exams, a circumstance that tends to be more prevalent among lower-income families and racial minorities.

WHAT'S NEXT?

"We want to study those kinds of disparities to make a case for revamping social systems to help people from all backgrounds get the eye care they need," Srinivasan said. "We see these disparities in the clinic, but we need more research to understand the barriers in access to eye care services for children."

BY SONYA HERRERA

Sonya is a freelance writer for the Byers Eye Institute at Stanford.

Case study: Drug Discovery

Eye research with ripple effects across medicine

New drug development is always a long and rigorous process, but it is also a critically important challenge.

Facilitated by the Mary M. and Sash A. Spencer Center for Vision Research at the Byers Eye Institute at Stanford, more than 150 researchers—including faculty, post-doctoral scholars, graduate students, laboratory staff, residents, fellows, visiting researchers, and undergraduates—log hundreds of thousands of hours a year in our laboratories to advance the science that may ultimately lead to new and innovative discoveries and treatments for vision-stealing diseases.

Today, dozens of potential new treatments for a long list of eye-related diseases are in development by Byers Eye Institute faculty and researchers. Many of these are even making strides on the path toward FDA approval.

“Developing new treatments is a priority for us at the Byers Eye Institute as we continue to push ourselves to translate research from the lab into the clinic to benefit patients,” said **Jeffrey Goldberg, MD, PhD**, Blumenkranz Smead professor and chair of ophthalmology.

Among the faculty and researchers working toward that end is **Yang Hu, MD, PhD**, associate professor of ophthalmology.

Hu and his team are working toward a new way to treat glaucoma, an optic nerve disease that affects more than 3 million Americans a year.

Glaucoma, which causes gradual vision loss, is the leading cause of irreversible blindness worldwide. The disease is the result of retinal ganglion cells (RGCs) and their axons in the eye becoming damaged.

Today, the only treatment for glaucoma is to lower the pressure in the eye, called intraocular pressure (IOP), with eye drops, laser procedures, oral medications, surgery, or a combination of those. But even with all of those options, doctors still can't prevent vision loss or

restore eyesight in glaucoma patients, Hu says.

“That there is no curative neuroprotective or restorative therapy for neurodegeneration is a central challenge for human health,” he lamented in a recent interview.

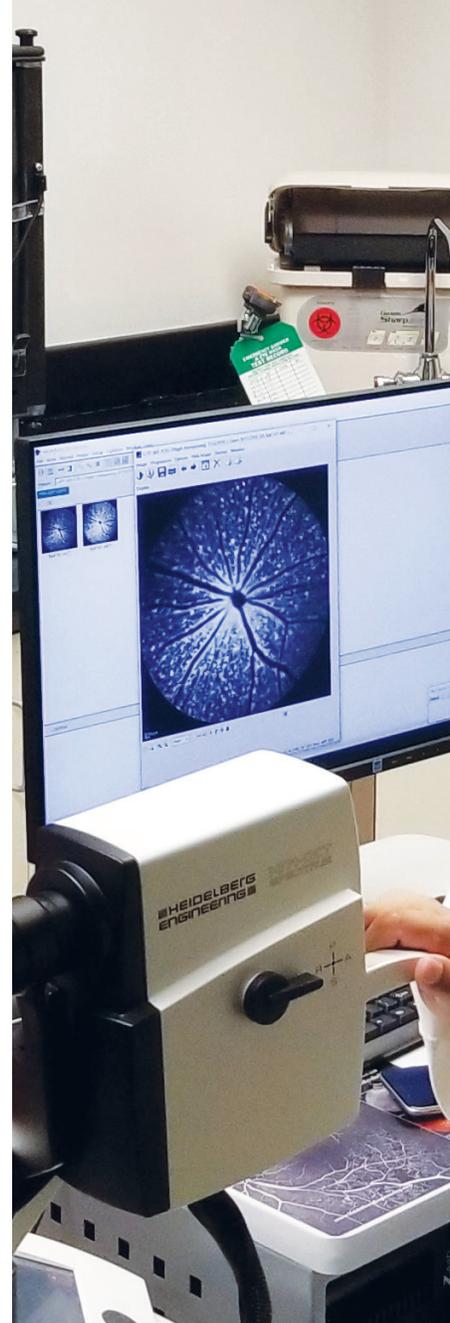
Hu's team is pursuing the prevention of glaucoma effects via new drugs and gene therapies that could delay or stop the degeneration of the optic nerve, the retinal ganglion cells, and their axons, independent of the pressure in the eye, and even regenerate the optic nerve to restore vision.

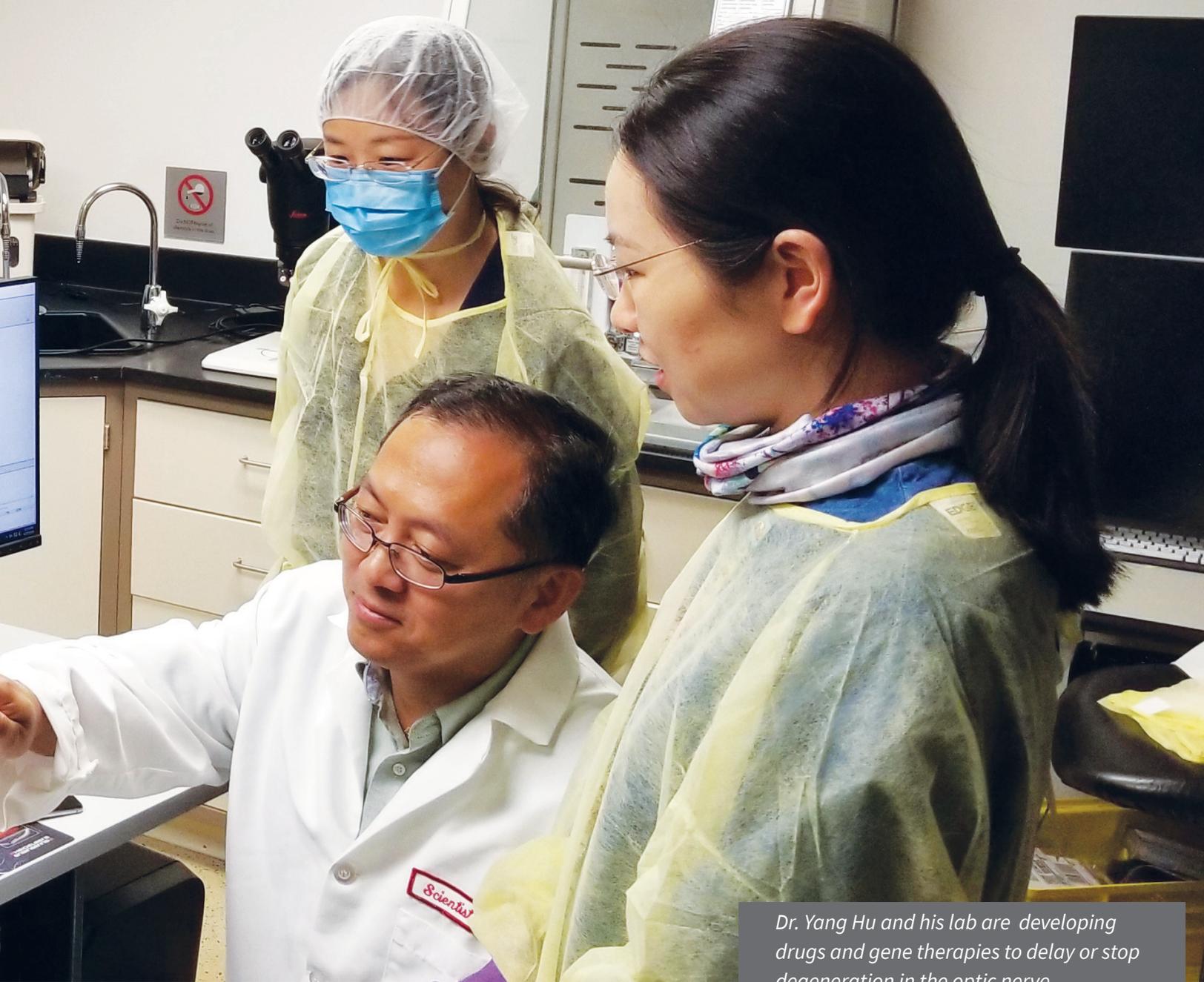
An elusive target

Discoveries in this area would break new ground. Scientists have long sought therapies to protect or regenerate cells in patients with degenerative diseases of the central nervous system, like glaucoma, with little luck.

To reach their goal, Hu and his team are focusing on the underlying causes that drive neuronal degeneration and axon regeneration after injury or disease, and they've made remarkable recent strides. So far, Hu's team has shown proof of concept for their treatments in animals, which signals the potential to also work in humans.

Now the work is progressing in preclinical studies, in which the team tests both safety and effectiveness in larger lab animals with eyes more like human patients.





Dr. Yang Hu and his lab are developing drugs and gene therapies to delay or stop degeneration in the optic nerve.

Discoveries in Hu's lab provide a prime example of how progress at the Byers Eye Institute is capturing the interest of Stanford supporters, and international funders.

This year, Hu received support from Stanford's Innovative Medicines Accelerator (IMA), and SPARK at Stanford, both programs designed to eliminate obstacles and speed the translation of Stanford's research discoveries into new treatments for patients.

The IMA and SPARK, Hu says, can provide the specialized expertise to help advance the work into clinical trials and provide funding to widen testing.

Hu's work has also been recognized beyond the Stanford campus. In June, he received the prestigious national

Research to Prevent Blindness Stein Innovation Award, which will provide flexible research funding to support his team's work in related research.

