



IU OPHTHALMOLOGY ANNUAL REPORT 2022

EUGENE AND MARILYN GLICK EYE INSTITUTE  
INDIANA UNIVERSITY SCHOOL OF MEDICINE  
DEPARTMENT OF OPHTHALMOLOGY

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Opened in 2011 and home to the IU School of Medicine Department of Ophthalmology, the Eugene and Marilyn Glick Eye Institute houses vision research labs and clinical facilities.

**On the cover**

The cover image shows a section of the optic nerve. The nerve cells of the retina exit through this region of the eye to connect to the brain. Fluorescent proteins of various colors demonstrate the scaffolding and cells within the optic nerve.

(Image courtesy of the Sharma Lab, IU School of Medicine Department of Ophthalmology)





As researchers and clinicians in the field of ophthalmology, we are acutely aware of the fragility of vision and the profound importance of preserving sight and preventing vision loss. In research laboratories, exam rooms, operating rooms and classrooms, the faculty, learners and staff of the Glick Eye Institute are committed to advancing eye health for patients in Indiana and beyond.

In support of our mission to advance research and discovery, in the past year the IU School of Medicine Department of Ophthalmology has jumped up to number 28 in National Institutes of Health funding among departments of ophthalmology. This success is due to our dedicated vision scientists who work tirelessly to develop new and better treatments for people with glaucoma, age-related macular degeneration and other debilitating eye diseases. In this report, we highlight some of our latest research advancements, including a breakthrough for the treatment of neovascular eye diseases and a first-of-its kind eye modeling system for the study of glaucoma and spaceflight-associated neuro-ocular syndrome.

In clinical care, our department is taking an active role in addressing the shortage of qualified ophthalmic technicians. In 2023, we will launch Indiana's only Ophthalmic Technician Training Program. In this report, you will find details about how our department is preparing to offer this specialized training.

At IU School of Medicine's campuses statewide, we're actively engaged in mentoring medical students with an interest in ophthalmology. In this report, you will find insights from volunteer faculty and students involved in these valuable experiences. In addition, our Dr. Yoshi Imanishi and colleagues have recently developed a novel vision science course for graduate students that you can learn about in the pages that follow.

Finally, I invite you to read the profile of two titans in the field of pediatric ophthalmology—Dr. Eugene M. Helveston and Dr. Forrest D. Ellis. In many ways, we owe our decades-long leadership in pediatric ophthalmology to their contributions as the founders of our division here at IU. To honor their legacy, we are pleased to announce a new fundraising campaign to create a professorship that bears their names.

It's an exciting time to be engaged in ophthalmology research, clinical care and training at Indiana University. As we look forward with determination to new possibilities, we thank you for your interest in our program and your partnership. Our shared understanding of vision's vital connection to quality of life is what inspires us and drives us forward.

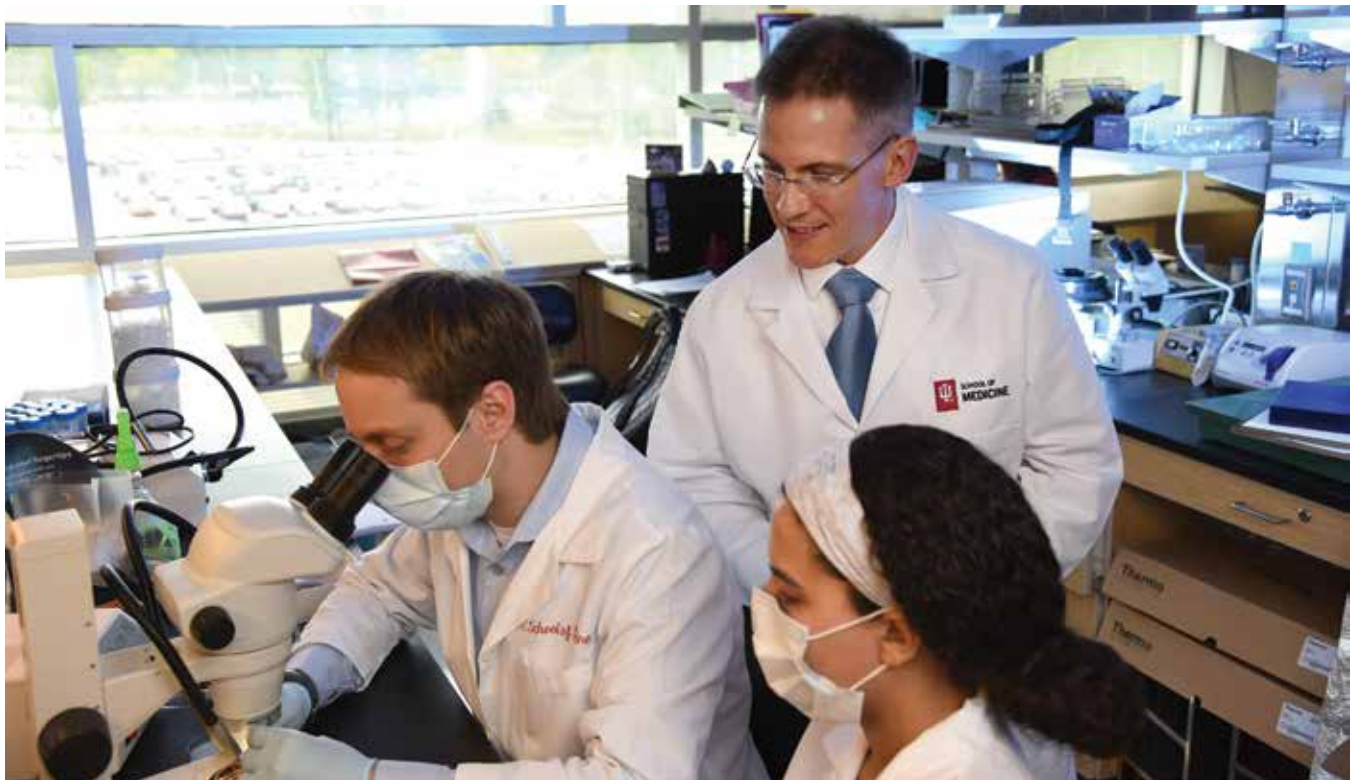
Sincerely,

**David K. Wallace, MD, MPH**

*Marilyn K. Glick Professor*

*Chair, Department of Ophthalmology*

## Ophthalmology researchers one step closer to treatment for blindness-causing diseases



*In his lab, Tim Corson, PhD, mentors students and trainees at all levels, including high school students, medical students, PhD candidates and postdoctoral fellows.*

Developing the first drug-like therapy to inhibit the enzyme ferrochelatase, the Corson Research Lab in the Department of Ophthalmology is paving the way for a new class of potential drugs to treat neovascular eye diseases.

The lab, led by Tim Corson, PhD, Merrill Grayson Senior Professor and vice chair for basic and translational research, specializes in the study of ocular neovascularization, or abnormal blood vessel growth in the eye. This is a key feature of diseases like wet age-related macular degeneration, diabetic retinopathy and retinopathy of prematurity. Ferrochelatase is responsible for making heme (heme is the red pigment found in

blood, but cells use heme in many ways). Ferrochelatase activity is important for the abnormal new blood vessel growth associated with these major blindness-causing diseases.

In 2017, the Corson Lab discovered ferrochelatase as a mediator capable of regulating the growth of blood vessels in the eye. Since then, researchers have been working to find new ways to inhibit it. Now they've discovered new chemicals that could also be the beginnings of a new class of drug. These chemicals will also be useful tools in continuing to explore ferrochelatase. The findings were published in January 2022 in the scientific journal *Cell Chemical Biology*.

"With much more future work, our ferrochelatase inhibitors might have potential as therapies for eye diseases characterized by abnormal blood vessel growth, especially wet age-related macular degeneration, but also proliferative diabetic retinopathy, retinopathy of prematurity and others," Dr. Corson said.

The research team screened thousands of chemicals to learn their ability to block ferrochelatase activity. They optimized some using biochemical assays to assess how well the chemicals blocked enzyme activity, and cellular assays to show that select chemicals could block blood vessel cell growth in the culture dish. One chemical was an effective therapy in a mouse model with features of wet age-related macular degeneration.

Dr. Corson and his team are the only researchers in the world focused on studying ferrochelatase and eye disease.

*"It's a fairly unique niche for us, and to my knowledge we're the only ones who are studying this specifically," Dr. Corson said. "Since the paper came out earlier this year, we've received quite a lot of interest from researchers in fields outside of the eye, who also have an interest in inhibiting ferrochelatase."*

While Dr. Corson's lab has not yet used their compounds in other diseases, there are research teams studying ferrochelatase in malaria, neurodegenerative disease and cancer who are interested in these compounds.

### **Next steps targeting eye disease**

The Corson Lab plans to continue work in this area by making chemicals more potent and for further assessments to ensure they aren't toxic. From there, Dr. Corson's research team can explore how to best deliver the chemicals to the eye therapeutically.

"To avoid vision loss, patients with these diseases usually need injections into their eyes, and even then, not all patients respond to those existing therapies," Dr. Corson said. "Therefore, new strategies for blocking blood vessel growth that could potentially be delivered by routes like eye drops are appealing."

The Corson Lab will also immediately use the chemicals as powerful tools in ongoing lab studies of how ferrochelatase functions to regulate blood vessel growth.

This project was a large international collaboration between researchers at the Glick Eye Institute and others across the globe.

Kamakshi Sishtla, a research analyst in the Corson Lab in Indianapolis, served as lead author of the study that was published in Cell Chemical Biology. Also contributing were the research teams of South Korean medicinal chemist Seung-Yong Seo at Gachon University and structural biologist Soo Jae Lee at Chungbuk National University.

Funding support included a Macular Degeneration Research grant from the BrightFocus Foundation, as well as grants from the National Institutes of Health and the Korean National Research Foundation.

### Novel modeling system offers innovative approach for studying the human eye

Like most researchers, Tasneem Sharma, PhD, started with the question—“What if?” Answering that question resulted in a first-of-its-kind human eye modeling system offering a novel way to study retinal cell damage observed in glaucoma. Dr. Sharma’s invention, the Translaminar

Autonomous System (TAS), has exciting implications for research and treatment of neurodegenerative diseases, including glaucoma, the leading cause of irreversible blindness, and other conditions, such as spaceflight-associated neuro-ocular syndrome.



*Tasneem Sharma, PhD, assistant professor of ophthalmology, uses the Translaminar Autonomous System (TAS) she developed to study the human eye.*



In research with human donor eyes, TAS allows researchers to study the back of the eye, where the terminal retinal neurons traversing the optic nerve are most sensitive to pressure. The innovative model, which has received a utilities patent, performs two functions. It independently regulates intraocular and intracranial pressure near the optic nerve head, a mesh-like structure that supports the retinal ganglion cell axons. Study of this sensitive pressure point—referred to as translaminar pressure—is important in determining the root cause of glaucoma.

TAS also has infusion capabilities. Nutrients can be injected through the system to keep the donor eye tissue healthy so it can be studied for longer periods of time. The same technique enables drugs and therapies to be infused into human donor eyes to evaluate their effectiveness in keeping retinal neurons alive under different pressure conditions.

Study of retinal neurons is central to glaucoma research. In patients with glaucoma, the disease damages or destroys retinal neurons, resulting in varying degrees of vision loss, including total blindness.

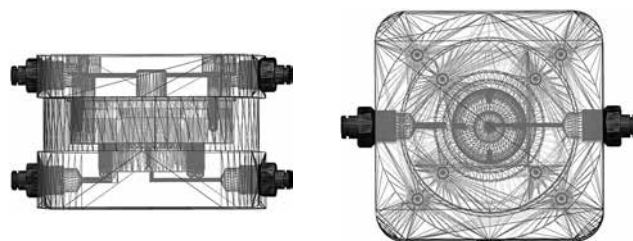
“In prior traditional human eye studies, the retinal cells could be kept alive in culture for only a few days because they need support to survive,” Dr. Sharma explained. “So, I started thinking, ‘what if we could design a support system?’ The novel capability of this model is that we not only mimic the translaminar pressure, but also keep cells alive by infusing nutrients through the system, recreating the entire infrastructure.”

A typical scenario for TAS is in testing investigational therapies.

*“If a dosing or regimen is effective in animal models, and we want to see if it makes a therapeutic impact in human cells, we can test it with this model,” Dr. Sharma explained. Nearly 90 percent of drugs fail when they go from animal to clinical trials because the drug regimen and toxicities are different. TAS provides a better way of conducting preclinical testing in a human system.”*

#### **New model attracts interest from NASA for SANS**

While Dr. Sharma was convinced her idea had potential, taking it from concept to reality required persistence. The journey began in 2018 while she was working as a postdoctoral researcher at the University of North Texas Health Science Center. Starting with a rough diagram, Dr. Sharma enlisted the help of her extended family, many of whom had engineering and manufacturing experience. After more than a year of trial and error, the first version of TAS was developed in 2019 using 3D printing technology.



*Several iterations of TAS were developed. These are two of the final diagrams of the patented system.*

*(continued on page 6)*

(continued from page 5)

Dr. Sharma applied for a patent later that year and within a few months was contacted by the Translational Research Institute for Space Health (TRISH), a consortium affiliated with NASA. Seeing an application for TAS in their study of spaceflight-associated neuro-ocular syndrome (SANS), funding officials at TRISH invited Dr. Sharma to apply for a grant to fund research using the model.