Beyond glaucoma

Hu's discoveries could also have implications beyond glaucoma to other degenerative eye and even brain diseases, including Alzheimer's, Parkinson's Disease, and ALS (amyotrophic lateral sclerosis).

"We are targeting glaucoma first," he said. "But if we can develop a neuroprotective treatment that shows effectiveness in glaucoma, it could very well be applicable to other neurodegenerative diseases."

BY MARCIA FRELICK

Marcia is a freelance writer for the Byers Eye Institute at Stanford.



(From L-R) Drs. Michael F. Marmor, M.E. Hartnett, Jane Marmor, and Jeffrey Goldberg stand for a photo at Hartnett's welcome reception.

Meet Dr. M.E. Hartnett

The first Michael F. Marmor, M.D., Professor in Retinal Science and Diseases

When **Mary Elizabeth (M.E.) Hartnett, MD**, arrived this year at the Byers Eye Institute, she brought with her a buzz of excitement that rippled through Stanford University and the international ophthalmology community.

The esteemed clinician-scientist moved from her post at the John A. Moran Eye Center at the University of Utah to the Byers Eye Institute in February to be the inaugural Michael F. Marmor, M.D., Professor in Retinal Science and Diseases. The endowed professorship is named for the first chairman of Stanford University's Ophthalmology department, **Michael Marmor, MD**, who is now professor emeritus of ophthalmology.

Hartnett specializes in pediatric retina and is regarded worldwide as one of the leading clinicians, surgeons, and scientists in the area. She is growing pediatric retina services—an often-underserved part of vision care—as the director of Pediatric Retina at the Byers Eye Institute and Stanford Medical Children's Health.

In the lab, Hartnett's research team is focused on devel-

oping new treatments for retinal vascular diseases from uncontrolled blood vessel growth in the eye.

When blood vessel growth—or angiogenesis—is uncontrolled, it can lead to serious diseases, including those that are major causes of blindness at every stage in life. Among those diseases are retinopathy of prematurity, which affects premature infants; diabetic retinopathy, which can affect people struggling with high blood sugar; and age-related macular degeneration (AMD), which is most often found among patients 50 years or older. That means Hartnett's research applies to a large portion of the population at all ages.

"I was overjoyed to welcome Dr. Hartnett to the Byers Eye Institute this year, and already she is doing great things in her research and for her patients," said **Jeffrey Goldberg, MD, PhD**, the Blumenkranz Smead professor and chair of ophthalmology at the Byers Eye Institute.

In the world of academia, being awarded an endowed professorship is one of the highest honors a university

can bestow upon a professor. On top of her endowed professorship at Stanford, Hartnett has received many prestigious awards, served on committees for leading ophthalmology nonprofits, published over 230 peer-reviewed articles, and authored more than 40 book chapters. In fact, she wrote the first-ever academic textbook on pediatric retina, which is now in its third edition.

Hartnett is also the director of Women’s Eye Health, an initiative and website that raises awareness about eye care and the disparities in the rate of eye disease that women face.

Despite her long list of achievements as a clinician, scientist, educator, and author, those who have met Hartnett know that she carries herself with a disarming air of modesty.

Sitting at her new desk, dwarfed by a nearby tower of books, and flanked by boxes of mementos and awards waiting to be unpacked into their new California home, Hartnett remembers when Goldberg first called about her new position last year.

“Jeff and I had met over the years at scientific meetings, and when he called, I thought he would ask about recommendations to fill the pediatric retina position that recently opened,” she said. “We met, and he said, ‘We want you,’ and that was a surprise. Given how strong the department is already, I felt really honored. I also believe in the value and growth of clinician-scientists. This was part of Jeff’s mission and the vision of Dr. Marmor.”

But Hartnett may have been the only person surprised that she was the one sought out for the prestigious professorship at the Byers Eye Institute because she was an obvious first choice for the position, Goldberg says.

“Very few people have the expertise we were looking for, and I knew with this endowed professorship we had the chance to recruit the very best,” Goldberg said. “I knew early on that Dr. Hartnett was the right one for the job.”

Indeed, the requirements for the professorship seem to fit Hartnett’s skills perfectly.

Marmor’s goal when he drew up the details for the professorship in his name was to help the Byers Eye Institute attract the best in the field and fill in any gaps in the department. In his vision, the ideal candidate would have a significant background in retina research—a top-



Introducing Mary Elizabeth Hartnett

(Nickname: M.E. Hartnett)

TITLE

Michael F. Marmor, M.D., Professor in
Retinal Science and Diseases
Director of Pediatric Retina

SPECIALTY

Vitreoretinal surgery and disease
for adult and pediatric patients

FUN FACT

Dr. Hartnett loves making art as a way to "activate the creative spirit," which she says is needed for science, but also keeps her grounded in life. "It is something my husband and I share, so we can do this together," she said.

PUBLISHING

Creator of *Pediatric Retina*, the
first-ever academic textbook on the
subject, now in its third edition.

230+
peer-reviewed
articles

40+
book chapters

ic that has been a major part of Marmor's own life's work. He hoped that the future professor would also have an established history of merging clinical expertise with scientific inquiry.

"The sense that I have is that the clinician-scientist is still the most powerful type of faculty for an academic department to advance its purposes," Marmor said in an interview this year. "This professorship is an aide to our department to recruit faculty where we had a gap. It allowed us to seek a clinician-scientist who will contribute new knowledge about the retina and retinal disease and use that knowledge to further the care of patients. We have not had a dedicated pediatric retinal specialist, and the endowment helped us to fill that need."

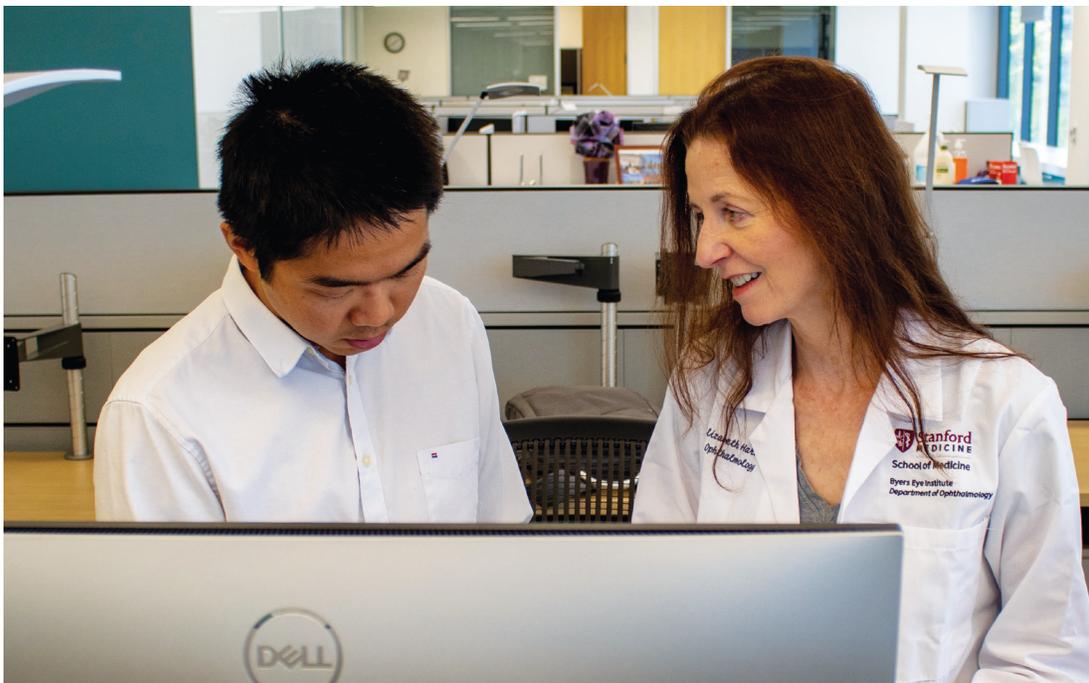
Marmor, who helped establish ophthalmology as its own department at Stanford nearly 40 years ago, trained at the NIH in neurophysiology and served as chair of the Byers Eye Institute from 1984 to 1992. During his almost 50-year career as an ophthalmologist and physiologist, Marmor has published more than 300 peer-reviewed pa-

pers and half a dozen books about the retina while also making a long list of contributions both to the clinical and research worlds.

He has also written three books about art and the eye, including one released in 2023 called "The Artistic Eye," which features fine art and shows how knowledge about vision can change how one appreciates it. Those who have done any sightseeing around San Francisco's Fisherman's Wharf area may also have seen Marmor's name atop the American Academy of Ophthalmology's Truhlsen-Marmor Museum of the Eye.

All of that may sound like a big legacy to uphold for anyone who holds the Michael F. Marmor, M.D. Professor in Retinal Science and Diseases, but Goldberg is confident that Hartnett is up to the task.

"Dr. Hartnett's arrival fulfills Dr. Marmor's vision," Goldberg said. "As she embarks on her journey in this new role, the field of retina research stands to benefit greatly from her expertise and dedication."



Dr. M.E. Hartnett mentors a researcher in her lab.

Already, Hartnett is seeing patients, publishing papers, and growing her new laboratory research team at the Byers Eye Institute at Stanford. She is approaching her role with a vision to answer every question with discovery.

"At Stanford, I can see much of what is needed and what we can create," she said. "Bridging the best of science and the best of clinical care are unique opportunities to help our patients and patients everywhere."

BY JANICE TURI

Janice is a web and communications specialist at the Byers Eye Institute at Stanford.



Dr. Khizer Khaderi has developed a new way to measure the eye-brain-body connection using video games.

Game On

How our eyes are the key to understanding the brain and body

If you sit down with **Khizer Khaderi, MD, MPH**, to talk about his work at Stanford University connecting vision and performance, there's a good chance that by the end of the conversation, he'll be drawing diagrams that crisscross the page or that fill up a whiteboard.

Once you know how many hats Khaderi wears, the crisscrossing diagrams make sense. Khaderi, clinical associate professor at the Byers Eye Institute, is also the founder and director of the Stanford Human Perception Laboratory (HPL) and the Stanford Vision Performance Center (VPC). In addition, he's a faculty member at the Stanford Institute for Human-Centered AI and the Wu Tsai Human Performance Alliance (HPA).

He's helped create a web of technology, partnerships, virtual platforms, and most recently, a physical clinic that all converge at the same idea: the eyes can help us unlock our peak performance with healthcare and technology that is human-centered, democratized, and proactive. As a bonus, it can also be fun.

"The VPC offers a new, holistic approach to vision care that clinicians, researchers, and Stanford University School of Medicine staff have spent years developing and bringing to life," Khaderi said.

The inaugural VPC clinic, which saw its first patient at the Arrillaga Center for Sports and Recreation in 2023, will focus on Stanford athletes, including those who have suffered concussions or other injuries that may affect the eyes or vision.

Future phases of the initiative will open the VPC clinic's technology and innovative practices to the broader public and focus on helping people reach their highest possible level of performance in whatever they do, whether in professional sports or leading a Fortune 500 company, Khaderi says.

"Imagine if you went to the hospital, and they didn't say 'What seems to be bothering you today?' but 'What's keeping you from performing at your best?'" he said.

AI AND TECHNOLOGY

Doctors at the VPC will measure not only patients' eyesight but also visual perception, reflexes, fatigue, and other indicators of health and performance. Patients will perform a series of simple tasks and get targeted medical testing so they can leave with a "prescription" to optimize and enhance their personal performance.

"Dr. Khaderi's passion for the Vision Performance Center can't be overstated," said **Jeffrey Goldberg, MD, PhD**, Blumenkranz Smead professor and chair of ophthalmology. "That energy has helped push this vision forward for years as faculty, administrators and staff members took up the effort and lent their expertise to create something truly unique."

High score

Prescriptions at the VPC won't likely be found at a pharmacy, but instead include things like a special pair of glasses to strengthen some aspect of one's vision or tailored exercises to help the mind, body, and eyes adapt more efficiently to the fast-changing technological world.

For instance, a patient may play a Space Invaders-esque game on the computer, designed through advanced algorithms to measure complex elements of visual,

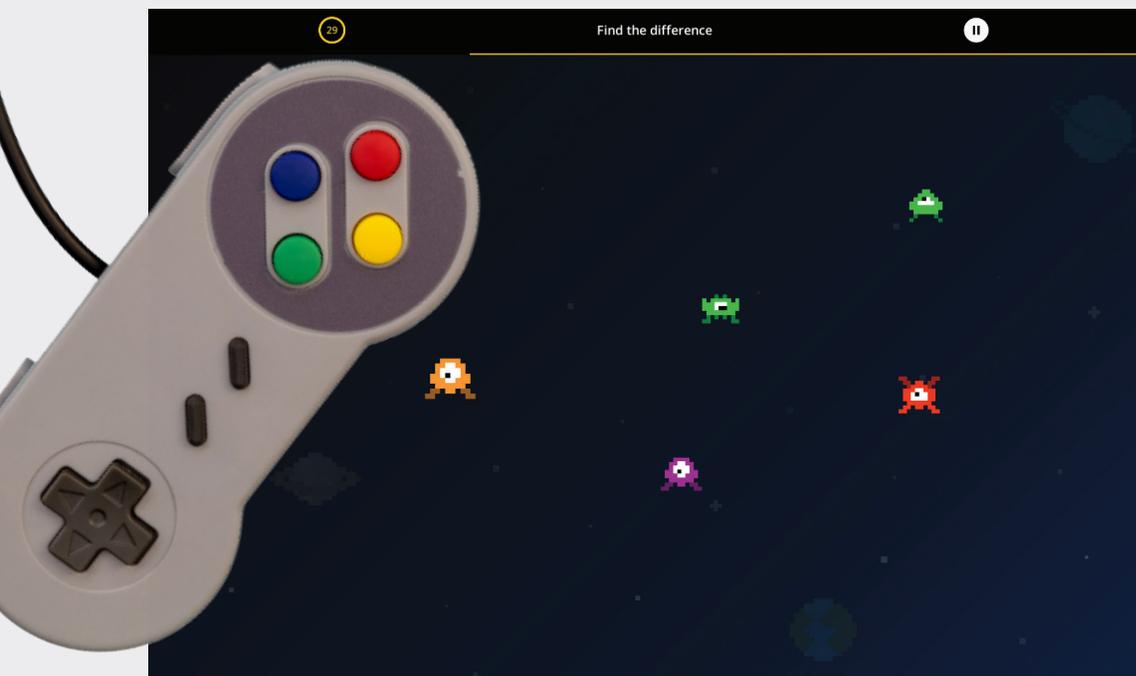
cognitive and motor function and generate an individualized Vision Performance Index, or VPI.

The VPI yields a numerical representation of the patient's field of view, how quickly they can detect their target on the screen, accuracy, whether they can track multiple objects at once, and their endurance.

VPI technology can be used in very simple tasks, like telling an office worker when their eyes are fatigued. But the VPI can also make more complex, multi-part assessments, like measuring how well a person perceives an action or object in their field of view, and then how quickly they decide what to do with that information before they act.

Most remarkably, the technology can easily and inexpensively be integrated into almost any computerized screen. Eventually, Khaderi says, the VPI score could become a measure the average person uses consistently, the way one might track their heart rate with a smartwatch.

The International Olympic Committee's recent Consensus Paper on Sports-related Ophthalmology Issues in Elite Sports named VPI as a tool that is "practical and necessary" to monitor vision performance.



Anyone can get a vision performance index (VPI) score by playing one of two retro, Space Invaders-esque computer games on the Vision Performance Center website at med.stanford.edu/vpc. The games take only minutes to play.

“We wanted to translate the idea behind wearables to the eye, brain, and body connection.”

Khizer Khaderi, MD, MPH

“The VPI dimensions allow esports athletes, coaches, and trainers to identify strengths and weaknesses, monitor the therapeutic effects of interventions to improve performance, and personalize training programs to game/role-specific skill sets,” the paper reads.

Vision and aging

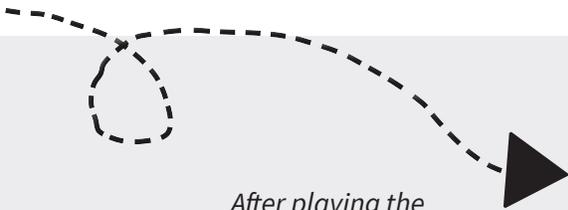
The VPC and the VPI technology is tapping into an enormous and fast-growing demand for science and

research that will not just help people live longer, but enjoy more healthy years of life. The longevity industry is relatively new, but attracted more than \$40 billion in investment globally in 2021, according to the economic and policy think-tank the Milken Institute. Bank of America estimates that could jump to more than \$600 billion by 2025.

But the technology’s application goes beyond monitoring and improving everyday performance. It could detect potential markers of cognitive decline, as with Parkinson’s disease or dementia. It could also spot signs of neurodivergence, like autism or attention deficit hyperactivity disorder (ADHD), helping people seek treatment and other accommodations earlier.

All those features have people listening. Khaderi has spent the past year in talks drumming up potential partnerships with some of the largest tech and gaming companies globally.

“We wanted to translate the idea behind wearables to the eye, brain, and body connection, while making our technology highly accessible,” Khaderi said. “Not everyone can afford wearables, but screen time is soaring, and we can leverage that for peoples' benefit.”



After playing the short video game, players get a simplified score that reveals how well they are performing. The score is calculated using advanced algorithms to measure complex parts of visual function.



BY JANICE TURI

Janice is a web and communications specialist at the Byers Eye Institute at Stanford.

AI AND TECHNOLOGY



Dr. Sophia Wang developed an algorithm to improve how electronic health information is analyzed to improve patient outcomes.

AI Revolution

Artificial intelligence is ushering in a new era of eye care

People think of their eyes as windows onto the world, but the physicians and professionals at the Byers Eye Institute at Stanford know they offer a window into our health. It's that quality that allows ophthalmology to be at the forefront of artificial intelligence (AI) advances. The AI programs developed at the Byers Eye Institute are already improving access to health care and helping doctors diagnose and predict patient outcomes.

One of the earliest and largest AI-enabled initiatives spearheaded by faculty at the Byers Eye Institute is the Stanford Teleophthalmology Autonomous Testing and Universal Screening (STATUS) program, which helps patients with diabetes get an annual eye exam using AI-enabled cameras without scheduling a separate appointment with an ophthalmologist.

“In ophthalmology, many clinical decisions are based on some sort of image, where other fields are more apt to use lab results,” said **David Myung, MD, PhD**, associate professor of ophthalmology and founding director of the STATUS program. “An amazing amount of research and development has gone toward using AI to read ocular images, which led to the first-ever FDA approval for AI-based disease detection.”