**“TRISH was interested in seeing if, by using the model to elevate eye pressure, we would see the same changes NASA was seeing in astronauts after prolonged spaceflight in microgravity environments,” Dr. Sharma said.**

SANS is a condition related to microgravity, or weightlessness, in space. Zero gravity causes a headward shift of fluid to the brain that increases pressure inside the head and eyes. Over time, high eye pressure can change the shape of the eye. Instead of being rounded, the globe becomes flatter, causing farsightedness. Nearly 70 percent of astronauts experience some type of vision changes in either one or both eyes. In most cases, the effects are temporary with vision returning to normal within a year.

With the TRISH grant funding, Dr. Sharma used TAS to conduct experiments in which intracranial pressure was elevated in human donor eyes. The results using the model validated aspects of SANS pathology and are published in *npj Microgravity*, a journal dedicated to spaceflight research.

### Current studies using TAS at IU

Since joining the IU School of Medicine Department of Ophthalmology in September 2020, Dr. Sharma has continued using TAS in her research. In glaucoma studies with the human eye modeling system, she is testing a therapeutic that shows promise in protecting retinal ganglion cells. Her lab is also conducting transplantation studies with retinal neurons formed from stem cells. The neurons are transplanted in the human eye and cultured using the model to see if they can survive under certain pressure conditions.

“In the early stages of glaucoma, when there are still remaining neurons, the goal is to help them survive, so we use therapeutics,” Dr. Sharma said. “At later stages, when most retinal neurons have died, the strategy is to transplant healthy neurons to take their place. Both are goals for treatment of the disease.”

Related to SANS and future studies with NASA, Dr. Sharma is interested in applying for space health grants and continuing her work with NASA collaborators. This fall she was selected to attend a funding workshop for the B-Sure (Boosting Spaceflight Underrepresented Research Equality) project. Supported by TRISH, the project aims to improve diversity in space health research. The workshop was hosted at the University of Florida Research and Academic Center at Lake Nona in Orlando, Florida.

Dr. Sharma also is committed to pursuing collaborations with other vision researchers. She is an inaugural member of the newly formed Retinal Ganglion Cell Repopulation, Stem Cell Transplantation and Optic Nerve Regeneration (RReSTORE) consortium, an international group of more than 100 leading investigators in glaucoma research and related fields.



“Bringing together glaucoma, neuroprotection and regeneration scientists from around the world, the consortium is a way for individual researchers to share insights that could be used to enhance understanding of eye diseases and make a broader impact in the discovery of new treatments and therapies,” she explained.

In her lab at the Glick Eye Institute, Dr. Sharma and her team are contributing to the science of glaucoma and SANS. The journey that started with a drawing of an innovative modeling system has resulted in grant-funded experiments, published work and the promise of new ways to conduct vision research.

“While the model has limitations of blood perfusion, it allows us the ability to study biomechanics of the human eye, preclinically test therapies, and enables a novel solution for keeping human eyes alive in culture in our pursuit of treating glaucoma and SANS. Hopefully, we can take advantage of the model and its technology to provide more insights in the future.”



*An innovative research model, TAS enables the injection of nutrients to keep donor eye tissue healthy for longer-term study. Drugs can also be injected to evaluate the effectiveness of new therapies. INSET: TAS was developed using 3D printing technology. This photo shows one of the early versions.*

## Collaborative culture, increased funding fuel vision research



**Tim Corson, PhD**

Achieving national prominence in vision research, the Department of Ophthalmology is poised for continued growth in research related to glaucoma, age-related macular degeneration, diabetic retinopathy and pediatric eye diseases. Tim Corson, PhD, who earlier this year was named the

department's vice chair for basic and translational research, is excited about the department's trajectory in research and discovery.

"It's been rewarding to recruit great faculty and to build a well-integrated team of vision scientists and researchers in their labs," said Dr. Corson. One of the first basic scientists recruited to the ophthalmology department when the Glick Eye Institute opened in 2011, Dr. Corson now leads a group of nine full-time vision scientist faculty.

"The type of community and research culture we've built here is quite unique in terms of the level at which our researchers engage and collaborate with one another," Dr. Corson said. "I'm really proud of our group, and our goal for the next couple of years is to recruit more researchers. I hope we can get to the point where we grow beyond the space we have in the building; that would be a good problem to have."

With the department's dramatic rise to no. 28 in National Institutes of Health (NIH) funding among ophthalmology departments, Dr. Corson is optimistic the department can continue moving up in the rankings.

"Our goal is to make it into the top 20 within the next five years, and hopefully move beyond that in future years," he said. I think with the strength of our scientists and the collaborative program we've built, that's an achievable goal."

Increased funding from the NIH and other sources means IU vision researchers have more resources to achieve the department's most pressing goal, Dr. Corson said. "Everything we do is about furthering our understanding of eye disease and translating our discoveries into new therapies."

**"The collaborative research environment is one of the things that drew me to IU. At IU School of Medicine, people genuinely want to see each other succeed. It's very easy to go and talk to another faculty member or researcher to learn a new technique or to get help. I continue to value the welcoming aspect of the environment."**

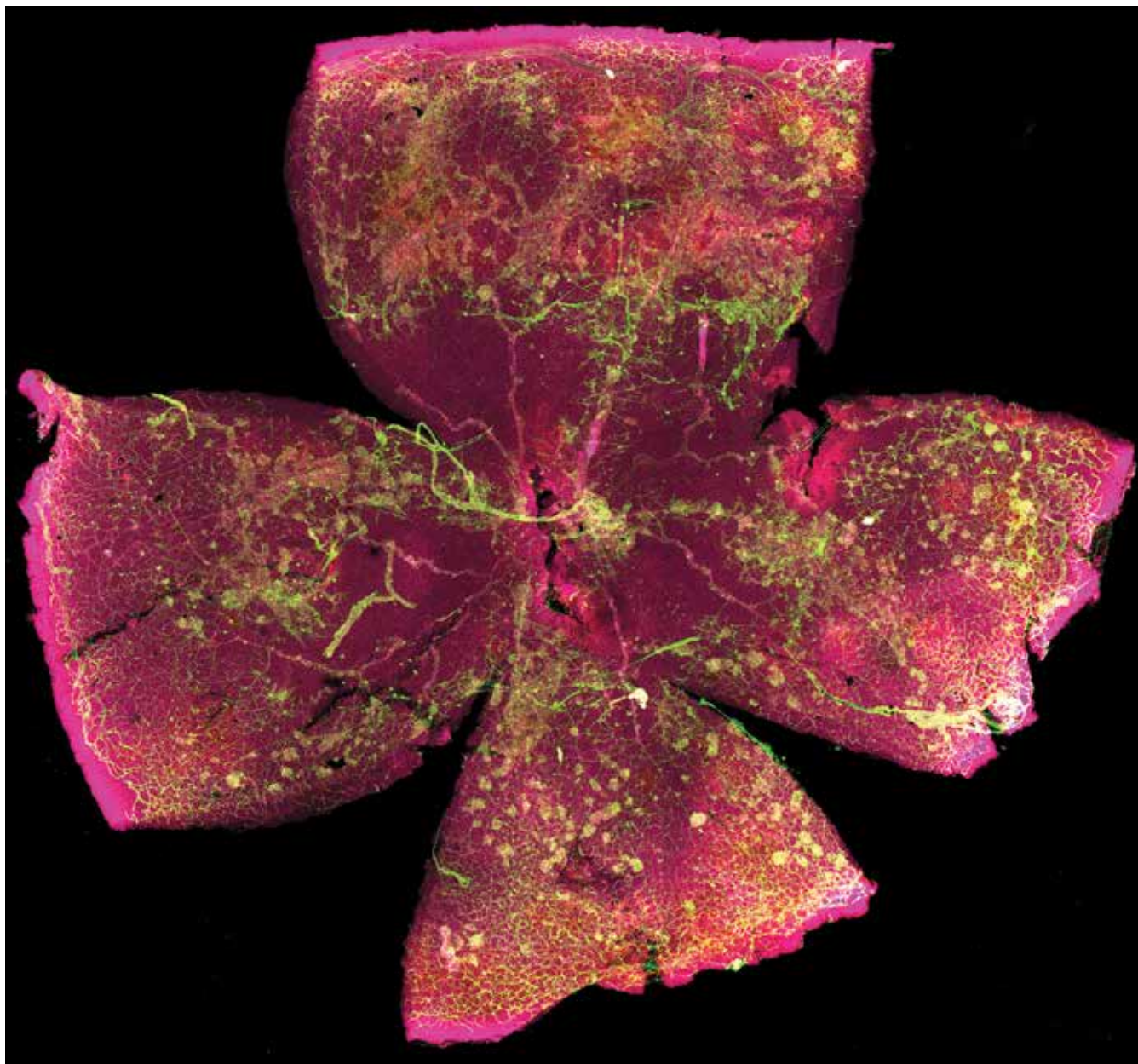
**Tim Corson, PhD**

*Merrill Grayson Senior Professor*

*Vice Chair for Basic and Translational Research*



## The science of retinopathy



IU ophthalmology researchers are studying the role that the Ref-1 protein plays in diabetic retinopathy and retinopathy of prematurity. Ref-1 controls many factors involved in the abnormal blood vessel growth and inflammation that contribute to these blinding eye diseases. This image is a whole flatmount retina of a mouse model that is being used to study Ref-1 and its effects. In this image, Ref-1 is pink, and the blood vessels are green.

*(Image courtesy of Gabriella Hartman, third-year PhD candidate, Medical Neuroscience Graduate Program, and a researcher in the Corson Lab.)*



### Cohen fund enables researchers to explore new approaches to fight macular degeneration

Department of Ophthalmology researchers are expanding research and inquiry related to macular degeneration thanks to a \$750,000 gift from an Indianapolis couple. The Norman I. and Maxine Cohen Macular Degeneration Research Fund was established by the Cohen family.

During their lifetimes, Norman and Maxine Cohen benefited from care they received from IU School of Medicine faculty and had a deep appreciation for medical research. In addition to funds designated for macular degeneration research, the couple also contributed generously in support of research in cardiology, hematology and oncology. Through their generous bequest, the Cohens continued their commitment to funding ophthalmology research.

Any faculty member—basic scientist or clinician—with a primary or secondary appointment in ophthalmology is eligible to apply for pilot funding through the Cohen macular degeneration research fund. Grants are awarded through a rigorous grant application process, which includes an anonymous peer review component.

The first Cohen grants were awarded in 2021 to Jason Meyer, PhD, and Padmanabhan Pattabiraman, PhD.

“We established the grant program criteria to encourage people who perhaps aren’t thinking about macular degeneration as their focused area to explore some new topics in that direction,” said Tim Corson, PhD, Merrill Grayson Senior Professor and vice chair for basic and translational research. “That’s exactly what happened with Dr. Meyer and Dr. Pattabiraman. Both are primarily glaucoma researchers but took advantage of the grant program to explore macular degeneration projects, which is exactly what we had hoped for.”

This year, Yoshikazu Imanishi, PhD, a specialist in retinal research, is the recipient of a Cohen pilot grant.

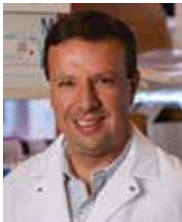
“This is an interesting project that uses some new tools for assessing photoreceptor degeneration in the context of the abnormal blood vessel growth that occurs in wet age-related macular degeneration,” said Dr. Corson, who is a co-investigator on the project. “All three projects funded thus far through the Cohen fund are a nice spectrum, demonstrating that scientists from all research directions within the department can apply their knowledge and skills to answer macular degeneration questions. It’s exactly the kind of outcome we’d like to see with a program like this, which aims to present novel ways to address age-related macular degeneration.”



**Age-related macular degeneration (AMD),** an eye disease that blurs central vision, is a leading cause of vision loss for older adults. Affecting nearly 11 million people in the United States alone, AMD is a common condition that significantly impacts quality of life. While AMD doesn’t cause total blindness, it can make it harder for those affected to read, drive, cook, engage in daily activities and recognize faces.

**Projects funded through the Norman I. and  
Maxine Cohen Macular Degeneration Research Fund**

**2021**



**Jason Meyer, PhD**

*A. Donald Merritt Investigator in Medical and Molecular Genetics, with adjunct appointments in the Department of Ophthalmology and the Stark Neurosciences Research Institute*

**Project summary from Dr. Meyer:**

"Microglia are the resident immune cells of the central nervous system, including the retina, and they play numerous roles in the maintenance of neuronal health. However, microglia can also contribute to degenerative disease states, and previous studies have shown that variants in microglial genes are associated with AMD. The Cohen pilot grant allows us to establish a powerful cellular model in a dish using human stem cells to directly observe and analyze interactions between microglia and photoreceptor cells, and how these interactions are perturbed in disease states such as those found in AMD."

To find new and better treatments for AMD, research underway in the Department of Ophthalmology includes the study of neovascularization (abnormal blood vessel growth in the eye), which is a key feature of the disease. Vision scientists in the department are also working to identify inflammatory markers responsible for the development of retinal diseases, including AMD.



**Padmanabhan Pattabiraman, PhD**  
*Assistant Professor of Ophthalmology;  
Assistant Professor of Biochemistry  
and Molecular Biology*

**Project summary from Dr. Pattabiraman:**

"A sign of AMD is formation of new blood vessels in the portion of the eye called the choroid, which lies under the light-sensitive retina. Our findings establish that vascular endothelial growth factor, which helps with new blood vessel formation, induces a family of proteins called sterol regulatory element binding proteins (SREBPs). We are targeting these SREBPs using an inhibitor called fatostatin to reduce new blood vessel formation. We are also identifying methods to reverse blood vessel formation in the retina to decrease AMD's onset."