Today, 10 AI-enabled STATUS cameras are spread across Bay Area primary care clinics affiliated with Stanford. More than 3,000 patients, about 100 each month, have had a photo of their eye screened by the AI system. The results show promise in combating disease and saving vision, says **Theodore Leng, MD, MS**, associate professor of ophthalmology and a retina specialist.

“Being able to detect disease earlier and intervene when we can actually turn things around and preserve vision is what is really important,” Leng said.

As AI technology progresses, eye images could also yield insights into patients' overall health and help detect diseases like Parkinson's or Alzheimer's diseases, and hypertension, Myung added.

Improving care for diabetes

The STATUS program grew out of an institution-wide quality improvement initiative that aimed to improve eye care for people with diabetes, which affects 400 million people worldwide. Diabetic retinopathy is the leading cause of blindness in working-age adults. Even so, many don't make it to their critically important annual eye exam.

In 2018, Myung launched an effort to offer remote exams in primary care clinics to close the screening gap for diabetic patients, and he thought ahead: The FDA had just approved the first AI system that could be used to analyze images for diabetic eye disease, so he made sure the cameras had that technology.

In addition to Leng, Byers Eye Institute retina specialists **Diana Do, MD; Prithvi Mruthyunjaya, MD, MHS; Vinit Mahajan, MD, PhD; Christopher Or, MD; and Darius Moshfeghi, MD**, have all been critical to the growth and success of the program, Myung says.

The STATUS program added a key innovation of AI-MD assistive interaction: when needed, the system pushes the images to a team led by Leng at the Stanford Ophthalmic Reading Center (STARC) for a closer look. Those who need to see an ophthalmologist get a notification within a day.

Early results show that people are more likely to schedule follow-up visits, possibly because patients find out about their eyes much sooner than they could in the past, Myung said.

“Being able to detect disease earlier and intervene when we can actually turn things around and preserve vision, is what is really important.”



Theodore Leng, MD, MS

Vision testing at home

Another research project is opening the possibility of vision testing at home. **Chris Piech, PhD**, assistant professor of computer science, received a diagnosis of uveitis, or intraocular inflammation, when he was 8 years old, and has spent his life battling eye complications.

After undergoing cataract surgery at Byers Eye Institute by **Charles Lin, MD**, clinical associate professor of ophthalmology, Piech asked Lin to collaborate on a project to improve the traditional eye chart, called the Snellen vision test. **Robert Chang, MD**, associate professor of ophthalmology, joined the collaboration, as did **Ali Malik**, a PhD computer science student in Piech's lab, and **Laura Scott**, Piech's wife.

Their collaboration formed the basis for the Stanford Acuity Test, an online vision test driven by AI, which can now be accessed at www.myeyes.ai. The test doesn't replace an eye exam but could help lay the foundation for home vision testing.

Transitioning diagnostics from the clinic into the home may offer major advantages for detecting disease or the progression of diseases.

For example, new technologies could allow some peripheral vision testing for glaucoma or for other

neuro-ophthalmic diseases to be done remotely, reducing burden on patients and clinics, and improving diagnostic accuracy by testing more often.

“This is the forefront of next-generation healthcare,” **Jeffrey Goldberg, MD, PhD**, the Blumenkranz Smead professor and chair of ophthalmology, said.

Big data and algorithms

But any scientist can attest that artificial intelligence systems are only as good as the data that goes into them. At the Mary M. and Sash A. Spencer Center for Vision Research at the Byers Eye Institute, researchers are using new approaches to ensure AI systems are trained on high-quality data.

Leng and **Daniel Rubin, MD, MS**, professor of biomedical data science, radiology, and medicine, and, by courtesy, of ophthalmology, have developed algorithms that can predict which patients with dry age-related macular degeneration (AMD) will likely progress to wet AMD, an explosive, damaging form of the disease.

Similarly, **Sophia Wang, MD**, assistant professor of ophthalmology, has trained an algorithm to improve how doctor's notes and other electronic health information are analyzed.

She and her team at the Byers Eye Institute are using AI to help predict which glaucoma patients need surgery and which patients would do well with less invasive treatment options.

Wang is collaborating with Chang, **Tina Hernandez-Boussard, MD, PhD, MPH**, associate professor in medicine (biomedical informatics), and **Suzann Pershing, MD**, associate professor of ophthalmology and of health research and policy.

A study that Wang authored and published this year in

the peer-reviewed journal, *Frontiers in Medicine*, shows this new technology can tell with higher accuracy than most humans which patients need what treatment. But Wang's not stopping there; she and her colleagues are continuing to tweak her model to become even more accurate.

"I think of AI as comparable to other tools," Myung said. "We used to use a hand screwdriver for everything. Then someone invented an electronic screwdriver. So far, AI is a force multiplier."

AI Snapshot

AI & EYE CARE

Artificial intelligence (AI) refers broadly to machines or software that **can do human-like tasks**, including learn from experience, analyze data, or even diagnose certain diseases.



The first autonomous AI system authorized by the U.S. Food and Drug Administration (FDA) was approved in 2018 to detect an eye condition called **diabetic retinopathy**.

REACHING PATIENTS

AI can make screenings and diagnostics tests easier to access and personalized information more readily available to patients. At the Byers Eye Institute that includes:

STANFORD ACUITY TEST

An online vision test driven by AI, which can be accessed at www.myeyes.ai. (Read more: page 24.)

VISION PERFORMANCE INDEX

A measurement gleaned from screen interactions, like in video games. (Read more: page 19.)



STATUS

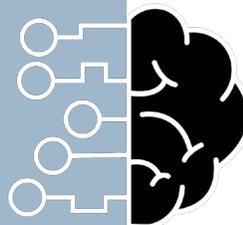
A program that uses specialized cameras and AI to screen for diabetic retinopathy in primary care clinics. (Read more: page 23.)

ASSISTING DOCTORS

AI is showing strong promise in helping doctors more accurately anticipate patient needs.

PREDICTING DISEASE PROGRESSION

Byers Eye Institute clinicians and scientists developed AI algorithms to help predict which age-related macular degeneration (AMD) patients will progress from dry to wet AMD. Other algorithms predict which glaucoma patients will need surgery instead of less invasive treatments. (Read more: pages 24-25.)





Janet Thompson and Dr. Prithvi Mruthyunjaya (left) stand with Thompson's family at the Lookin' for a Cure 5K fundraiser for ocular melanoma at Byers.

Life, Uninterrupted

An ocular melanoma diagnosis with a happy ending

Janet Thompson knows better than most the value of a healthy lifestyle and preventative care to fend off disease, but she also knows first-hand that sometimes illness sneaks up on you anyway.

Thompson has spent her entire working life in the health-care field. She earned a degree from the Family Nurse Practitioner program at the University of California, Davis, before spending decades in women's general health-care clinics in the Sacramento area. She's prided herself on keeping a healthy weight, lipid levels, and blood pressure. After retiring in 2014, Thompson would ride her bike on 25- to 30-mile journeys three days a week, take long walks, and play pickleball with her husband, a retired veterinarian.

All of that seemed like it was working to help her avoid

serious illness, until 2019, when a routine eye exam turned into a recommendation for a second opinion, which turned into a surprising ocular melanoma diagnosis that almost took her eye.

Thompson sought an expert to treat her condition and found **Prithvi Mruthyunjaya, MD, MHS**, professor of ophthalmology and, by courtesy, associate professor of radiation oncology at Stanford. Mruthyunjaya is also the director of Ocular Oncology at the Byers Eye Institute.

A second opinion

Thompson's saga started six years before her appointment with Mruthyunjaya, when her optometrist initially discovered a large, flat freckle on her eye. Her optometrist said the freckle needed a second opinion, even

though freckles like hers “hardly ever turned into anything.” Still, the optometrist would check in with an ophthalmologist and, hopefully, come back with good news.

Her news wasn’t good. That freckle was ocular melanoma—a cancer with the possibility to or spread.

The first ophthalmologist Thompson saw informed her that the melanoma was affecting her optic nerve, the critical connection at the back of the eye that allows visual information to reach the brain for processing. He recommended an enucleation—to remove her eye.

Thompson and her husband **Dennis** researched options. A family member recommended the Byers Eye Institute.

“I am so darn lucky,” she said. “You know, Dr. Mruthyunjaya is a busy guy, but somehow, it was just two weeks later that I got in.” She didn’t know at the time that no matter the backlog, the Byers Eye Institute always works to get urgent patients into their doctors.

The Thompsons met with Mruthyunjaya in July of 2019, and his assessment wasn’t quite as dire. He found that the tumor wasn’t growing into Thompson’s optic nerve, but overhanging it, meaning she would only need radiation, not enucleation.

Mruthyunjaya offered another treatment plan, called radiation plaque brachytherapy, in which he would place a disc with radioactive “seeds,” or pieces of metal smaller than a grain of rice, into the eye to target radiation to the site of the melanoma. The seeds stay at the back of the eye for five to six days to help the cancer shrink.

The procedure still came with risks. “Even if the treatment were successful, two to three years later, she could have been close to legally blind,” Mruthyunjaya said. “But Janet was willing to save her eye if at all possible.”

From worry to results

Thompson returned to Byers Eye Institute for her radiation surgery in August 2019, about a month after that first meeting. The surgery went smoothly, but she wasn’t out of the woods yet. She returned to Mruthyunjaya every three to four months for monitoring and for injections of Bevacizumab, a drug used to protect the retina by blocking the protein that triggers blood vessels to form, known as vascular endothelial growth factor.

Today, Thompson sees Mruthyunjaya every six weeks for the injections. “Janet’s an incredibly classy, kind, warm personality,” Mruthyunjaya said. “She’s the kind of person you’d want as your friend and neighbor, and it’s really been such a pleasure to know her.”

Thompson’s sight is now nearly 20/20 with her glasses. She, her husband Dennis, their two sons, daughter-in-law, and grandchildren joined in the Ocular Melanoma 5K benefit hosted at the Byers Eye Institute in July, beaming with gratitude for how much Stanford has changed their lives. Thompson credits Mruthyunjaya specifically for her unlikely success story.

“He’s so good, not just his expertise, but he’s so compassionate—he cares, and that comes across,” she said.

“It was a whirlwind, but things fell into place... I was meant to be at Stanford.”

Janet Thompson

Mruthyunjaya was inspired by Thompson’s case to push forward a large clinical trial that is now being conducted across multiple universities and clinics to prevent radiation retinopathy, a major cause of vision loss after radiation treatment for ocular melanoma.

“It was the response of patients like Janet Thompson that motivated me to move this first-of-its-kind clinical trial forward,” Mruthyunjaya said. “Results of this study may increase access to these drugs for more patients.”

Thompson and her family are continuing that tradition through their giving to the Byers Eye Institute at Stanford, funding work that will help others who might find, like she did, that sometimes illness catches up to us.

“It was a whirlwind, but things fell into place—it was meant to be,” she said. “I was meant to be at Stanford.”

Sight Restored

Celebrating three years of restored vision

Larry Mohr never expected his eyesight to fail, until a tragic accident 20 years ago. The slow descent into blindness was, in his words, torture, made worse by the certainty that dark days were ahead.

“None of the doctors ever said, ‘You’re going to go blind,’” he said. “But they didn’t need to—I knew it was going to happen.”

Mohr had a long-storied history of high achievements throughout his educational and professional career, receiving degrees in engineering from Cornell and Stanford and an MBA from the latter, before working in venture capital for more than five decades. He was used to solving tough problems, but his eyesight was his most important and perplexing challenge, until he connected with the doctors at the Byers Eye Institute at Stanford nearly 12 years ago.

Today, Mohr is celebrating three years of restored sight, and he’s using his experience to help others.

A long and winding road

In October 2003, Mohr took a commonly prescribed prescription to treat gout. Almost immediately, a severe reaction, called Stevens-Johnson Syndrome, led to a two-week stay in the burn unit. The syndrome burned his eyes, starting an unstoppable cascade that would cause Mohr to go completely blind by 2018.

“It was a slow, spiraling down for 15 years,” he said.

As his sight diminished, so too did his and his wife Nancy’s plans for their future. The couple sold the dream home they had built in Woodside, California, to move into an apartment along Sand Hill Road, which would be closer to care and easier to maneuver around. Mohr, an avid cyclist, began limiting his trips on two wheels to the Pacific Coast and back, eventually halting his 100-mile journeys once and for all as his vision worsened.

“There wasn’t much we could do about it,” he said. “It seemed certain and inevitable.”

Mohr and his wife hired a young woman, **Mary Jane “MJ” Davey** to help part-time. When he went blind, she started full-time and became an invaluable resource. Among other things, Davey spent countless hours reading medical journals to Mohr, as he sought opinions from around the world.

Fighting to find answers, Mohr came to Stanford, hoping to find a like-minded doctor and care team with new ideas about how to help.

It was there, in 2011, that he first met **Charles Lin, MD**, clinical associate professor of ophthalmology, and found that his future may be clearer than he pictured before.

Searching for resolution

From the start, Lin and Mohr were in lockstep to find new options to restore his sight.

Still, there were times when Lin had to be straightforward with Mohr.

“Larry managed to do okay for a few years, with a combination of scleral contact lenses helping to keep the eyes stable, but unfortunately, he started to develop problems,” Lin said. “It was difficult to see him go through those complications.”

Mohr struggled with corneal abrasions, and ulcers on the cornea that would not heal, but he appreciated the care and honesty he got from his doctors.

“We had developed a very trusting, very honest relationship, and Charles Lin had warned me that my eye dryness would be a problem eventually,” Mohr said.

Lin brought in fellow ophthalmologist and Associate Professor of Ophthalmology, **Andrea Kossler, MD, FACS**, to help with the treatment plans.



Larry Mohr and his wife Nancy celebrate his restored vision with Dr. Andrea Lora Kossler (top left), MJ Davey (top middle) and Dr. Charles Lin (top right).

To limit the eyes' deterioration, Kossler performed a tarsorrhaphy procedure, sewing both of Mohr's eyes partially shut in 2015. Two months later the right eye was opened but the left eye remained sewn shut. Soon it became clear that Mohr's condition was worsening; in January 2018, Mohr had a fungal infection in his right eye, leading the care team to replace the cornea with one from a donor.

Still, Mohr did not waiver in his quest for answers, and his persistence was rewarded when he learned about a rare, innovative procedure performed in India, where Stevens-Johnson Syndrome is more common. The procedure had only been performed a handful of times in

the United States and involves moving a salivary gland from the mouth to the eye.

"Larry is a very thoughtful patient, he considered all his options and was steadfast in his decision to save his sight," Kossler said. "He reminded me of the power of a patient's will and determination. I knew I was on board."

If successful, the surgery would provide Mohr's eye enough lubrication for the first time in a decade to consider a prosthetic corneal transplant, called a KPro. It was an ambitious plan, but Mohr was ready for a second chance at sight, so he sent Kossler to India to learn the procedure from **Sayan Basu, MBBS, MS** an ophthalmol-

ogist and scientist at the L.V. Prasad Eye Institute.

“My entire business career has been in venture capital—high risk, high reward,” Mohr said. “The doctors all advised me these surgeries were high risk and the outcome was uncertain. I simply said, ‘I’m blind. There is no downside.’”

From plan to reality

Mohr’s determination pushed both himself and the doctors who cared for him at the Byers Eye Institute to think deeply and collaborate in creative ways, Lin says.

“He knew more could be done, and he wasn’t willing to accept where he was,” Lin said. “We were really challenged to think about innovative solutions, and a large part of that is because of his prompting of us to think about alternatives.”

In October 2019, Mohr underwent his first surgery, the salivary gland transplant by Kossler. Within a week, his eyes were moist, and it was clear the surgery was a success. “We were excited and, for the first time, cautiously optimistic,” Kossler said.

Mohr later traveled to the UC Davis Health Eye Center for the KPro implant, enlisting the help of **Mark Mannis, MD, FACS**, professor and chair of ophthalmology at UC Davis.

The day after the KPro surgery, Mohr was able to see for the first time in three years. The day after surgery, Mannis came into the exam room, and Mohr said, “Dr. Mannis, you’re bald, and you’re wearing a bow tie,” Mohr remembered. “He was so excited, held onto my arm, and kept repeating, ‘This is why I do this.’ It was very emotional.”

Renewed life and hope

This September marked the three-year anniversary of Mohr’s successful surgeries in his right eye. His vision varies from day to day and depends on the lighting, but although it is sometimes cloudy, it is often good.

He is grateful for the life-changing vision the many

“He considered all his options and was steadfast in his decision to save his sight. He reminded me of the power of a patient’s will and determination.”

Andrea Kossler, MD, FACS

surgeries gave him but isn’t planning on another set of operations in the left eye for now.

Since his surgery, Mohr and his wife have committed to helping others struggling with vision loss, and he voices his appreciation to his care team for restoring his vision anytime he gets the chance.

“I’m grateful for the amount of vision I’ve got—it’s impossible to overstate the improvement over being blind,” Mohr said.

His is a resounding example of innovation in care delivery and collaboration across institutions and even across continents. The Mohrs now support eye care and ongoing research at the Byers Eye Institute and other institutions, ensuring the next generation of patients have the same access to reliable, talented care that he had.

“Larry Mohr pretty much embodied all of the challenging external diseases that we see in the cornea,” Lin said. “But when I think about his case, I think about just how much persistence, determination, and belief he had in himself and his team. We couldn’t be happier to have contributed to his remarkable turnaround, and we couldn’t be more grateful for his ongoing support.”

BY GRACE STETSON

Grace is a freelance writer for the Byers Eye Institute at Stanford.

Why give?

Nearly 2.2 billion people worldwide live with severe vision impairment or blindness, and with an aging population, these numbers continue to escalate steeply. Further, many people living with vision loss do not have access to even basic eye care. These factors contribute to a serious unmet need globally in diseases such as age-related macular degeneration, glaucoma, and corneal degeneration, as well as in rare but debilitating eye diseases caused by genetics, inflammation, tumors, or other conditions.

Our vision at the Byers Eye Institute at Stanford is to address this urgent problem head-on, with the goal to eliminate blindness and ocular disease in our community and abroad. To achieve that, we have assembled a comprehensive multidisciplinary research endeavor with the support of our generous community.

Recent breakthroughs in neuroscience, genetics, imaging, stem cell medicine, and technology have given us real opportunity to cure these as-yet incurable diseases and to reverse the vision loss they cause.

Stanford's unmatched depth and breadth of expertise in each of these fields and our unique ability to leverage these breakthroughs makes us optimistic that cures are on the horizon. But finding cures isn't enough. We must get them to patients faster, so at the Byers Eye Institute we are focused on accelerating the development of therapies and expediting clinical trials.

From discovery to delivery, we have brought together the best minds and the best technologies and are determined to combat blindness and vision loss. If you believe in our vision and want to support our research efforts, please contact:

To make a gift online visit
med.stanford.edu/ophthalmology/giving



Heather Schuster

Senior Associate Director of Development
650.542.6597 | hschuster@stanford.edu

Debbie Drake Dunne

Senior Associate Director of Development
415.264.8080 | debbiedd@stanford.edu



Bonnie Uytengsu stands with Dr. Joyce Liao in front of a laboratory at the Mary M. and Sash A. Spencer Center for Vision Research at the Byers Eye Institute.