**2022**



**Yoshikazu Imanishi, PhD, MSC, BSC**  
*Associate Professor of Ophthalmology;  
Letzter Scholar in Ophthalmology;  
Adjunct Associate Professor of  
Pharmacology and Toxicology*

**Project summary from Dr. Imanishi:**

AMD causes abnormal growth of blood vessels in the eye. These abnormal blood vessels cause destruction of the photoreceptor cells that we use to see light. We are studying how the health of photoreceptor cells is compromised in AMD. Our research study will enable further investigation of treatments to improve photoreceptor health."

## Researchers take aim at vision loss with nanotechnology

Researchers from the IU School of Medicine Department of Ophthalmology and the Purdue School of Engineering and Technology at IUPUI are developing a solution for those experiencing vision impairment, thanks to a new \$450,000 grant from the National Institutes of Health.

More than 250 million people worldwide have vision impairment through blindness or other conditions like macular degeneration. There is no cure for macular degeneration, and treatment options are limited. With this new, two-year grant, researchers plan to create an artificial device that can restore vision in these patients using innovative new technology.

"The retina is the sensor of light, and loss of photoreceptor cells is the major cause of blindness in children and adults," said Amir Hajrasouliha, MD, assistant professor of ophthalmology.

*"Our eye works like an old-fashioned camera.*

*Cells called photoreceptors sense different signals of light, whether in contrast or different colors, then they generate a signal and pass it through the optic nerve to pass to the brain," Dr. Hajrasouliha said.*

*"Different diseases can cause photoreceptor loss, leading to blindness."*

The novel neurosensory device will use light-to-electric conversion nanoparticles to interface directly with retinal ganglion (nerve) cells (RGCs) to restore vision in patients with loss of photoreceptors. This innovative technique has been tested in a laboratory setting over the last several years.

"The study is in its early stages, but the preliminary work has been promising and shows us that we can use this phenomenon to sense the light," Dr. Hajrasouliha said.

"The goal is to improve the signal generated by this artificial retina for best resolution."

"This device operates based on the principles of converting light to a voltage that can excite the nerves connecting the eye to the brain. The frequency that the nerves are excited mimics how the retinal cells work," said Afshin Izadian, PhD, associate professor of electrical engineering and technology. "We are trying to harness the physical properties of nanoparticles to make them work like retinal cells. This will allow pictures to form in the brain at high resolution, improving the eyesight of impaired eyes."

While many patients with vision impairment are experiencing macular degeneration, researchers hope this work can help those with other conditions, even if their vision impairment is caused by genetic issues.

"We are not just aiming for one gene mutation or one disease of a gene," Dr. Hajrasouliha said. "It's something that can apply to many categories of gene mutations and retinal degenerations."

While the project is still in the initial phase of the study, researchers look forward to further development and testing of the device to determine when and how it can be used in patients in a clinical setting.

"Our future discoveries in this field will help us evaluate clinical relevance and will open new horizons in treating low vision," Dr. Izadian said. "This project is an example of our longtime collaboration at the schools of engineering and medicine. Collaboration of researchers with diverse backgrounds has proven to be effective, and we hope that this collaboration continues in the future."





*Afshin Izadian, PhD, (left) from the Purdue School of Engineering and Technology, and Amir Hajrasouliha, MD, (right) from the IU School of Medicine Department of Ophthalmology are collaborating on vision research with a grant from the NIH.*



## **New Engineering in Medicine Institute to launch in Indianapolis**

The Engineering in Medicine Institute is a flagship effort combining the strengths of IU School of Medicine and the Purdue University College of Engineering. The goal of the new Engineering in Medicine Institute is to create an environment between IU School of Medicine and Purdue Engineering that fosters innovation and translation, as well as partnership with premier industries in Indiana.

## Department adds elite RPB Challenge Grant to research funding arsenal

In late 2021, the Department of Ophthalmology was awarded a prestigious Challenge Grant from Research to Prevent Blindness (RPB), one of the premier funding organizations for vision research in the United States. The grant provides \$75,000 of research funding per year for four years. A highly competitive program with a rigorous application and review process, RPB grants are among the most difficult to earn. To be considered, ophthalmology departments must have an existing base of high-quality National Eye Institute or other grants related to vision research.

"To receive an RPB grant is definitely a distinction people in our field recognize as the mark of a strong department," said Tim Corson, PhD, Merrill Grayson Senior Professor and vice chair for basic and translational research. "The number of RPB-supported ophthalmology departments around the country is small because the standards and requirements for receiving these grants are so high."

In addition to receiving funds to support new and existing research programs, earning a Challenge Grant unlocks opportunities to apply for other RPB grants, including unrestricted grants and career development awards for individual investigators. According to RPB's criteria, the IU School of Medicine Department of Ophthalmology will be eligible to apply for an unrestricted RPB grant four years after receiving the Challenge Grant.

### Supporting new vision research at IU

RPB Challenge Grant awardees have flexibility in how the funds are used. At IU, RPB funds will provide seed funding for a new pilot grant program that the department has already established. This program is designed to encourage new research projects within the department. The remaining RPB Challenge grant funds will be used to purchase research equipment and to support salaries for junior researchers who are working to acquire major external grants to fund their research.

"One of the real advantages of a program like this is that it gives us some additional funding to promote novel research projects," said Dr. Corson. "Our pilot grant program encourages our vision scientists to come up with new and interesting ideas for tackling some compelling questions in vision research."

In addition, Dr. Corson added, because it's not possible to receive large-scale funding for new ideas without some proof of concept, funding for pilot projects is needed.

### Projects funded through the RPB Challenge Grant

#### 2021



**Weiming Mao, PhD, MB, BS**  
*Jay C. and Lucile L. Kahn Scholar  
in Glaucoma Research and  
Education; Associate Professor of  
Ophthalmology; Associate Professor of  
Biochemistry and Molecular Biology*

#### Project summary from Dr. Mao:

"Steroids are frequently used to suppress inflammation in the eye; however, they may increase eye pressure and induce glaucoma. Surprisingly, even after minimally invasive glaucoma surgery, some patients still develop high eye pressure when they are treated with steroids. The high eye pressure is due to decreased ocular fluid drainage.

There are two parts of the eye tissue that control fluid drainage and eye pressure—the proximal (removed by glaucoma surgeries) and the distal tissue. The distal tissue consists of many tiny vessels that further drain the fluid. In contrast to the proximal tissue, we know little about the distal tissue.

Using a system created to mimic patient eye conditions, this study aims to find out distal tissue's role in steroid-induced eye pressure elevation. The findings will provide the mechanism and new therapeutic targets for understanding and treating glaucoma."



**Arupratan Das, PhD**

*Assistant Professor of Ophthalmology;  
Assistant Professor of Medical and  
Molecular Genetics*



**Padmanabhan Pattabiraman, PhD**

*Assistant Professor of Ophthalmology;  
Assistant Professor of Biochemistry  
and Molecular Biology*

**Project summary from Dr. Das and Dr. Pattabiraman:**

"Glaucoma is a devastating blinding disorder in which nerve cells, called retinal ganglion cells (RGCs), in the optic nerve die over time. Currently, there is no FDA-approved therapy to protect these nerve cells.

In this collaborative project, we have teamed up to test a drug for its ability to protect the optic nerve. For this drug to be effective, it needs to reach the eye after injection so that it can protect nerve cells in the eye. We found that the drug can reach the eye after injection into mice, which is a promising result.

We have used human stem cells to identify the drug and are testing its effectiveness in mice with optic nerve injury. These studies of an RGC-protective compound provide a roadmap for developing a therapy to maintain vision for glaucoma patients."

**2022**



**Amir Hajrasouliha, MD**

*Assistant Professor of Ophthalmology*

**Project summary from  
Dr. Hajrasouliha:**

"Gold nanoparticles (small particles measured in nanometers, or one billionth of a meter) have been shown to slow the growth of blood vessels and reduce inflammation. Based on these findings, they may have the potential to treat retinal diseases, including age-related macular degeneration. Even with this promise, there is still concern over the toxicity of nanoparticles. The Research to Prevent Blindness pilot grant will allow us to study the effect of gold nanoparticles on the function and structure of the retina. The results of this study will help us determine the safety of this innovative tool in future applications to eye disease."

**Padmanabhan Pattabiraman, PhD**

*Assistant Professor of Ophthalmology; Assistant  
Professor of Biochemistry and Molecular Biology*

**Project summary from Dr. Pattabiraman:**

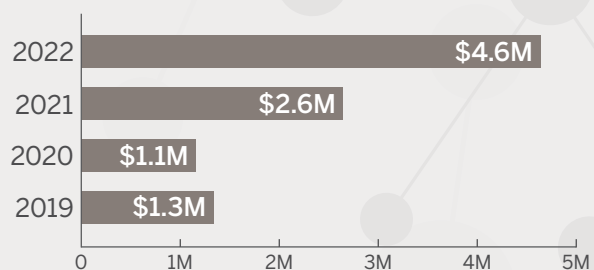
"Eye pressure balance is important in preventing primary open-angle glaucoma, a leading cause of blindness. Increased eye pressure can result in glaucoma, and lowering eye pressure is the only strategy to stop progression of the disease. Our recent study identified a family of proteins called sterol regulatory element binding proteins (SREBPs) that is activated when ocular pressure is high. SREBPs can bind to DNA in the nucleus and start the synthesis of lipid-making proteins/enzymes. This research will investigate if activation of SREBPs can increase ocular pressure. The findings will help in the discovery of new drugs to manage glaucoma."



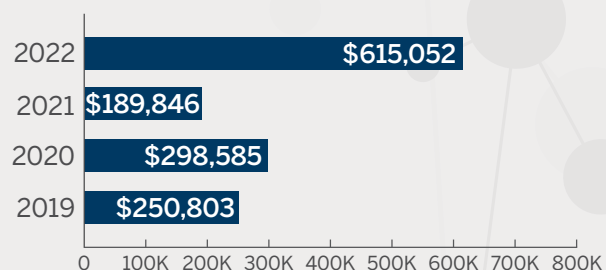


## STATISTICS

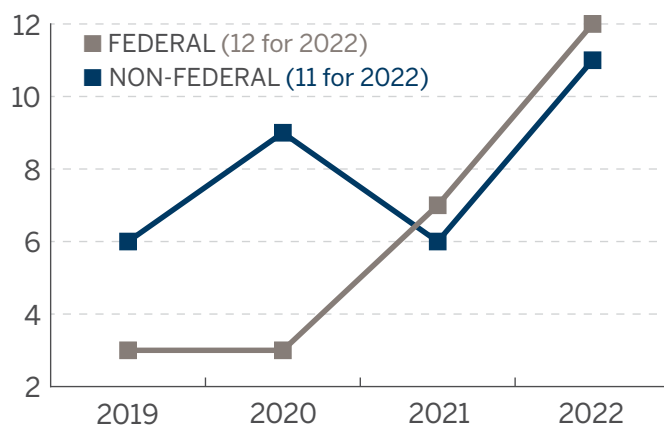
### FEDERAL FUNDING



### NON-FEDERAL FUNDING

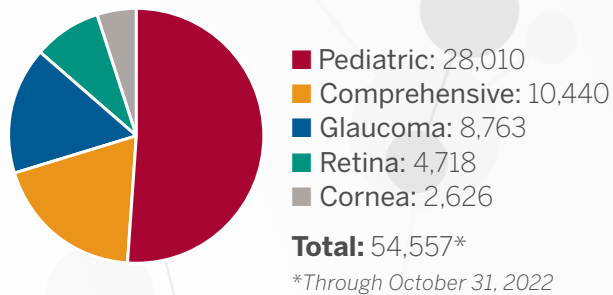


### ACTIVE GRANTS

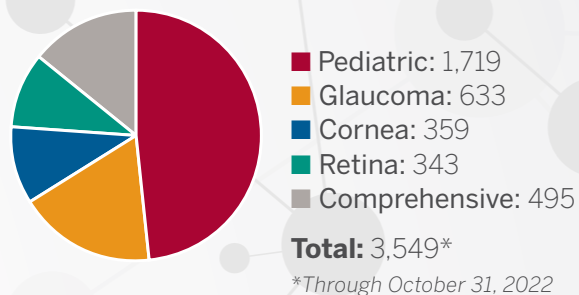


## PATIENT VOLUME

### 2022 PATIENT VISITS\*

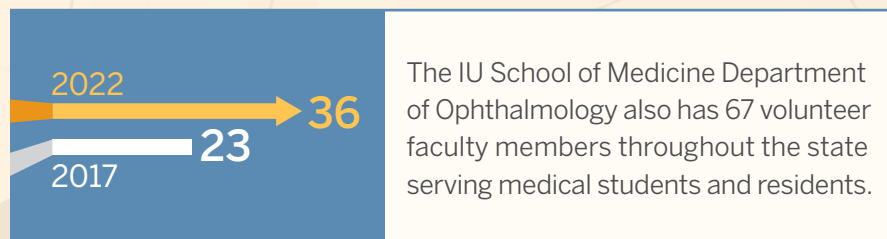


### 2022 SURGERIES\*



## FACULTY, TRAINEES AND CLINICAL STAFF

### FULL-TIME FACULTY



**20** full-time ophthalmologists  
**7** optometrists  
**9** vision scientists

### RESIDENTS



2021-22: **24**      2017-20: **18**

In 2022, five fellows are pursuing postgraduate ophthalmology training with the Department of Ophthalmology.

### PATIENT CARE

- Clinic locations
- Clinical staff members



## Faculty involvement, mentorship help attract medical students to ophthalmology

The future of vision care depends on clinical advancements, research innovation and skilled ophthalmologists to lead patient care. To help ensure a strong pipeline of physicians trained to deliver expert eye care in the future, the Department of Ophthalmology is working to foster mentoring relationships for medical students considering a career in ophthalmology.