Giving Mission

When the next best thing to being a doctor is helping one

If **Bonnie Uytengsu** could go back in time and pick any career she wanted, she would have made her way in medicine, as a doctor or as a researcher studying the intricacies of the brain and what makes it tick.

“I wanted to be a doctor, but as you see, I’m not,” she said with a smile in an interview in her Atherton, California home. “The next best thing is helping doctors.”

Even without a doctorate, Bonnie and her family—her late husband, **Wilfred Sr.**; daughter, **Candice**; and sons, **Michael** and **Wilfred Jr.**— have made an enormous impact on medicine and other important disciplines with their family foundation by targeting their philanthropy to research and clinical care that will help people live healthier, happier lives around the world.

The Byers Eye Institute at Stanford, where Bonnie got the care she needed at a critical and scary moment in her life,

is a major beneficiary of that generosity, and as a result is pushing forward innovative work to address challenging eye diseases.

Bonnie's journey to the Byers Eye Institute started with a stroke. She remembers in detail the unusually tiring day about six years ago, when she stayed in bed with a headache that wouldn't budge.

It was her daughter Candice who, returning from a vacation, knew something was off when her mom wouldn't get up to chat. She called paramedics, who rushed Bonnie to Stanford Hospital. The doctors there estimated she had two strokes that day.

One of the most disturbing stroke side effects were a type of visual hallucinations that would manifest as a person's nose disappearing or people or things that didn't belong would appear in the room.

“I’d be watching television and the person would step off the screen,” Bonnie said. “I thought, ‘I don’t think I can go through life seeing people who are not really there.’”

A small subset of survivors have such visual disturbances when the stroke happens in the midbrain, where visual processing happens, says **Joyce Liao, MD, PhD**, professor of ophthalmology and of neurology.

“Loss of vision is what people usually talk about after a stroke, but this kind of visual phenomenon that is more fantastic is rare,” Liao said. “In general, people don’t think they’re going crazy, so it is very different from visual hallucinations that we see in psychosis, for instance.”

Liao treated Bonnie for her vision issues and assessed her overall health in the aftermath of her strokes. The two have since formed a strong doctor-patient bond that has lasted longer than the visual hallucinations did.

“There was definitely a connection, and it’s very special,” Liao said.

The feeling is mutual: “I love her,” Bonnie said of Liao. “I think she’s wonderful. I think she’s brilliant. I can sense the intelligence and she’s modest.”

From curiosity to philanthropy

One thing that is immediately obvious about Bonnie is that she is a naturally curious person. Her daily routine includes reading an entire newspaper front to back and she has books of all genres stacked in neat piles and along shelves in her home. That’s probably why Bonnie can hold a conversation on nearly any subject with some kind of interesting fact or nuanced viewpoint.

So she was quick to learn about eye disease and Liao’s body of research in the wake of her own vision issues.

Her initial gift to the Byers Eye Institute went to support research into the complexities of the eye-brain connection, studied by Liao and other faculty.

Her most recent gift to the Byers Eye Institute will help advance research for patients struggling with age-related macular degeneration (AMD), which affects about 20 million Americans and can cause significant, irreversible vision loss, especially in people aged 50 and older.

“A lot of this research wouldn’t be possible without

“**[Philanthropy] gives clinician-scientists a lot more flexibility to pursue the things that we think are the most important for our patients.**”

Joyce Liao, MD, PhD

philanthropy,” Liao said. “It gives clinician-scientists a lot more flexibility to pursue the things that we think are the most important for our patients.”

Bonnie and her family have long been philanthropic, a trait she says she adopted largely from her husband.

The couple met in the Philippines shortly after Wilfred returned to the country with an engineering degree from Stanford University to open a flour mill. He pursued food manufacturing at the behest of his father, who wanted him to advance in a stable industry.

His father’s advice steered him to success as an entrepreneur and founder of several food manufacturing businesses as well as the head of Sunshine Biscuit Co., which made a slew of popular snacks, including Cheez-Its.

Bonnie and her husband felt that with success came a moral mandate to contribute to causes that would improve lives and instilled those values into their children who have gone on to help oversee the family’s foundation and give to causes around the world.

After years of philanthropy benefitting Stanford engineering education, local hospitals, schools, disease research, and more, Bonnie has just one regret. “I just wish that I had started giving earlier and done more of it,” she said.

Modern-Day Textbook

Ophthalmologists are turning to podcasts to teach and learn

When **Natalie Homer, MD**, assistant professor of ophthalmology and an ophthalmic plastic and reconstructive surgeon at the Byers Eye Institute, was deep in her training and eager to squeeze learning into every free second, she wished for an ophthalmology podcast she could turn on during the more mundane tasks of everyday life.

Podcasts were popular and growing when Homer finished her residency in 2018, but the ophthalmic world had yet to carve out its own space in the audio medium.

Just five years later, Homer makes the podcasts she wished she had in 2018, but she is far from the only one filling the gap. Many Byers Eye Institute faculty have jumped into the world of podcasting to connect with other clinicians, encourage continuing education, provide career insights, and help people improve health.

“Podcasts can be an invaluable tool, not only for trainees but for practicing physicians,” Homer said. “They’re valuable because the podcasts serve as a readily accessible resource to further expand our education.”

The wealth of knowledge available on podcasts today is what Homer has dubbed “the modern-day textbook,” as people spend a growing amount of their time tuning in.

In 2013, only 12% of Americans aged 12 and older lis-

tened to a podcast within the prior month, according to the Pew Research Center, but in 2023, that number jumped up to 31%.

Filling the gap

For Homer, podcasting is a constant these days. She is a host of the American Society of Ophthalmic Plastic and Reconstructive Surgery’s official podcast, where she hosts virtual journal clubs, surgical technique debates, and expert advice sessions on topics like practice management and contract negotiation.

The first time **Khizer Khaderi, MD, MPH**, a neuro-ophthalmologist and technology developer at the Byers Eye Institute, was on a podcast, he was interviewed about his nontraditional path to becoming a medical doctor and researcher. “I had an inspiring idea about how we could better measure visual function in people, and I withdrew from the usual clinical path to start a video game company based off my research,” Khaderi said.

Khaderi wants others to know that they can pursue a multitude of interests and still be highly skilled clinicians who treat patients.

“I get a lot of like feedback about how it’s a refreshing perspective because it’s not the same echo chamber,” Khaderi said.

Looking to the future

Then there are chances to dive into the nitty-gritty.

That’s what **E.J. Chichilnisky, PhD**, the John R. Adler Professor of Neurosurgery, and professor of ophthalmology at Stanford, did in his March 9, 2023 appearance on the Wu Tsai Neurosciences Institute at Stanford’s podcast, “From Our Neurons to Yours.”

In Chichilnisky’s episode, titled “Building a bionic eye,” he translated the complex science of how the eye’s retina receives light and turns it into signals our brains can



Dr. Andrew Huberman interviews Dr. Jeffrey Goldberg for the June 26 episode of the Huberman Lab Podcast. The episode has been accessed an estimated 10 million times.



Dr. Natalie Homer fills an education gap by hosting podcasts about ophthalmology.

perceive as an image. He described how a device could function as an artificial retina that could restore sight in people with conditions like macular degeneration, or one day offer humans new visual skills.

The science is promising, and podcasts are a great way to spread the word, Chichilinsisky said. “So far, people love them,” he added.

Jeffrey Goldberg, MD, PhD, Blumenkranz Smead professor and chair of ophthalmology, focused on reaching the broader public during his appearance on the Huberman Lab Podcast last summer.

Andrew Huberman, PhD, associate professor of neurobiology and, by courtesy, ophthalmology at Stanford, has nearly 4 million YouTube subscribers, and his podcast frequently ranks among the top-10 most popular on Spotify and Apple platforms.

“The Huberman Lab Podcast was a great opportunity

to reach millions of people all at once with information that could benefit them in their daily lives and in their work,” Goldberg said, reflecting on the experience. “That is a rare and exciting opportunity for any physician.”

During the June 26 episode, those who struggle with glaucoma—the leading cause of irreversible vision loss worldwide—may have been most interested to learn about his promising research into reversing vision loss from the devastating disease.

Parents may have been motivated to take a trip to the park after learning outdoor light may help reduce near-sightedness, known as myopia, in children’s vision.

Whatever the takeaway, the goal is shared: “We want to make information more available to those who want it,” Homer said. “So many of us are tuning into podcasts for education, it really is the modern-day textbook.”

BY EMMA YASINSKI

Emma is a freelance writer for the Byers Eye Institute at Stanford.



Unique training and mentorship opportunities and an active wet lab program (pictured) help set the Byers Eye Institute apart for students and budding ophthalmologists.

Training the Next Generation

On a mission to find and support talented clinician-scientists

When **Adeeti Aggarwal, MD, PhD**, surveyed her residency options after medical school, the Byers Eye Institute stood out because it offered something that other residency programs didn't: a chance to SOAR.

That is, the Byers Eye Institute offered the Stanford Ophthalmology Advanced Research Residency (SOAR) program, which helps aspiring and rising physician-scientists find protected time for research early in their careers. The program provides what Aggarwal calls "the best program in the country for preparing physician-scientists interested in vision science research."