Dr. Schroeder, who practices in both Indianapolis and West Lafayette, Indiana, leads the department's effort to connect medical students studying at IU School of Medicine's nine campuses with local ophthalmologists for job shadowing experiences and mentoring. These mentoring relationships are often assimilated with the school's formal Mentoring and Advising Program (MAP).

**With more than 1,400 students, IU School of Medicine is one of the few medical schools nationwide to offer statewide medical education.**

MAP helps medical students explore careers and clinical specialties by providing access to volunteer and adjunct faculty advisors and career mentors.

"Ophthalmology is a specialty that requires early exposure, as it often exists outside the traditional hospital system," said Richard Schroeder, MD, assistant professor of clinical ophthalmology. "Early job shadowing experiences can help medical students gain a better understanding of the field and help them realize it's a specialty they are interested in pursuing."

In addition to helping facilitate mentoring relationships at the regional campuses, Dr. Schroeder is a faculty mentor himself. Third-year medical student Sophia Bertot, who spent her first two years of medical school at IU School of Medicine-West Lafayette before continuing her study in Indianapolis, has shadowed Dr. Schroeder in the clinic and the operating room for more than a year.

*"Dr. Schroeder has helped me develop my skills and prepare for my ophthalmology rotations and future residency application," Bertot said. "From examining patients' eyes under the slit lamp and scrubbing in to observe surgeries, I've grown so much since I started working with him and am very grateful he was willing to be my mentor."*



Richard Schroeder, MD, has mentored third-year medical student Sophia Bertot for more than a year. Bertot spent her first two years of medical school in West Lafayette, where Dr. Schroeder practices.

### A real-world view of ophthalmology



**Niko  
Kalafatis, MD**

While attending IU School of Medicine-South Bend, Niko Kalafatis, MD, had similar experiences with ophthalmologist Steve Gerber, MD, who has practiced in South Bend for 30 years.

“When I shadowed with Dr. Gerber as a medical student,

I was able to see every aspect of ophthalmology—clinic visits, surgery, the private practice side of things and education,” said Dr. Kalafatis, who is now a first-year ophthalmology resident at IU School of Medicine. “With Dr. Gerber, who sees many pediatric patients, and his partners—a cornea specialist and a cataract surgeon—I was able to observe and benefit from a lot of varied experiences.”

An adjunct faculty member with IU School of Medicine for more than 11 years, Dr. Gerber is involved in the instruction of family practice residents in South Bend. For medical students, he presents ophthalmology lectures during which he shares information about the specialty and the benefits of a career in ophthalmology.



**Steve  
Gerber, MD**

*“Medical students owe it to themselves to take a good look at specialties and figure out what they want to do and what they like. Ophthalmology is a great field, and I always tell students to investigate it, if they are at all interested,” Dr. Gerber said.*

Barbara Schroeder, MD, owns an ophthalmology practice in Fort Wayne, Indiana, and has been practicing for more than 30 years. Also an adjunct faculty member with IU School of Medicine, Dr. Schroeder directs the school's Fort Wayne ophthalmology surgery rotation and the elective for fourth-year medical students.

Serving as a mentor for students for the past 10 years, Dr. Schroeder said she's able to provide students a glimpse of what private practice is like.

“Beyond the clinical education that students get from shadowing in a community-based practice, I think it's valuable for them to see what a career looks like in private practice,” Dr. Schroeder said. “They're able to see the issues that are inherent in private practice—employer and financial concerns, staffing and logistical issues. As a community practitioner, you wear a lot of hats and seeing all of that can be very beneficial.”



**Barbara  
Schroeder, MD**



*IU School of Medicine-South Bend is one of the school's nine campuses for medical student instruction.*

*(continued on page 20)*



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## Opportunities for statewide mentoring

The student mentorships in West Lafayette, South Bend and Fort Wayne are examples of what the Department of Ophthalmology and regional medical school leaders are committed to supporting on the regional campuses. The statewide infrastructure for teaching and mentorship is growing; each campus now has a regional director of ophthalmology to help promote these relationships. The goal, Dr. Richard Schroeder said, is to recruit at least four or five adjunct faculty in each region who are willing to host students in their clinics and operating rooms.

“We envision building a statewide program that’s a win-win for everyone—medical students and the ophthalmologists who mentor them,” said Dr. Richard Schroeder. “The experiences that Sophia and Niko have had—we’d like for all students who have an interest in ophthalmology to experience similar opportunities.”

Of the win-win benefits of mentorship, Drs. Gerber and Barbara Schroeder said they enjoy helping students progress in their medical careers and gain mutual benefit from serving as mentors. “I love the students’ enthusiasm; it reminds me of why I do what I do,” Dr. Gerber said. “It’s fun to work with enthusiastic young people who are so interested in learning.”

It’s also a way, Dr. Barbara Schroeder added, of reinforcing that even after years of professional practice, there is always more to learn from a mentor’s perspective.

*“When the students come in, they ask such great questions, and being involved with them reminds me of how lucky I am to be doing the kind of work that I do,” Dr. Barbara Schroeder said.*



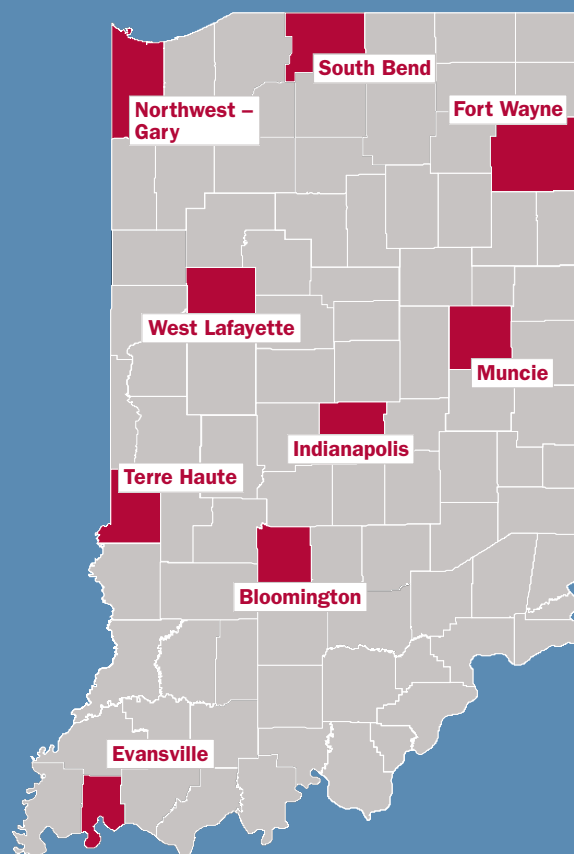
Through job shadowing experiences with Dr. Schroeder in the clinic and operating room, Sophia Bertot has gained valuable insight and clinical skills training during medical school.

## Investing in Indiana health through statewide medical education

IU School of Medicine is one of the few medical schools in the nation to offer statewide medical education. In fact, the school is a pioneer in the use of a multi-campus system to educate medical students. Statewide medical education increases the likelihood medical school graduates will put down roots in these communities and begin practicing and serving patients there.

The medical school is committed to investing in its campuses to update facilities, increase student services and programs, provide clerkship opportunities outside of Indianapolis, and work in partnership with local hospitals to add residency training in these regions.

In addition, a unique Scholarly Concentrations Program provides medical students optional experiences that complement the core medical student curriculum. Scholarly concentrations empower students to delve into topics of personal interest such as urban medicine and health care disparities, business of medicine, public health, quality and innovation in health care, and more.

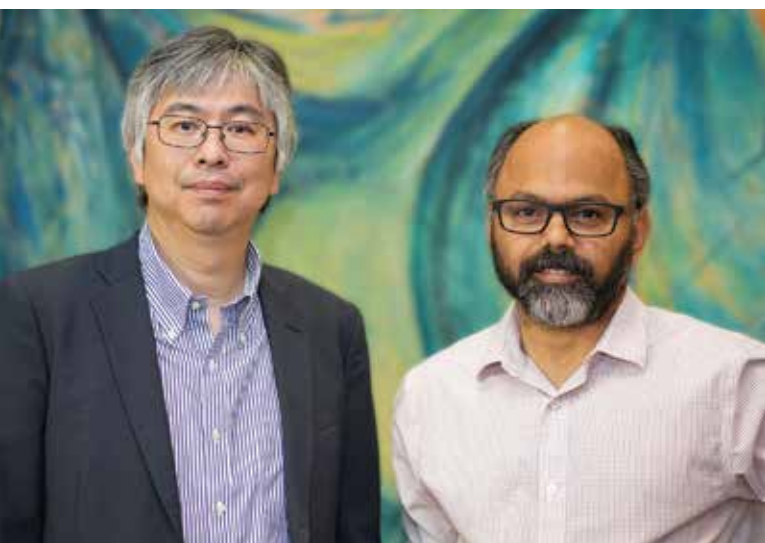


**INDIANA UNIVERSITY**  
SCHOOL OF MEDICINE



## Graduate researchers to benefit from new vision science course

Faculty in the IU School of Medicine Department of Ophthalmology have developed a unique vision science course designed to augment the training of graduate students and postdoctoral fellows working in research labs on the IUPUI campus. A one-of-a-kind offering at Indiana University, “Biology of the Visual System,” is an elective course focused on the biochemical, molecular and cell biological basis of vision.



Yoshikazu Imanishi, PhD, and Padmanabhan Pattabiraman, PhD, have developed a new visual system course for graduate researchers.

The course, which launches in January, is targeted to graduate students joining the research labs at the Glick Eye Institute and other labs engaged in vision science research at IUPUI. The course also may appeal to students interested in other sensory systems, such as researchers in otolaryngology (ear, nose and throat) and hearing sciences, and to neuroscience students with a desire to understand the basics of how neurons work. In addition, pharmacology and toxicology graduate students will benefit from the course's discussion of how eye disease therapeutics are developed.

Course Director Yoshikazu Imanishi, PhD, MSC, BSC, associate professor of ophthalmology, said the course was designed so that students will apply what they learn to their work in the research labs and their graduate studies.

“To create the course, we started thinking about what students may want to learn or need to learn to have systematic knowledge of the ocular system,” Dr. Imanishi said.

*“Students who join labs do very specific things—where it’s more about how a unique aspect of the visual system works—but if they know how different parts of the eye are interconnected, they can learn more about the unique system they are working on,” Dr. Imanishi added.*

Gabriella Hartman, a third-year PhD student in the Medical Neuroscience Graduate Program at the IU Stark Neurosciences Research Institute, is planning to enroll in the course after learning about it from her research mentor, Professor of Ophthalmology Tim Corson, PhD.

*“Since my research focuses on retinal neovascular eye diseases, including diabetic retinopathy and retinopathy of prematurity, I think this course*



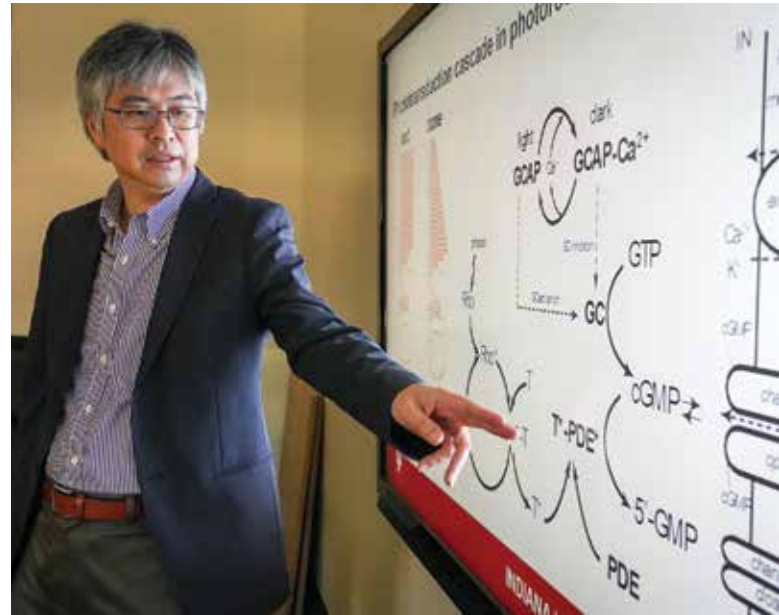
*will give me a great overview of vision science to supplement my research,” Hartman said.*

### Curriculum to draw on faculty expertise

Course topics are based heavily on the research strengths of the ophthalmology faculty, which include research related to macular degeneration and other retinal disorders, glaucoma, and genetic conditions that cause blindness and other diseases. The course also will delve into the eye's anatomic structure, photoreceptors, neural processing in the retina, visual processing in the brain, and the structure and function of the cornea and lens. Ocular pharmacology, advances in ocular stem cell-based therapy and retina prosthetics also will be covered. Ten ophthalmology faculty members will present course lectures related to their individual areas of expertise.

"What is most beneficial about this course is that we have plenty of basic research scientists in our department who are doing cutting-edge research," said Padmanabhan Pattabiraman, PhD, assistant professor of ophthalmology. "One of the aims is to let students learn what kind of new and emerging technologies are used to understand the visual system, so we will cover those topics for students to learn how the system is dissected and studied."

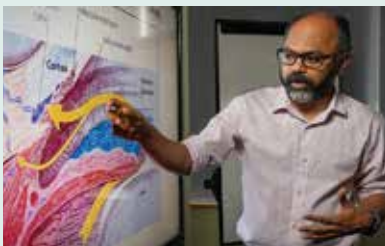
Second-year PhD student Nicole Bodi, who works in Dr. Tasneem Sharma's ophthalmology lab investigating the relationships between spaceflight environmental stressors and vision changes, plans to take the course to increase her understanding of the eye.



Dr. Imanishi and other Department of Ophthalmology faculty members will teach the new course.

"Information from this course will be especially helpful at vision conferences and will give me a better background on work presented by basic and translational vision research seminar speakers," Bodi said.

Dr. Pattabiraman believes the course is a one-of-a-kind opportunity for graduate students to learn about vision science from leading experts in the field at IU School of Medicine.



*"There is no textbook that can bring all this together for students—attending this course is the best way to learn about the complete spectrum of the visual sciences," Dr. Pattabiraman said. "And because a course like this doesn't exist on our campus, students have something really new and different to look forward to."*



## Department to launch state's first ophthalmic technician training program

Qualified ophthalmic technicians are the lifeblood of successful ophthalmology practices. In Indiana and across the nation, however, ophthalmic technicians are becoming increasingly hard to find, as are reputable programs to train those interested in the field. The IU School of Medicine Department of Ophthalmology is poised to address the market shortages and provide high-quality training with the launch of its new Ophthalmic Technician Training Program.

Scheduled to begin in fall 2023, the department's technician training course will be the first program in Indiana dedicated to training ophthalmic technicians. Engaged in both didactic and hands-on learning, students will complete two full semesters and a summer session gaining experience in a variety of clinical settings and with both adult and pediatric patients. In addition to receiving 30 college credits, students completing the one-year, full-time certificate program will be prepared to sit for the exam to become a certified ophthalmic assistant (COA). Ophthalmic assistants are certified by the International Joint Commission on Allied Health Personnel in Ophthalmology (IJCAHPO).

*"Our aim is to encourage high school students—or those in the workforce who may be looking for something new—to consider a career in ophthalmology," said David Wallace, MD, MPH, chair, IU School of Medicine Department of Ophthalmology. "In addition, by offering this program, it's our intention to help meet the demand for skilled technicians to work in our clinics here at IU or in eye care practices around the state."*

### Program to offer unique benefits for learners

Mallory Mack, COA, ophthalmology department education coordinator, said there are many paths to becoming an ophthalmic assistant and earning certification. Many COAs begin in front office or clerical positions in ophthalmology practices and are "up trained" to perform clinical



**Mallory Mack, COA**

duties. The Department of Ophthalmology's program offers distinct advantages, not the least of which is the opportunity to learn from IU faculty in a variety of clinical environments. Students will spend time in the department's adult clinics at the Glick Eye Institute and Indiana University Health Methodist Hospital, as well as the pediatric clinic at Riley Hospital for Children.



*Emily Rance, COA, is one of the ophthalmic technicians who works in the patient clinic at the Glick Eye Institute.*

## Ophthalmic Technician Training Program at IU School of Medicine

- ▶ One-year, full-time certificate program
- ▶ Instructors: Clinical ophthalmology faculty
- ▶ 30 college credits upon program completion
- ▶ Both adult and pediatric clinical experience
- ▶ Preparation for taking the technician certification exam

Individuals age 18 and older with a high school diploma or GED will be eligible to apply for the program.

To learn more, email Mallory Mack, COA, Department of Ophthalmology, at [msenecal@iu.edu](mailto:msenecal@iu.edu).



*"Through our program, those interested in this field will gain valuable experience in both adult and pediatric ophthalmology, which may be harder to come by in other practice settings," Mack said.*

*"IU technician training program students will also have the opportunity to participate in lectures given throughout the year to ophthalmology residents, medical students and other learners."*

To promote enrollment for the first cohort next fall, the department will be contacting local high schools, networking with other organizations and attending job fairs in central Indiana.

"Graduates of this program will benefit from IU's reputation and the education offered by our department with preparation that will be attractive to ophthalmology practices in need of qualified technicians," Dr. Wallace said. "We're looking forward to offering students a unique, high-quality education that enables them to be successful in the profession."

## Faculty offer high school students a glimpse of careers in medical research

Learning the role and value of ophthalmology research proved to be an eye-opening experience for high school students participating in a health care careers fellowship program at Indianapolis' Crispus Attucks High School. Eight fellowship students spent two weeks in the research labs of ophthalmology faculty members Drs. Tasneem Sharma and Padmanabhan Pattabiraman, as part of a six-week summer rotation aimed at introducing the students to health care jobs.

Drs. Sharma and Pattabiraman were among the first IU academic researchers who volunteered to host students for the inaugural summer internship portion of the IU Health High School Fellowship at Crispus Attucks High School. A partnership between Indiana University Health and Indianapolis Public Schools, the fellowship supplements the high school's health sciences academy curriculum with career pathway programming and real-world learning opportunities.

"The fellowship is a robust learning program that provides students with experiences and exposure to the health care industry," said Andrea Russell, fellowship program manager and an associate with IU Health.

"The summer internships are an essential part of the students' experience in exploring different career opportunities." During the internship this past summer, the rising juniors observed and learned about various careers in health care, including those in patient care, research and administrative support. For the research portion of the internship, the fellowship's 23 students were divided among research labs in ophthalmology, neuroscience and musculoskeletal health on the IUPUI campus.

"The program helps to open students' minds to possibilities at an early age," said Dr. Sharma. "Being exposed to a whole slew of perspectives in the health profession provides them an opportunity to experience a diverse array of professional options. I think that's the really great thing about the fellowship."

In addition to observing the daily activity in the ophthalmology research labs, students learned about the eye and how vision research helps uncover new treatments for glaucoma and other eye diseases that result in vision loss or blindness. Drs. Sharma and



Students from Crispus Attucks High School in Indianapolis spent two weeks in vision research labs. Pictured left to right: Padmanabhan Pattabiraman, PhD, Avinash Soundararajan, PhD, Jalaya Harvey, Micah Baker, Nevaeh Ousley, Kamora Holifield, Alena Bibbs, Chandler Harris, Azaria Watkins and Tasneem Sharma, PhD.

Pattabiraman taught students the basics of research and offered hands-on opportunities to conduct laboratory experiments, including observing eye dissections.

For 16-year-old Chandler Harris, who spent two weeks in Dr. Sharma's lab, the eye dissection and being able to help conduct experiments were two of the most memorable parts of the internship.

In a note thanking Dr. Sharma for the experience, Chandler Harris wrote:

*"I enjoyed every day in this rotation. I really liked the fact it was interactive and there were a lot of hands-on learning experiences. I enjoyed pipetting the most, but I really loved seeing the eyes. Overall, the experience was amazing and very eye opening to me."*

Dr. Pattabiraman, who has hosted students from other high schools in his lab for the past seven years, said the fellowship students were eager and dedicated to learning about career options in health care.

"Our goal is really to kindle their curiosity," said Dr. Pattabiraman. "When the students came, they had a goal to explore opportunities and learn what life would be like doing research, and I believe they learned while they were here, what it means to do science in a lab."

Dr. Sharma, who attended the Crispus Attucks students' presentations following the conclusion of the summer internship, believes mentoring young people is mutually beneficial. "Students are so insightful, and they always ask questions you have not thought of, which can really make you think," she said. "In some ways, students bring as much to the table for me as I do for them."

Dr. Pattabiraman said it's rewarding to have a chance to introduce the importance of medical research to a new generation of young people.

"I enjoy doing this because students are the ones in the future who are going to bring change in the world—they are going to be the driving force."



Indiana University Health

### **IU Health High School Fellowship at Crispus Attucks High School**

Crispus Attucks High School, located near the IU Health academic health center, has a curriculum pathway in health sciences.

The purpose of the high school fellowship program is to help diverse students explore, gain exposure and build skills for employment in a diverse range of health care careers.

#### **Facts about the fellowship**

- ▶ Students apply during their freshman year of high school and, if selected, participate in the program for the next three years.
- ▶ Fellowship students are selected through a rigorous application process that includes a personal essay, letters of recommendation and interviews.
- ▶ Additional in-school and external learning experiences, social enrichment and internships are offered through the program.
- ▶ Students have the opportunity to earn medical certifications, credits for postsecondary study and a job offer from IU Health upon graduation.
- ▶ The first fellowship class included 27 students; 42 students started the three-year program this fall.





## Drs. Helveston and Ellis paved the way for IU School of Medicine's longstanding leadership in pediatric ophthalmology

In the late 1960s and early 1970s, **Eugene M. Helveston, MD**, and **Forrest D. Ellis, MD**, recognized the clinical and intellectual potential of a new field of ophthalmology dedicated to the treatment of eye diseases in children. Dr. Helveston and Dr. Ellis were among the trailblazers who defined pediatric ophthalmology as a subspecialty, and over the course of four decades, built at Indiana University one of the leading pediatric ophthalmology divisions in the country.

Today, the division, led by David A. Plager, MD, is one of the nation's largest with 13 full-time faculty clinicians and two fellows. It is distinguished nationally for the treatment of pediatric cataracts, glaucoma, retinopathy of prematurity, strabismus and retinoblastoma. Thousands of children in Indiana and beyond have their eyesight because of the dedication and expertise of the pediatric ophthalmologists in the division built by Drs. Helveston and Ellis.

### Eugene M. Helveston, MD



The opportunity to treat strabismus—or eye misalignment—in children was one of the things that attracted Dr. Eugene Helveston to pediatric ophthalmology. During his career, he became one of the nation's foremost experts in strabismus.

When he founded the pediatric ophthalmology division at IU School of Medicine, he was eager to begin treating both children and adults with strabismus. Those patients would come, but the first patient he ever saw at IU had a different and much more serious condition.

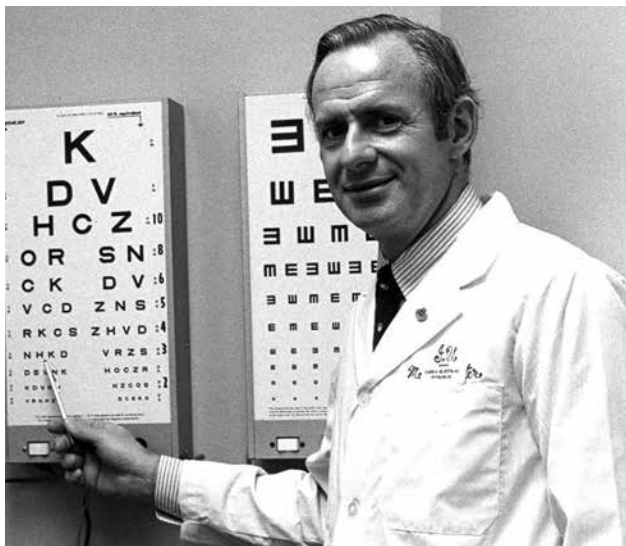
"I remember the day, and the patient was a young boy about 5 or 6 with bilateral eye cancer—a large retinoblastoma tumor—and I had never treated one," Dr. Helveston recalled.

A rare but aggressive cancer, retinoblastoma can be fatal. Even with the limited options for treatment at the time, Dr. Helveston successfully treated the boy, saving both his life and one of his eyes. Within months, referrals to IU for retinoblastoma increased and with continued success in outcomes for patients, the division gained

a reputation, which still exists today, for expertise in managing complex pediatric eye diseases.

The clinical successes in the division's early years were a direct result of Dr. Helveston's drive, commitment and specialized training. After graduating with both a bachelor's degree and a medical degree from the University of Michigan, he completed a rotating internship at St. Joseph Mercy Hospital in Ann Arbor. Joining the ophthalmology residency program at IU School of Medicine in 1961, his training was interrupted for two years of service in the U.S. Army Medical Corps.

Following completion of the IU residency, Dr. Helveston was selected for the prestigious Heed ophthalmology fellowship at the Wilmer Eye Institute at John Hopkins. Calling the fellowship an experience that "changed my life," Dr. Helveston was the first fellow from Wilmer to also train regularly with Marshall M. Parks, MD. Dr. Parks, a pediatric ophthalmologist in Washington, D.C., co-founded the nation's first pediatric ophthalmology fellowship program. For Dr. Helveston, those years at the Wilmer Eye Institute and in Washington illuminated the value of mentorship and helped define how he mentored others throughout his career.



*Dr. Eugene Helveston founded the pediatric ophthalmology division at IU School of Medicine in 1967.*

“The most important thing in my professional life were the mentors I had,” he said. “They were people I had relatively little in common with in the big picture, but what they did and what they stood for coincided with what I wanted to do and stand for.”

When Dr. Helveston returned to IU in 1967, he began a long career of paying that mentorship forward. He was well known among learners and faculty alike for his enthusiasm and commitment to teaching. He found clever ways of explaining complex concepts to residents and fellows, even comparing the functions of eye ligaments to things like a clothesline or a hammock.

Dr. Helveston’s influence on a generation of pediatric ophthalmologists cannot be overstated. Through the fellowship he established at IU School of Medicine, he trained many of the nation’s top practitioners in the field. The textbook on the practice of pediatric ophthalmology he wrote with his first fellow, Dr. Forrest D. Ellis, was widely used in the field for many years.

“The thing that probably gives me the most satisfaction is the fellowship program, and thanks to all of the people at IU who have contributed to it over the years, we’ve

now trained the second highest number of pediatric ophthalmology fellows in the world,” Dr. Helveston said. As a clinician and educator, Dr. Helveston has been honored by countless organizations, including the American Academy of Ophthalmology and the American Association for Pediatric Ophthalmology and Strabismus. He’s presented more than 20 named lectureships and authored or co-authored three ophthalmology textbooks and more than 300 scientific articles. During his career he participated in more than 25 medical missions with Orbis, the international flying eye hospital. He founded Orbis’ telemedicine consultation platform, Cybersight, and led that program for 14 years.

Born and raised in Detroit, Michigan, Dr. Helveston has always been loyal to Indiana University. There were offers from other institutions over the years, but what kept him at IU was a deep devotion to his patients and the program.

“I made a promise to myself to start and stop in one place because I wanted to have a practice that was continuous over my entire career,” he explained. “I was able to see patients over a 40-year span; when you treat children, you can do that.”