SOAR is just one of the ways the Byers Eye Institute is a

leader in training the next generation of clinicians and scientists. The Institute also is home to an outsized number of early-career research grants and programs to attract promising young ophthalmologists from around the world and pair them with the mentorship they need to scale their careers to their full potential.

"This program really sets us up to become physician-scientists," she said. "Being part of SOAR is a really unique and amazing opportunity."

Through the program, the Byers Eye Institute sponsors a pre-residency research year for motivated and interested residents, timed between an initial intern year and three

“Being part of SOAR is a really unique and amazing opportunity.”

Adeeti Aggarwal, MD, PhD



years of clinical ophthalmology training.

“During that year, residents are meant to get their clinician-scientist career off the ground, and continue pushing their work forward throughout the rest of their ophthalmology training,” says **Carolyn Pan, MD**, director of the ophthalmology residency program.

They’ll set up a laboratory, apply for grants, hire researchers, and otherwise lay the path for discovery on their topic of choice with one or more faculty mentors.

“This way, your research career doesn’t have to take a four- to six-year pause while you’re doing clinical training,” Pan said.

That’s exactly what the program is meant to do, says **Yang Sun, MD, PhD**, professor of ophthalmology and vice chair for academic affairs. Sun helps direct and provide broad career mentorship for the SOAR program after it was established by **Jeffrey Goldberg, MD, PhD**, Blumenkranz Smead professor and chair of ophthalmology at the Byers Eye Institute.

“This program is aimed at filling a gap,” Sun said. “SOAR streamlines a career for promising physicians who want to do groundbreaking research.”

That’s what **Lucie Guo, MD, PhD**, took advantage of through the SOAR program. She is now a vitreoretinal fellow at the Byers Eye Institute, well on her way to her goal of becoming a physician-scientist.

“The year of dedicated research time was very helpful in getting ambitious projects off the ground, which otherwise wouldn’t have been possible during our busy clinical training,” Guo said.

The award goes to...

Developing a career as an academic ophthalmologist continues during fellowship and as junior faculty. Multiple researchers at the Byers Eye Institute hold prestigious early career research grants, also known as K awards, from the National Institutes of Health (NIH).

K awards can help put researchers on track for future awards, providing key experience, time, and funding as they make their first big breakthroughs.

→ **Bryce Chiang, MD, PhD**, a Byers Eye Institute instructor and researcher who is currently a glaucoma fellow, received a five-year K award in 2022. He’ll develop a targeted way to deliver medication to the optic nerve, the critical nerve in the back of the eye responsible for sending visual information to the brain.

“The optic nerve degenerates in glaucoma and other optic neuropathies—diseases that cause nerve damage—but there’s no good way to deliver focused therapies there,” Chiang said.

→ Assistant Professor **Wendy Liu, MD, PhD** is using her 2023 grant to dive into the role of pressure sensors in the eye that may be involved in glaucoma using human genetics and animal models. “That’s complex work that would be hard to get off the ground without mentorship and funding,” Liu said.

“Everyone is generous with their time, which has greatly advanced my work in new directions,” Liu added. “The K award is instrumental in allowing me protected research time to pursue new research directions with the potential for clinical translation.”

BY MARCIA FRELICK

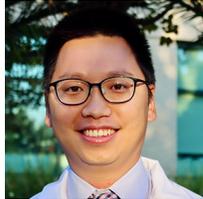
Marcia is a freelance writer for the Byers Eye Institute at Stanford.

Meet our residents and fellows

CLINICAL FELLOWS CLASS OF 2024



Anh Bui, MD, PhD
Cornea



Bryce Chiang, MD, PhD
Glaucoma



Sean Collon, MD
Global



Melanie Daulton, MD
Pediatrics



Ankur Gupta, MD
Uveitis



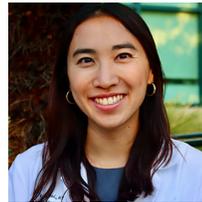
Austen Knapp, MD
Vitreoretinal



Mathew Margolis, MD
Cornea



**Naga Pradyumna
Kothapalli, MD**
Neuro-Ophthalmology



Karen Wai, MD
Vitreoretinal



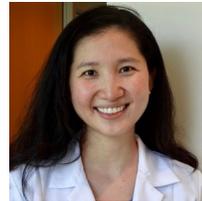
Michael Yang, MD
Glaucoma

2024 BYERS FAMILY OPHTHALMIC INNOVATION FELLOW



Kevin Jackson, MD

CLINICAL FELLOWS CLASS OF 2025



Lucie Guo, MD
Vitreoretinal



Jordan Sokol, MD, MBA
Vitreoretinal

Congratulations class of 2023!

To see where our graduates are headed next, scan the QR codes below.



RESIDENT ALUMNI



CLINICAL FELLOW ALUMNI

RESIDENTS CLASS OF 2024



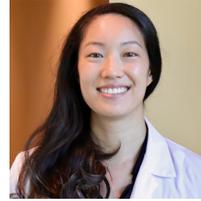
Caity Logan, MD, PhD
SOAR Program



Louisa Lu, MD



Andrea Naranjo, MD

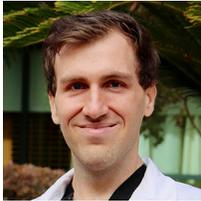


Elaine Tran, MD

RESIDENTS CLASS OF 2025



Aneesha Ahluwalia, MD



Arthur Brant, MD



Brian Soetikno, MD, PhD
SOAR Program



Sean Wang, MD
SOAR Program



Gina Yu, MD

RESIDENTS CLASS OF 2026



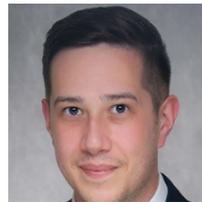
Lyna Azzouz, MD



Sahil Shah, MD, PhD
SOAR Program



Anna Bettina Toth, MD, PhD
SOAR Program



Gabriel Velez, MD, PhD



Cindy Zhao, MD, MBA

RESIDENTS CLASS OF 2027



Alec Bernard, MD, MS
SOAR Program



Arnav Moudgil, MD, PhD
SOAR Program



Filippus Vingopoulos, MD, PhD



Anania Woldetensaye, MD



Christine Xu, MD

RESIDENTS CLASS OF 2028



Adeeti Aggarwal, MD, PhD
SOAR Program

SELECT AWARDS AND HONORS

The Byers Eye Institute is home to 10 faculty named top doctors by Castle Connolly in 2023.



(Left to right) **Andrea Kossler, MD, FACS**; **Theodore Leng, MD, FACS**; **Diana Do, MD**; **Steven Sanislo, MD**; **Ruwan Silva, MD, MPhil**; **Quan Dong Nguyen, MD, MSc**; **Kuldev Singh, MD, MPH**; **Edward Manche, MD**; **Darius Moshfeghi, MD**; and **Scott Lambert, MD**.

Julian Wolf, MD, MS; **Brian Soetikno, MD, PhD**; and **Ditte Rasmussen** received the VitreoRetinal Surgery Foundation Research Award, aimed at supporting early-stage investigators working on research projects in macular and retinal disease.

Prithvi Mruthyunjaya, MD, MHS, was awarded the prestigious Crystal Apple Award by the American Society of Retina Specialists in recognition of his devotion to the



PRITHVI MRUTHYUNJAYA, MD, MHS

education and professional development of young vitreo-retinal specialists.

Mruthyunjaya was also an honored speaker on multiple occasions, delivering the 2023 Truhlsen Eye Institute Distinguished Lecture at the University of Nebraska; the Joseph E. Kolowitz Memorial Lecture in Ophthalmology at Wilmer Institute at Johns Hopkins, and the F. Phinizy Calhoun Jr. Lecture in Ophthalmology at the Southeastern Ocular Pathology Symposium at Emory Eye Center.

Arthur Brant, MD, was awarded the Rosenkranz Prize from the Freeman Spogli Institute for International Studies and Stanford Health Policy to further his work to eliminate blindness from sickle cell disease in West Africa.

Brant is also the lead investigator on a project awarded a Stanford Global Health Seed Grant to roll out a screening and treatment program to preserve sight for diabetic patients globally, starting in Ghana. **Prithvi Mruthyunjaya, MD, MHS**, and **Geoffrey Tabin, MD**, are also on the research team.

Wendy Liu, MD, PhD, was awarded a National Eye Institute (NEI) K08 grant for her project entitled “The Role of Mechanosensitive Ion Channels in Glaucoma.”



WENDY LIU, MD, PHD

Liu also received the Shaffer Grant from the Glaucoma Research Foundation, and a selective E. Matilda Ziegler Foundation for the Blind research grant.

David Myung, MD, PhD, received the Career Advancement Award from Research to Prevent Blindness, and the Innovation Accelerator Pilot Award from the VA Palo Alto Health Care System. He, **Michael Mbagwu, MD**, and **David Buickians** received a High Impact Technology Award from the Stanford Office of Technology Licensing.

Myung also led the annual Ophthalmic Innovation Symposium, a part of the Bay Area Ophthalmology Course, and co-organized the 2023 Collaborative Community on Ophthalmic Imaging (CCOI) Annual Meeting along with **Mark Blumenkranz, MD, MMS.**



Kuldev Singh, MD, MPH, was named to The Ophthalmologist Power List in 2023 as a physician who has demonstrated a decade of excellence and impact in ophthalmology.

Sophia Wang, MD, MS, received the 2023 American Glaucoma Society 'Young Clinician Scientists' award.

Quan Dong Nguyen, MD, MSc, chaired the Faculty Advisory Committee for the highly successful and growing annual Byers Young Investigators Research Conference.