One of those patients, of course, was the young boy Dr. Helveston treated at the beginning of his career. Twenty years after surviving retinoblastoma, he invited Dr. Helveston to his wedding.

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*“The most unlikely cases can be the ones that you’re quietly proud of,” Dr. Helveston said. “You just feel privileged to have been given the chance to do it.”*

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## Forrest D. Ellis, MD



For a skilled physician who truly enjoyed treating children, pediatric ophthalmology was the perfect subspecialty for Dr. Forrest D. Ellis. As one of the nation's first pediatric ophthalmologists, Dr. Ellis treated hundreds of children during his

25 years with the IU School of Medicine Department of Ophthalmology. In the early 1970s, pediatric ophthalmology was a new field of clinical exploration that Dr. Ellis found both intellectually stimulating and personally rewarding.

"I wasn't really satisfied professionally until I got into pediatric ophthalmology," said Dr. Ellis, who spent nine years in general practice before enrolling in the ophthalmology residency program at IU School of Medicine in 1969.

*"Giving children straight eyes and restoring vision were very satisfying, Dr. Ellis added. I told someone once that the things that kept me awake at night were never the eye surgeries themselves, but the young patients for whom we didn't get the intended result."*

Fortunately, those instances were few and far between. Combining a gentle demeanor with extraordinary clinical skill and competence, Dr. Ellis was personable and relatable, characteristics that made him beloved by children and families.

Always concerned with a child's well-being, he carried his experience and training as a general family practice physician into his roles as a pediatric ophthalmologist

and teacher. At IU School of Medicine, he encouraged ophthalmology residents and fellows to consider the whole patient, not just their eyes, in planning treatment.

Even with a seemingly innate sense of how to care for people, Dr. Ellis never dreamed of becoming a physician. As a child growing up in the small town of Deputy in southeastern Indiana, he was encouraged by his teachers to go to college. He enrolled at IU Bloomington and as a freshman was paired with a dorm roommate who was in medical school.

"He explained a lot of what he was learning, and I became more and more interested in what he was doing," Dr. Ellis said. "At the start of my sophomore year, I started taking pre-med courses."

Dr. Ellis graduated from IU in 1954 and IU School of Medicine in 1957. After medical school, he entered the U.S. Air Force, completing a one-year internship in San Francisco, California, and then serving two more years as a flight surgeon at air bases in Texas and Florida. It was the exposure to ophthalmology during his military service that years later would prompt him to pursue IU School of Medicine's ophthalmology residency and the Pediatric Ophthalmology Fellowship directed at the time by Dr. Eugene Helveston.

Dr. Ellis served as the co-director of pediatric ophthalmology, alongside Dr. Helveston, from 1974 to 1997. He was engaged in the training of medical students, ophthalmology residents and more than 60 pediatric ophthalmology fellows. Dr. Ellis received a National Institutes of Health (NIH) grant for the study of retinopathy of prematurity and evaluated NIH grant applications through his service on multiple committees.

## The Helveston-Ellis Professorship in Pediatric Ophthalmology

Over the course of their careers, Drs. Eugene Helveston and Forrest D. Ellis saved the sight of thousands of patients, all while nurturing the next generations of pediatric ophthalmologists. Their incredible commitment to their callings and the work has inspired so many. Now, we have the opportunity to thank them for their service and honor their legacy by supporting the newly created **Helveston-Ellis Professorship in Pediatric Ophthalmology**. This professorship furthers their commitment to teaching by creating a faculty position bearing their names.



We hope you will consider making a gift to the Helveston-Ellis Professorship today to honor the incredible impact of Drs. Helveston and Ellis. Please visit [go.iu.edu/4Cia](https://go.iu.edu/4Cia) online or contact Caitie Deranek Stewart, senior director of development, at [cderanek@iu.edu](mailto:cderanek@iu.edu) or 317-278-2133 to discuss this initiative.

He published more than 100 peer-reviewed scientific articles, numerous book chapters and abstracts during his career. In organizational leadership roles, he is a past president of the American Association for Pediatric Ophthalmology and Strabismus and the American Eye Study Club, as well as statewide ophthalmology organizations.

After retiring from IU in 1997, Dr. Ellis practiced part-time at Midwest Eye Institute for five years. Earlier this year at his home in Zionsville, Indiana, Dr. Ellis received in the mail a copy of a memoir written by a patient with congenital glaucoma he had treated more than 30 years ago. In both the written text and a touching handwritten inscription, the patient thanked Dr. Ellis for saving his sight.

*"I've tried never to get full of myself thinking that I've done great things. I think you have to be very humble about giving yourself that kind of credit," Dr. Ellis said. "I do know that it takes perseverance, dedication and hard work—all of those things to be successful."*



## Drs. Helveston and Ellis: Valued mentors, inspiring leaders

Training dozens of residents and fellows during their years in the Department of Ophthalmology, Drs. Helveston and Ellis made a profound impact on the lives and careers of ophthalmologists and clinicians at IU and across the nation. Four Department of Ophthalmology faculty members share insights about working alongside them and what the two men contributed to the field of ophthalmology.

"As leaders and innovators in pediatric ophthalmology, Dr. Helveston and Dr. Ellis taught me not only the science of medicine, but also how to interact with patients and families in the best possible way. I learned so much from both of them that I can never repay, but I've tried to pay it forward by showing our trainees how to treat others in the clinic and in the operating room."



**David Wallace, MD, MPH**  
*Pediatric ophthalmologist;  
Chair, Department of Ophthalmology*

"Through their mentorship, Dr. Helveston and Dr. Ellis influenced not just one generation but several generations of future ophthalmologists, regardless of their field. We saw examples of how to be a physician, how to be a leader, how to be compassionate and how to practice and be at the top of your game. They both exemplified those traits."



**Louis Cantor, MD**  
*Jay C. and Lucile L. Kahn Professor  
Emeritus of Glaucoma Research and  
Education*

"Drs. Helveston and Ellis were my first meaningful encounters in the field of ophthalmology. They were my initial inspiration, nearly 40 years ago, and continue to be to this day. These icons emulate what every doctor should strive to be, not only as a physician, but as a person."



**Derek Sprunger, MD**  
*Pediatric ophthalmologist;  
Professor of Clinical Ophthalmology*

"Dr. Helveston was my fellowship mentor in 1997 and 1998. During that time, he introduced telemedicine to ophthalmology when he created Cybersight, now a part of Orbis International. He was also the first pediatric ophthalmologist for Orbis. As such, he has had tremendous impact on ophthalmology training around the world. Cybersight initially had about 10 users. It now has almost 80,000 users in almost every country in the world. The impact of this is staggering."



**Daniel Neely, MD**  
*Pediatric ophthalmologist;  
Professor of Ophthalmology*

## IU School of Medicine Department of Ophthalmology: A leader in pediatric eye care



With a primary clinical practice at Riley Children's Health, the IU School of Medicine pediatric ophthalmology division is the only faculty physician group in Indiana—and one of the few in the Midwest—to treat complex pediatric eye diseases and conditions. IU School of Medicine pediatric ophthalmologists are leaders in multidisciplinary programs, including:

- ▶ Retinoblastoma Program
- ▶ Ocular Genetics and Inherited Retinal Disease Program
- ▶ Retinopathy of Prematurity Program

- ▶ The IU School of Medicine Department of Ophthalmology has trained the second-largest number of fellowship-trained pediatric ophthalmologists currently in practice in the U.S.
- ▶ IU's pediatric ophthalmology program is one of 43 such programs approved by the Association of University Professors of Ophthalmology.



**Riley Children's Health**  
Indiana University Health

## New faculty committee leads efforts to promote diversity, equity, inclusion and justice

In nearly every facet of American life, issues related to diversity, equity, inclusion and justice (DEIJ) are part of the national conversation. As academic institutions take steps to incorporate DEIJ more fully into their culture, the IU School of Medicine Department of Ophthalmology is working to ensure DEIJ is promoted in education, research and clinical care. The goal of these efforts is to create a more culturally competent and inclusive work environment for faculty, staff and learners.



*Left to right: Drs. Corson, Boente, Sharma and Lind serve on the department's DEIJ committee.*

In spring 2022, the department convened a new DEIJ faculty committee, charged with implementing a comprehensive, three-year strategic plan for DEIJ. Directed by Tasneem Sharma, PhD, the committee includes three additional members—Charline Boente, MD, Tim Corson, PhD, and John Lind, MD. Developed over the past several months, the strategic plan supports the department's DEIJ mission and focuses on six priorities:

- 1 Reportable statistics**  
Identify resources and tools to ensure diverse representation from every clinical space, laboratory environment and staff unit.
- 2 Education**  
Implement DEIJ educational and skill-building programs to promote a safe nurturing environment and create awareness within the department so that members can prosper.
- 3 Inclusivity: Teaching, training and practice**  
Increase educational efforts within the department to decrease bias, promote inclusion, ensure cultural competence and support professional development.
- 4 Recruitment and retention**  
Increase the number of underrepresented members within the department to reflect state demographics.
- 5 Venue for voice**  
Designate methods and procedures for reporting and communicating DEIJ-related issues.
- 6 Accountability**  
Ensure the dissemination of our data and progress with fairness.

**"Many initiatives are already underway in support of these priorities," said Dr. Sharma. "Our researchers, clinicians and trainees are engaged in a wide variety of programs, projects and mentorship opportunities that relate to health disparities, cultural competency and inclusivity. We look forward to continuing to progress in our efforts to embrace these initiatives in our department in the coming years."**

## Perspectives from the DEIJ faculty committee



*"I am proud of the leadership demonstrated by the faculty that puts DEIJ at the forefront of decision-making. From focusing on recruitment of new faculty, staff and residents to events that are inclusive, I believe we are making tremendous strides in being leaders at IU School of Medicine."*

**John Lind, MD**

Associate Professor of Ophthalmology

Dr. Lind serves as the Department of Ophthalmology's champion in the Minority Ophthalmology Mentoring Program, which is jointly sponsored by the American Academy of Ophthalmology and the Association of University Professors of Ophthalmology.



*"Discovery and innovation thrive when diverse viewpoints are brought to bear on research questions. One powerful way to obtain such diverse viewpoints is to engage a diverse population of researchers, at multiple levels and with multiple backgrounds."*

**Tim Corson, PhD**

Merrill Grayson Senior Professor

Vice Chair for Basic and Translational Research, Department of Ophthalmology



*"Training our residents to care for patients with excellence in both technical and cultural competence is our ultimate goal. The cultural competency education our DEIJ committee is planning for our entire department, including faculty, trainees and staff, will give us an opportunity to learn together and support a cultural shift in our department. In improving cultural competency, we're able to provide better patient care."*

**Charline Boente, MD, MS**

Assistant Professor of Clinical Ophthalmology

Residency Director, Department of Ophthalmology



*"By having a departmental committee specifically focused on DEIJ, we are able to streamline initiatives, create opportunities to define specific outcome measures and ensure that issues and DEIJ-related strategic planning are truly developed within our department."*

**Tasneem Sharma, PhD**

Assistant Professor of Ophthalmology

Chair, DEIJ Faculty Committee, Department of Ophthalmology

Dr. Sharma is also the department's director of diversity, equity, inclusion and justice.

(continued on page 36)



(continued from page 35)

### Department of Ophthalmology **Diversity, Equity, Inclusion and Justice Mission Statement**

The Department of Ophthalmology at Indiana University School of Medicine is committed to the representation of all members of our departmental community. We strive to ensure that diversity in all forms is reflected in our daily activities and environment. We aim to drive equity within our department to foster a growth mindset and increase awareness of these issues. We envision an atmosphere that promotes inclusion of our community members. Our commitment to our community is to implement justice in all aspects of our culture.



**INDIANA UNIVERSITY**  
SCHOOL OF MEDICINE

### IU School of Medicine: Committed to Diversity, Equity, Inclusion and Justice

IU School of Medicine is committed to establishing an organizational culture in which differences—including race, ethnicity, gender, age, sexual orientation and other physical abilities and qualities—are present and highly valued.

#### **Representational diversity**

IU School of Medicine recruits talented trainees, faculty and staff from various backgrounds with focused efforts toward identified diversity categories.

#### **Inclusive environment**

IU School of Medicine is dedicated to creating an environment that fosters inclusion throughout the organization.

#### **Cultural competence**

Culturally competent, patient-centered care is the foundation of providing excellent health care, eliminating health disparities and contributing to innovative breakthroughs in science.



## Underrepresented in Medicine Visiting Elective Program

### Medical student Catherine Anderson-Quiñones participates in summer elective

In July, the Department of Ophthalmology hosted a medical student as part of the IU School of Medicine Underrepresented in Medicine (URiM) Visiting Elective Program. The program supports qualified third- and fourth-year medical students who are from underrepresented backgrounds in medicine and attend a U.S. medical school. The URiM visiting elective aims to increase awareness of opportunities in academic medicine and encourage students from diverse backgrounds to apply to IU School of Medicine residency programs.

**Catherine Anderson-Quiñones**, a fourth-year medical student at the University of Tennessee Health Science Center College, spent four weeks with ophthalmology faculty and residents on the IUPUI campus. She recently shared details about her experience and how it has influenced her career plans.



#### Why were you interested in participating in the URiM elective program with IU Ophthalmology?

Indianapolis is where my mother grew up after leaving Cuba with her family at the age of eight. I was born in Indianapolis and completed my undergraduate degree at DePauw. As a Latina, I am interested in serving my community during and after residency. IU serves a growing Hispanic population, and I greatly appreciate that the university is actively supporting diversity in medical education by providing support for URiM students. Additionally, I was able to learn about research funding that would be available to me as a resident for health disparities research.

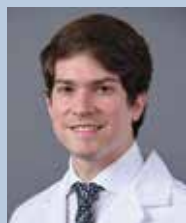
#### How was the program beneficial to you?

Not only did I get a close look at IU's culture, I was able to work on refining my ophthalmic examination skills. I was also able to see the facilities and research opportunities firsthand.

#### How do you believe attending the program will help you in the future?

Getting to know IU School of Medicine's residents and faculty members gave me an opportunity to see how I would fit into the program as a potential resident. The relationships I formed and the mentorship I received from the faculty will be something I will take with me into the next phase of my career.

### Ophthalmology resident earns iDREAM scholarship



First-year resident **Fernando Pellerano Sosa, MD**, was selected to participate in IU School of Medicine's iDREAM (Incentivizing Diverse Recruitment for Equity in

Academic Medicine) Resident Scholar program. iDREAM aims to enhance diversity among physicians to better reflect the diversity of the population they serve.

Dr. Sosa will use the \$2,500 award to support research on treatments for endophthalmitis, an infection of the tissue or fluids inside the eye.

"Applying for iDREAM was a great opportunity to gain a research grant to fund one of my research projects," said Dr. Sosa, who was born and raised in the Dominican Republic. "This project will shape the beginning of my career in clinical research in the retina field."

## Advisory board supports Glick Eye Institute's mission

Through engagement and advocacy, the Department of Ophthalmology Advisory Board provides insight and perspectives on research, clinical care and philanthropy. Launched in January 2021, the advisory board meets twice yearly to receive departmental updates and discuss topics of interest to the mission of the Glick Eye Institute. Board members include patients, practicing and retired ophthalmologists, members of the community, and IU School of Medicine ophthalmology department faculty.

"It's extremely valuable to get the board's perspective of our work from the outside looking in," said David Wallace, MD, MPH, chair of the Department of Ophthalmology. "With their knowledge, ideas and personal experiences, the board members help guide our efforts and provide an external viewpoint on how we can meet the needs of the community through research and patient care."

Louis Cantor, MD, Jay C. and Lucile L. Kahn Professor Emeritus of Glaucoma Research and Education, is one of the advisory board members, along with Dr. Wallace, representing the Department of Ophthalmology. Dr. Cantor, who served as chair of the department when the Glick Eye Institute opened in 2011, believes the advisory board supports the fundamental aspects of what it means to be an institute.



*Leslie Proksa (left) and Jane Carter (right) are members of the department's advisory board. Leslie is a patient of Dr. Louis Cantor (center), who is a faculty representative on the board. Jane is also a longtime patient of IU Ophthalmology.*

"We model at the Glick Eye Institute what many consider to be the definition of an institute—a broad group of committed people with similar goals who come together to take action for a common purpose," Dr. Cantor said. "This not only includes the faculty, staff and learners within our walls, but also stakeholders in the community. For me, that's where the role of the advisory board comes into focus in bringing the various constituencies together to help sustain our progress, prioritize activities and ensure we're making broad impact in Indiana and beyond."

Three board members—Jane Carter, Ben Grande and Leslie Proksa—shared why they serve on the department's advisory board.

### IU Department of Ophthalmology Advisory Board

Louis B. Cantor, MD

Jane P. Carter

Benjamin A. Grande

Norman A. Kempler, MD, FACS

Alan E. Leighton

Francis W. Price, MD

Leslie A. Proksa

David K. Wallace, MD, MPH

Arthur W. Willis, Jr., MD

### Jane Carter

Before she started visiting the Glick Eye Institute for eye care, Jane Carter had never had a visual field test. By the time her glaucoma was diagnosed by IU ophthalmologists, she had already lost part of her vision.

"I wasn't seeing anything through the whole top half of my left eye; my right eye was compensating for it, and I didn't even know," said Jane, who in recent years has also developed age-related macular degeneration.

In addition to receiving excellent clinical care from IU ophthalmologists, Jane and her husband Larry, who also has glaucoma, have become interested in the vision research underway at the Glick Eye Institute aimed at finding new treatments for eye disease.

"Several years ago we established an endowment with IU School of Medicine to support research in the ophthalmology department," Jane said. "Related to those interests, I'm learning a lot from being on the advisory board. I've always been very confident in the care I've received at IU School of Medicine, and in viewing things differently as a patient, I hope I can contribute in that way."

### Ben Grande



Ben Grande has a professional and personal connection to the Department of Ophthalmology. A director with the Gene B. Glick Company and Glick Philanthropies, Ben is also the grandson of Gene and Marilyn Glick. In 2011, the Glicks donated \$30 million to Indiana University to support vision research, eye care and education.

"The investment in the Glick Eye Institute is the largest financial investment Glick Philanthropies has ever made. But more than that, it was the most meaningful gift that my grandparents ever gave," Ben said. "My grandmother was focused on eye research and eye health for more

than 30 years, so it was something that she was incredibly passionate about, and my grandfather as well." For Ben, serving on the advisory board is a way of staying connected to his grandparents' original vision.

"Knowing how important the gift was to my grandparents, it's rewarding to see everything the institute is accomplishing. I wanted to be involved with the board to help carry on that legacy."

### Leslie Proksa

Leslie Proksa became acquainted with Dr. Cantor and the Department of Ophthalmology 40 years ago when her mother, Dorothy Proksa, developed glaucoma. Until her death 10 years ago, Dorothy received care at the Glick Eye Institute, first for low-pressure glaucoma and later for macular degeneration. Knowing that glaucoma can be inherited, Leslie began seeing Dr. Cantor several years ago. While she shows no signs of the disease, she is interested in research that can help find a cure for glaucoma and the retinal diseases that had such a profound impact on her mother's life.

"My mom always supported vision research, and I've kept that torch going; it's very near and dear to my heart," said Leslie, a retired educator.

During her annual eye exams with Dr. Cantor, she always asks about the latest research and treatments for glaucoma. For Leslie, being involved with the ophthalmology advisory board is a chance to make an even bigger difference.

"I'm thrilled to be a part of this," she said. "It makes me feel like I'm contributing to a cause that I'm committed to, and that's very important to me."

*To learn more about the advisory board and community advocacy on behalf of the Glick Eye Institute, please contact Caitie Deranek Stewart at 317-278-2133 or [cderanek@iu.edu](mailto:cderanek@iu.edu).*



## Gratitude for IU ophthalmology training inspires philanthropy

Sustaining a thriving ophthalmology practice takes skill, dedication and drive. Norman Kempler, MD, demonstrated all three in the solo general ophthalmology practice he led for 40 years in Fort Wayne, Indiana.

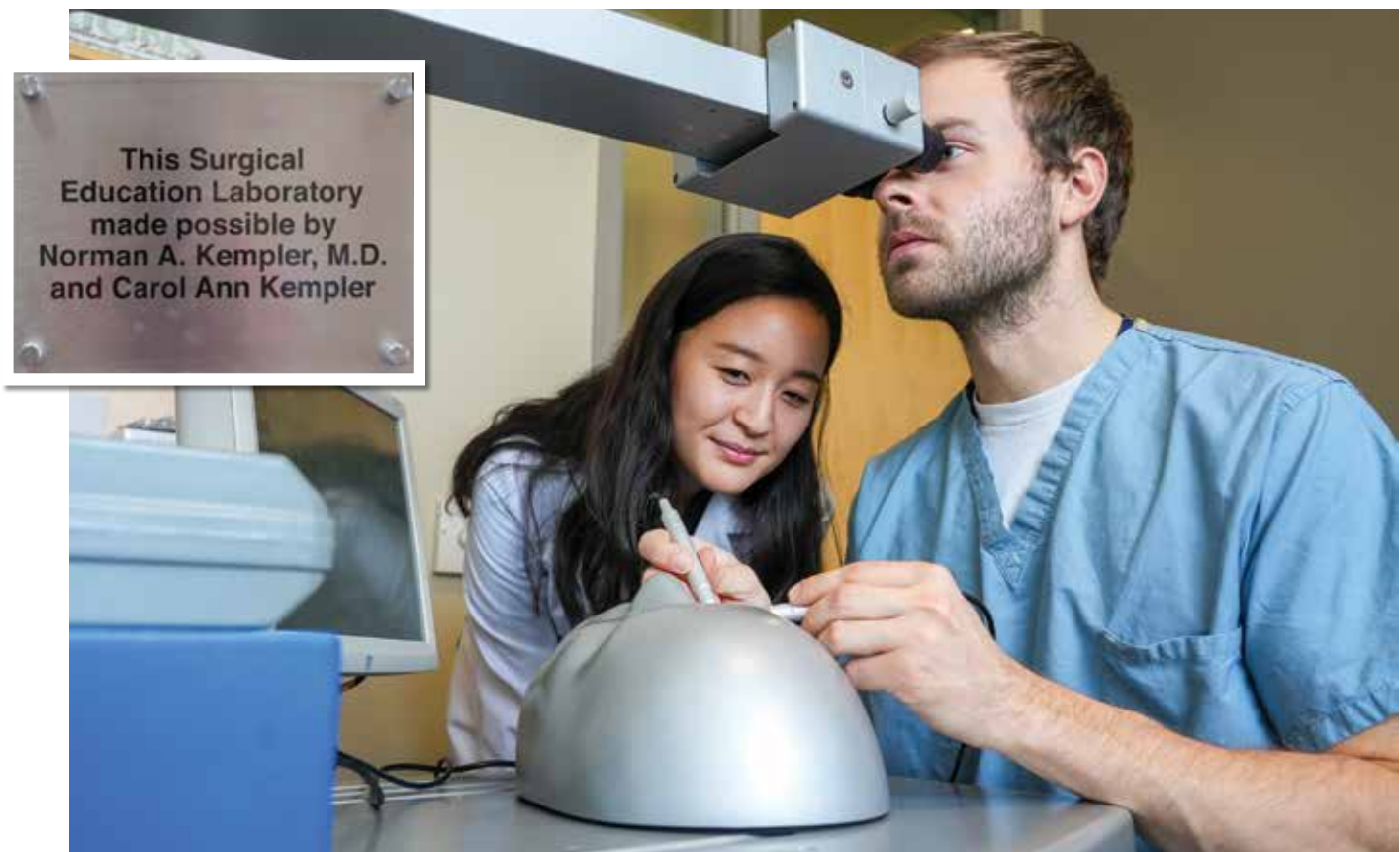
"I was always fascinated by the idea of vision and sight," said Dr. Kempler, a native of South Bend, Indiana, who graduated from IU School of Medicine in 1967. "I thought ophthalmology would be a good field of medicine to work in, and that interest was reinforced in medical school."

After graduating from IU School of Medicine, Dr. Kempler completed a one-year medical internship at Methodist Hospital in Indianapolis. Before joining the school's

ophthalmology residency program, he spent two years as a general medical officer in the U.S. Public Health Service. He was assigned to serve members of the Yankton Sioux tribe on the tribal Indian reservation in Wagner, South Dakota.

"It was difficult to see people in such an impoverished situation but also gratifying knowing that we were providing medical services that they really needed," Dr. Kempler recalled.

During his years with the public health service, Dr. Kempler also gained experience in ophthalmology.



Second-year residents Kathy Dong, MD, and Chandler Mitchell, MD, practice with the Eyesi Surgical Simulator. *INSET:* The simulator is part of an education laboratory funded by Dr. Norman Kempler and Carol Kempler.

"Ophthalmologists would often come to the reservation to do eye surgery or cataract surgery, and I would travel with them and assist with the surgeries," he said. "I did quite a bit of ophthalmic surgery before entering the residency program, which helped a lot."

The value of good training is something that Dr. Kempler and his wife Carol, who has a master's degree in mathematics, have never failed to recognize. For Dr. Kempler, exemplary training began during his early years at IU School of Medicine and continued through the ophthalmology residency program where he learned from skilled clinicians and educators in the department.

"The education I received was first class, and I have great memories of training with Drs. [Forrest D.] Ellis, [Eugene] Helveston and [Merrill] Grayson."

In gratitude for that training and to help ensure future ophthalmologists have the same educational advantages, Dr. and Mrs. Kempler made a gift to help fund a surgical simulation laboratory for the IU School of Medicine Department of Ophthalmology.

"I received good training from good people at IU that benefited me in positive ways during my career. I thought it was appropriate to give something back," Dr. Kempler said.

*"When I learned about the new surgical simulation technology that was coming along, I thought it would be a wonderful thing to add," Dr. Kempler said. "We've been quite happy to help get it set up for the department."*



*The Eyesi Surgical Simulator, manufactured by Haag-Streit, enables residents to sharpen the skills needed for cataract surgery.*

## The value of surgical simulation



**Mia Miller, MD**  
Fourth-year  
resident

"To prepare for cataract surgery, the Eyesi has been essential in teaching me the basics for becoming a good surgeon. The anti-tremor sessions really work. My hands didn't shake much during my early surgeries thanks to both the muscle memory of working on the Eyesi and the confidence it gave me.

The simulator has allowed me to meet many of my surgical milestones (improved outcomes, operative time and skills) earlier and more quickly. I believe I've become a better surgeon by using the Eyesi."

## Three new clinicians join the department

### Priya Joshi, OD



Born and raised in Melbourne, Florida, Priya Joshi, OD, earned her undergraduate degree in psychology from the University of Miami. She graduated with a doctorate in optometry from the University of Alabama at Birmingham School

of Optometry in 2015. She completed a residency in primary care and ocular disease at the W.G. Hefner Veterans Affairs Medical Center in Salisbury, North Carolina, in 2016. She worked in a private practice in Carrboro, North Carolina, for five years before joining the IU Department of Ophthalmology earlier this year.