Scott Lambert, MD, was the distinguished speaker to give the Frank D. Costenbader Lecture at the annual meeting of the American Association of Pediatric Ophthalmology in New York City in April 2023.

Andrea Lora Kossler, MD, FACS, received the Stanford Biodesign Faculty Fellowship (BFF), the Gabilan Fellowship Award, and the American Society of Oculoplastic and Reconstructive Surgery (ASOPRS) Foundation Research Award.



Kossler also was appointed to the Executive Board for the North American Society of Academic Orbital Surgeons (NASAOS) and served as the organization's conference chair for the NASAOS Annual Conference Com-

mittee. Kossler co-chaired the Oculoplastic Section for the Sonoma Eye Meeting and served on the Women In Ophthalmology Board of Directors.

Mary Elizabeth (M.E.) Hartnett, MD, was named the first Michael F. Marmor, MD, Professor of Retinal Science and Diseases at the Byers Eye Institute. She also served as the Constance E. West, MD, lecturer at the Cincinnati Children's Hospital Medical Center and the Bradley R. Straatsma Lecturer at the UCLA Stein Eye Institute.

Hartnett served on the National Advisory Eye Council of NIH, the Scientific Advisory Board for the Knights Templar Eye Foundation, and the American Ophthalmologic Society Council. She chaired the Scientific Advisory Committee for the Macula Society and the Scientific Advisory Board for the Jack McGovern Coats' Disease Foundation. In September, she directed the International Advances in Pediatric Retina meeting.



Hartnett also received a Research to Prevent Blindness and American Academy of Ophthalmology Award for IRIS Registry Research and an R34 grant. She served as a senior editor for Adler's 12th edition of "Physiology of the Eye."

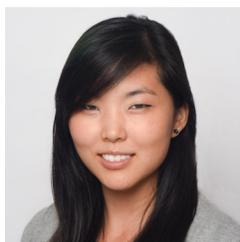
Y. Joyce Liao, MD, PhD, was awarded the Low Vision Research Award from Research to Prevent Blindness and the Lions Clubs International Foundation.

Liao also led the Fourth Annual Optic Disc Drusen Conference, attracting over 300 people from 35 countries.



ACTIVE FACULTY AND SUBSPECIALTY CARE

COMPREHENSIVE OPHTHALMOLOGY AND CATARACTS



Eubee Koo
clinical assistant professor*



Artis Montague, MD, PhD
clinical professor



Suzann Pershing, MD
associate professor



Susan Ryu, MD
clinical assistant professor

CORNEA AND REFRACTIVE SURGERY



Charles Lin, MD
clinical associate professor



Edward Manche, MD
professor



Bethlehem Mekonnen, MD
clinical assistant professor



David Myung, MD, PhD
associate professor



Jennifer Rose-Nussbaumer, MD
associate professor



Christopher Ta, MD
professor



Geoff Tabin, MD
Fairweather Foundation
professor



Charles Yu, MD
assistant professor

NEURO-OPHTHALMOLOGY



Shannon Beres, MD
clinical associate professor



Khizer Khaderi, MD, MPH
clinical associate professor

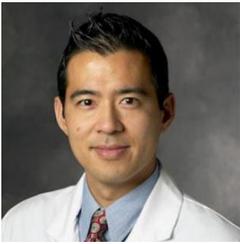


Joyce Liao, MD, PhD
professor



Heather Moss, MD, PhD
professor*

GLAUCOMA



Robert Chang, MD
associate professor



Caroline Fisher, MD
clinical associate professor



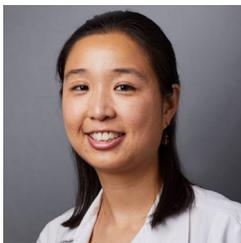
Jeffrey Goldberg, MD, PhD
Blumenkranz Smead
professor & chair



Wen-Shin Lee, MD
clinical assistant professor



Wendy Liu, MD, PhD
assistant professor



Ann Shue, MD
clinical assistant professor
(adult & pediatric)



Kuldev Singh, MD, MPH
professor



Yang Sun, MD, PhD
professor



Sophia Wang, MD
assistant professor

OPTOMETRY



Jill Beyer, OD
clinical assistant professor



Steven Binder, OD
clinical assistant professor



Zheng Chen, OD
clinical assistant professor



Tawna Roberts, OD, PhD
associate professor*



Gayathri Srinivasan OD, MS
clinical associate professor



Katherine Warner, OD
clinical assistant professor

ACTIVE FACULTY AND SUBSPECIALTY CARE

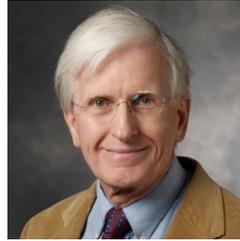
RETINAL AND MACULAR DISEASES AND SURGERY



Natalia Callaway, MD, MS
clinical assistant professor



Diana Do, MD
professor



Michael Gaynon, MD
clinical professor
(pediatric)



Stephen Smith, MD
clinical assistant professor



Theodore Leng, MD, FACS
associate professor



Charles DeBoer, MD, PhD
clinical instructor*



Chris Or, MD
clinical assistant
professor (uveitis)



Carolyn Pan, MD
clinical associate professor



Vinit Mahajan, MD, PhD
professor



Darius Moshfeghi, MD
professor (adult & pediatric)



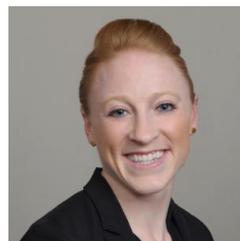
**Prithvi Mruthyunjaya,
MD, MHS**
professor (ocular &
orbital oncology)



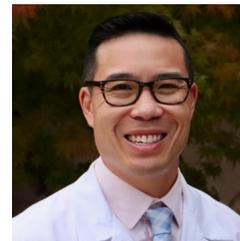
Ruwan Silva, MD, MPhil
clinical assistant professor



**Quan Dong Nguyen, MD,
MSc**
professor (uveitis)



Cassie Ann Ludwig, MD, MS
assistant professor



Loh-Shan Leung, MD
clinical assistant professor



Steven Sanislo, MD
clinical professor

OPHTHALMIC PATHOLOGY



Jonathan Lin, MD, PhD
professor

ADULT AND PEDIATRIC VITREORETINAL



Mary Elizabeth Hartnett, MD
Michael F. Marmor, MD, Professor
of Retinal Science and Diseases*

RESEARCH



Alfredo Dubra, PhD
professor
(optical engineering)



Yang Hu, MD, PhD
associate professor
(glaucoma & optic nerve)



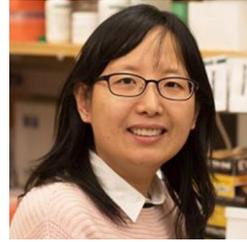
Michael Kapiloff, MD, PhD
Reinhard Family
professor (glaucoma
& optic nerve)



Daniel Palanker, PhD
professor (engineering &
experimental physics)



Yasir Sepah, MBBS
assistant professor
(precision health)



Sui Wang, PhD
assistant professor
(retinal disease)

OCULAR AND ORBITAL ONCOLOGY | OCULOPLASTICS



Natalie Homer, MD
assistant professor



Andrea Kossler, MD, FACS
associate professor



Peter Levin, MD
clinical instructor*



Albert Wu, MD, PhD, FACS
assistant professor

PEDIATRIC OPHTHALMOLOGY AND ADULT STRABISMUS



Euna Koo, MD
clinical associate professor*



Scott Lambert, MD
professor



Omondi Nyong'o, MD
clinical instructor*

OTHER VISION SCIENCE FACULTY WITH APPOINTMENTS IN OPHTHALMOLOGY



E.J. Chichilnisky, PhD
John R. Adler professor
(neurosurgery)



Andrew Huberman, PhD
associate professor
(neurobiology)



Daniel Rubin, MD
professor (biomedical data
science, radiology, medicine
[biomedical informatics])



Creed Stary, MD, PhD
associate professor
(anesthesiology, perioperative
& pain medicine)



Douglas Vollrath, MD, PhD
professor (genetics)



Brian Wandell, PhD
Isaac and Madeline Stein
Family professor
(psychology)

★ **CONGRATULATIONS ON AN APPOINTMENT OR PROMOTION IN 2023!**



Byers Eye Institute Locations

CLINICAL CARE

Byers Eye Institute, Palo Alto
Adult and Pediatric Clinical Services
Adult Operating Rooms
2452 Watson Court
Palo Alto, CA 94303

NEW! **Byers Eye Institute, Livermore**
Adult Clinical Services and Operating Rooms
1133 E. Stanley Blvd, Suite 117 & 209
Livermore, CA 94550

NEW! **Byers Eye Institute, Portola Valley**
Optometric Services
3250 Alpine Rd
Portola Valley, CA 94028

Stanford Children's Health
Pediatric Ophthalmology, Los Gatos
14601 S. Bascom Ave, Suite 200
Los Gatos, CA 95032

Stanford Children's Health
Pediatric Ophthalmology, Palo Alto
Mary L. Johnson Specialty Services Building
730 Welch Road, 1st Floor
Palo Alto, CA 94304

For adult clinical appointments, call (650) 723-6995.
For pediatric clinical appointments, call (650) 723-1143.

RESEARCH

Mary M. and Sash A. Spencer Center for Vision Research:
Basic/Translational Research
1651 Page Mill Road
Palo Alto, CA 94304

Mary M. and Sash A. Spencer Center for Vision Research:
Clinical Trials and Translational Research
2370 Watson Court
Palo Alto, CA 94303