"I am so grateful to have the opportunity to work in a setting that is challenging and diverse in the types of cases we encounter," said Dr. Joshi, who is currently treating both pediatric and adult patients. "I especially like having a wide array of specialists in such close proximity to collaborate on cases."

Dr. Joshi enjoys getting to know children and their parents and finds working in pediatric ophthalmology rewarding. "I love treating children; their vision is so critical to learning and development," Dr. Joshi said. "It's fulfilling to be a part of their growth."

### Tyler Knight, MD



Tyler Knight, MD, earned both a bachelor's degree and medical degree from Indiana University. Calling himself a "true Hoosier through and through," Dr. Knight grew up in Indianapolis. Following medical school, he completed his ophthalmology

training at Vanderbilt University. He returned to IU School of Medicine for a pediatric ophthalmology fellowship and was appointed to the faculty earlier this year.

"I tell my patients and their families that I have the best job in medicine," said Dr. Knight. "In the clinic I get to play with finger puppets and flashlights, play matching games and execute a complex set of skills to perform a complete eye examination on squirmy, cute, busy or downright upset kiddos. In the operating room I have the privilege of taking care of eye and vision problems that need correcting."

As an ophthalmologist and educator, Dr. Knight is passionate about emerging technology, connecting with patients and families, and participating in resident and medical student education.

### Kunal Suri, MD



Kunal Suri, MD, a native of Dalhousie, India, graduated from Indira Gandhi Medical College in 2006. For Dr. Suri, a career in ophthalmology offers the best of both worlds—the opportunity to foster long-term relationships with

patients and the chance to apply her surgical skills in the operating room. With the understanding that the eye is a window for investigating systemic disease processes, Dr. Suri also appreciates collaborating with IU School of Medicine colleagues in other medical disciplines to take the best care of her patients.

Drawn to an "invigorated energy" in the Department of Ophthalmology, Dr. Suri appreciates the department's commitment to faculty development.

"I found the Department of Ophthalmology to be a great fit for my career aspirations," Dr. Suri said. "It allows me the privilege of interacting with colleagues from different subspecialties in ophthalmology while honing my craft as a comprehensive ophthalmologist."

## Residency graduates highlight the benefits of training at IU School of Medicine

The Department of Ophthalmology residency program at IU School of Medicine was founded in 1908 and is a four-year program accredited by the Accreditation Council for Graduate Medical Education. With 24 residency positions, the program provides exceptional experience across the clinical and surgical subspecialties of ophthalmology. Six residents graduated from the program on June 30, 2022. Four graduates shared how the program helped prepare them for careers in ophthalmology.

### Ayesha Badar, MD



"With the diversity of pathology and the surgical training I received at IU, I feel very well prepared for practice. In addition, the residency program made me more interested in staying involved in an academic environment."

### Adrienne Ng, MD



"The IU residency program prepared me well for my career in ophthalmology. With the exceptional and diverse clinical and surgical training, IU helped me grow into a well-rounded and competent comprehensive ophthalmologist. When I think back on my time in the residency program, my wonderful experience with the faculty stands out the most. They are all excellent teachers, mentors and role models who care about us both professionally and personally."

### Emily Ross, MD



"IU Ophthalmology does a great job of allowing residents to develop more autonomy through our training and offers good surgical exposure so that we graduate with a well-rounded education. The program leadership

and resident clinical experiences are big assets. Program leaders are constantly working with residents to make the program better. The resident clinics help learners develop their exam and decision-making skills in a supervised environment so that after graduation we are used to managing complex patient conditions."

### Jing Sun, MD



"I believe IU's residency gives residents all the building blocks needed to have a great career in any subspecialty they choose. The biggest asset is how diverse the pathology is since the entire state of Indiana

refers into the IU ophthalmology clinical program. Having two resident clinics helps residents gain independence and confidence in themselves as clinicians. The most memorable part of the residency for me were the small moments with fellow residents where the relationship transitions from co-workers into friends."

**Katherine Chuang, MD**, and **Allison Fox, MD**, also graduated from the residency program in 2022.



*IU School of Medicine has the only ophthalmology residency program in Indiana. Since the program's inception, the Department of Ophthalmology has trained more than 500 residents and fellows.*



## Faculty highlights

**Victoria Miller, MD**, was named Professor of the Year by the ophthalmology residents.

**Devin Mackay, MD**, was honored as Lecturer of the Year, and **Saaquib Bakhsh, MD**, was named the Merrill Grayson Fellow of the Year.

**Amir Hajrasouliha, MD**, and **Yoshi Imanishi, PhD**, gave an Orbis Cybersight presentation that was attended by 272 participants from 78 countries. Cybersight provides online training and mentorship to eye health providers in developing countries.

**Tim Corson, PhD**, received a grant from the Reeves Foundation.

**John Lind, MD**, has been appointed glaucoma fellowship director. Dr. Lind also organized a glaucoma session that included **Weiming Mao, PhD**, **Padmanabhan Pattabiraman, PhD**, and **Tasneem Sharma, PhD**, at the Annual Borish Research Symposium at the IU School of Optometry.

**Rudy Yung, MD**, served as faculty advisor for the Ophthalmology Student Interest Group (OSIG). OSIG received two honors from the IUPUI CUBE Student Organization Center. The awards recognized OSIG's impact in the community.

**Jennifer Eikenberry, MD**, **Charline Boente, MD**, **Shaohui Liu, MD, PhD**, and **Louis Cantor, MD**, served as oral examiners for the American Board of Ophthalmology (ABO), and **Rudy Yung, MD**, wrote questions for the ABO's written qualifying exam.

**Arupratan Das, PhD**, was elected to represent IU School of Medicine on the IUPUI Faculty Council.

**Tasneem Sharma, PhD**, was selected for the Alliance for Eye and Vision Research's Emerging Vision Scientist Program. She traveled to Capitol Hill in Washington, D.C., to discuss her team's research and to advocate for vision research. Dr. Sharma was also elected to serve on the IU School of Medicine Faculty Steering Committee.

**Jennifer Eikenberry, MD**, **Denis Jusufbegovic, MD**, and **Elizabeth Martin, MD**, were honored with Indiana University Trustees Teaching Awards.

**Padmanabhan Pattabiraman, PhD**, was appointed to the Indiana BioMedical Gateway Program admissions committee and to the Medical Neuroscience Training and Advisory Committee.

**John Lind, MD**, **Rudy Yung, MD**, and **Jennifer Eikenberry, MD**, were honored with IU School of Medicine Department of Ophthalmology Physician Mentor Recognition of Service awards.

**Shaohui Lui, MD, PhD**, and **Gavin Roberts, MD**, were promoted to associate professor of clinical ophthalmology.

**Yoshi Imanishi, PhD**, was selected as a Showalter Scholar. Dr. Imanishi was also elected to serve on the IU School of Medicine Awards Committee.

The **Department of Ophthalmology** faculty hosted 81 vision scientists from the Midwest at the Heartland Vision Research Symposium. The event was organized by **Padmanabhan Pattabiraman, PhD**, from the Department of Ophthalmology and **Pete Kollbaum, OD, PhD**, from the IU School of Optometry.

## Plager named emeritus professor

In recognition of his service to Indiana University, David Plager, MD, was appointed Professor Emeritus of Ophthalmology earlier this year. Dr. Plager, director of the section of pediatric ophthalmology and adult strabismus, has been at IU School of Medicine for the past 40 years, except for one year of fellowship training in Washington, D.C. After fellowship, he returned to IU as assistant professor and rapidly rose through the ranks, achieving full professor status in 2002.

Dr. Plager has received lifetime achievement awards from the American Academy of Ophthalmology and the American Association for Pediatric Ophthalmology and Strabismus (AAPOS). He has given more than 250 national and international presentations and has been honored with more than 40 named lectureships or visiting professorships. Recently, he gave the Costenbader Lecture at the annual AAPOS meeting, which is widely considered to be the most prestigious lectureship in the field of pediatric ophthalmology.

Advancing clinical care, Dr. Plager has authored or co-authored more than 100 publications in peer-reviewed journals and 15 book chapters. He played a significant role in developing the Infant Aphakia Treatment Study, a multicenter randomized trial that has guided the treatment approach for infants with cataracts.



*David Plager, MD*

“Dr. Plager has transformed the way we think about clinical problems in pediatric ophthalmology,” said David Wallace, MD, MPH, ophthalmology department chair. “He has made a great impact on children and their families not only through his own work, but by training and inspiring leaders in our field around the world.”

**As a dedicated educator, Dr. Plager has trained and mentored more than 200 residents and fellows, many of whom have gone on to lead pediatric ophthalmology divisions at other top institutions.**

## FULL-TIME FACULTY DIRECTORY

**David Wallace, MD, MPH**

Chair, Department of Ophthalmology  
Marilyn K. Glick Professor  
*Pediatric Ophthalmology*

**Ashay Bhatwadekar, PhD**

Associate Professor  
*Research*

**Charline Boente, MD, MS**

Assistant Professor  
*Pediatric Ophthalmology*

**Louis Cantor, MD**

Jay C. and Lucile L. Kahn Professor Emeritus  
*Glaucoma*

**Tim Corson, PhD**

Merrill Grayson Senior Professor  
*Research*

**Arupratan Das, PhD**

Assistant Professor  
*Research*

**Dana Donaldson, OD**

Assistant Professor  
*Pediatric Optometry*

**Jennifer Eikenberry, MD**

Associate Professor  
*Comprehensive Ophthalmology*

**Amanda Gosch, OD**

Assistant Professor  
*Optometry*

**April Graves, OD**

Assistant Professor  
*Pediatric Optometry*

**Kathryn Haider, MD**

Associate Professor  
*Pediatric Ophthalmology*

**Amir Hajrasouliha, MD**

Assistant Professor  
*Retina and Vitreous*

**Sanae Imanishi, PhD, MSC**

Research Assistant Professor

**Yoshikazu Imanishi, PhD, MSC, BSC**

Lois Letzter Chair and Associate Professor  
*Research*

**April Jones, OD**

Assistant Professor  
*Pediatric Optometry*

**Priya Joshi, OD**

Assistant Professor  
*Pediatric and Adult Optometry*

**Denis Jusufbegovic, MD**

Assistant Professor  
*Retina and Vitreous*

**Tyler Knight, MD**

Assistant Professor  
*Pediatric Ophthalmology*

**Melissa Ko, MD**

Professor  
*Neuro-Ophthalmology*

**John Lind, MD**

Associate Professor  
*Glaucoma*

**Shaohui Liu, MD, PhD**

Associate Professor  
*Corneal and External Diseases*

**Qianyi Luo, PhD**

Research Assistant Professor

**Devin Mackay, MD**

Associate Professor  
*Neuro-Ophthalmology*

**Weiming Mao, PhD, MB, BS**

Jay C. and Lucile L. Kahn Chair and  
Associate Professor  
*Research*

**Elizabeth Martin, MD**

Assistant Professor  
*Glaucoma*

**Victoria Miller, MD**

Assistant Professor  
*Comprehensive Ophthalmology and Uveitis*

**Daniel Neely, MD**

Professor  
*Pediatric Ophthalmology*

**Padmanabhan Pattabiraman, PhD**

Assistant Professor  
*Research*

**Melanie Pickett, OD**

Assistant Professor  
*Optometry*

**David Plager, MD**

Professor Emeritus  
*Pediatric Ophthalmology*

**Samantha Polster, OD**

Assistant Professor  
*Optometry*

**Gavin Roberts, MD**

Associate Professor  
*Pediatric Ophthalmology*

**Richard Schroeder, MD**

Assistant Professor  
*Glaucoma*

**Tasneem Sharma, PhD**

Assistant Professor  
*Research*

**Heather Smith, MD**

Assistant Professor  
*Pediatric Ophthalmology*

**Derek Sprunger, MD**

Professor  
*Pediatric Ophthalmology*

**Kunal Suri, MD**

Assistant Professor  
*Comprehensive Ophthalmology*

**Chi “Rudy” Yung, MD**

Professor Emeritus  
*Comprehensive Ophthalmology*





### Give to the IU School of Medicine Department of Ophthalmology

So much of the research and education taking place in the Department of Ophthalmology is made possible by philanthropy.

If you would like to give to our department, you may designate that your gift be used in one of several ways, including supporting the missions of excellence in research and education. Endowment gifts that create resources in perpetuity, as well as gifts to help purchase surgical simulation equipment, help trainees gain critical skills that impact thousands of patients each year.

Gifts can also be directed toward any of the subspecialty clinical or research areas within the department, including pediatric ophthalmology and adult strabismus, corneal and external ocular disease, glaucoma, neuro-ophthalmology, oculoplastic surgery, vitreoretinal disease and comprehensive ophthalmology.

If you would like to discuss how your philanthropy can make a difference to eye research and education at IU School of Medicine, please contact Caitie Deranek Stewart at [cderanek@iu.edu](mailto:cderanek@iu.edu) or 317-278-2133.

**The Department of Ophthalmology accepts cash, check or online credit card donations.**

**Checks should be made out to:**

Indiana University Foundation – School of Medicine  
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## **IU Department of Ophthalmology**

### MISSION

To advance eye health in the state of Indiana and worldwide by delivering excellence in patient care, education and research

### VISION

To be recognized as a leader in patient care, education, and eye and vision research

### CORE VALUES

- ▶ Excellence in innovation and advancement of patient care, education and research
- ▶ Respect for individuals affiliated with or in contact with us: staff, students, residents, fellows, faculty, patients and families
- ▶ Integrity that embraces the highest standards of ethical behavior and exemplary moral character
- ▶ Diversity reflected in actions that appreciate all individuals
- ▶ Cooperation manifested by collegial communication and collaboration within and beyond the department



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