"Touch brings me into the world.
My fingers are my eyes."
HELEN KELLER

WVU Eye Institute

INSIGHTS 2024

West Virginia University
DEPARTMENT OF OPHTHALMOLOGY AND VISUAL SCIENCES

CONTENTS

Dear Friends,

I am pleased to present the 2024 Annual Report for the West Virginia University Department of Ophthalmology and Visual Sciences and the WVU Eye Institute. In this report, we'll highlight some of our activities and accomplishments throughout the past year as we eagerly look ahead to the future.

We are excited to share the news that construction of the new WVU Eye Institute is officially underway. The more-than 150,000 square foot facility is currently estimated to be completed in fall 2027.

This crucial expansion will nearly double our available clinical space, allowing us to increase from 60 exam rooms and 13 testing rooms to 102 exam rooms and 44 testing rooms. We look forward to this advancement with great excitement, as the new facility will allow us to better serve West Virginians by accommodating our growing number of patients, faculty and trainees.

In this report, you will hear stories from several of our trainees, including resident Omar Sadat, M.D., who shares his experiences in the Transitional Year Residency Program. You will also read about cornea fellow Evan Frigoletto, M.D., who first arrived on campus as a resident in 2020 and now looks forward to joining our faculty as a cornea specialist following his fellowship graduation this summer.

Fourth-year medical student Molly Shott shares her story of affirming her passion for ophthalmology through the WVU School of Medicine's Ophthalmology Interest Group, a student-led organization supported by our faculty that aims to introduce medical students to the fascinating world of visual sciences.

In addition to our trainees, we are delighted to highlight a member of our esteemed faculty, Charlie Moore, M.D. Dr. Moore is a 1984 graduate of the WVU School of Medicine and a 1988 graduate of the Department of Ophthalmology and Visual Sciences Residency Program. Since joining our faculty in 1996, Dr. Moore has dedicated his career to meeting the growing needs of patients, trainees and community members from across the region.

Our dedicated team of vision researchers continue to make groundbreaking discoveries in our laboratories, where they gain valuable insight and seek to develop novel therapies for ophthalmic patients in West Virginia and beyond.

Assistant professor and researcher Ezequiel Salido, M.D., Ph.D., leads an exciting new study aimed at developing new treatment methods for the blinding disease known as retinitis pigmentosa, thanks to a $1.9M grant from the National Eye Institute. We also highlight another key research grant from Research to Prevent Blindness, which will fund innovative research into treating vision-threatening diseases in rural areas.

Strides in research continue to be made by our trainees, including undergraduate students from across the country who enroll in our Summer Undergraduate Vision Research Fellowship Program. This highly-competitive program, led by our very own Michael Robichaux, Ph.D., and Saravanan Kolandaivelu, Ph.D., introduces undergraduate students from across the country to the world of vision research through a collaborative and hands-on program hosted on the WVU Health Sciences Campus. We also highlight the research of post-doctoral researcher Souradip Chatterjee, Ph.D., who was the recipient of the 2024 Knights Templar Eye Foundation Career-Starter Research Grant.

> "We are excited to share the news that construction on the new WVU Eye Institute is officially underway. This crucial expansion will nearly double our available clinical space [...] to better serve West Virginians."
>
> **THOMAS MAUGER, M.D.**

(continued)

We celebrate the continued successes of our outreach programs, helmed by WVU Eye Institute Director of Outreach Rebecca Coakley, MA, CLVT. Coakley and staff from our Children's Vision Rehabilitation Program provided support for the annual Braille Challenge and Cane Quest events, where blind and visually impaired children from across West Virginia gathered to practice and showcase their braille literacy and orientation and mobility skills.

We also give thanks to our generous donors, who provided nearly $600M in funding throughout 2024. The exciting advancements we make each year would not be possible without them.

Thank you for your unwavering support and continued interest in our activities at the Department of Ophthalmology and Visual Sciences and the Eye Institute. We have an exciting future ahead of us, and I hope you will continue to follow our story in the years to come.

Sincerely,

Thomas Mauger MD

Thomas Mauger, M.D.
Professor and Chair, Department of Ophthalmology and Visual Sciences; Director, WVU Eye Institute

FACULTY

Clinical Faculty Research Faculty

ANNAHITA
AMIRESKANDARI M.D.
Assistant Professor

GEOFFREY
BRADFORD M.D., M.S.
Professor, Vice-Chair of Education, Director of Medical Student Education

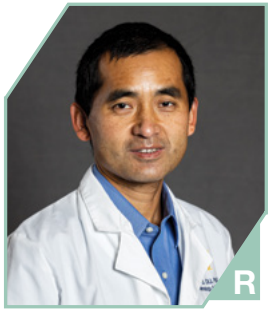
JUDIE
CHARLTON M.D.
Professor Emeritus

SOURADIP
CHATTERJEE PH.D.
Postdoctoral Research Associate – Ramamurthy Lab

LENA
CHEN M.D.
Assistant Professor

SOMYA
CHOWDHARY M.D.
Assistant Professor

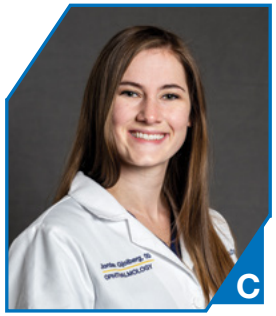
WEN TAO
DENG PH.D.
Assistant Professor | Additional Appointment: Asst. Professor, Dept. of Biochemistry and Molecular Medicine



JIANHAI
DU PH.D.
Associate Professor | Additional Appointment: Assoc. Professor, Dept. of Biochemistry and Molecular Medicine

BRIAN
ELLIS M.D.
Professor Emeritus

GHASSAN
GHORAYEB M.D., MBA
Associate Professor, Vitreoretinal Fellowship Program Director, Vitreoretinal Division Director, Vice Chair of Clinical Affairs



JORDAN
GJOLBERG O.D.
Assistant Professor

KEVIN
HALENDA M.D.
Assistant Professor

MARYAM
HEKMATARA PH.D.
Postdoctoral Research Assistant – Robichaux Lab

ALISON
HIXENBAUGH O.D.
Assistant Professor

PRAVEEN
JEYASEELAN M.D., MBBS
Assistant Professor

SARAVANAN
KOLANDAIVELU PH.D.
Associate Professor | Additional Appointment: Assoc. Professor, Dept. of Biochemistry and Molecular Medicine

LINGO
LAI M.D.
Assistant Professor, Cornea Fellowship Program Director, Associate Residency Program Director

L. CAROL
LAXSON M.D., PH.D.
Assistant Professor, Diabetic Retinopathy Program Director

MONIQUE
LEYS M.D., EBO
Professor

JOHN
LINBERG M.D.
Professor Emeritus

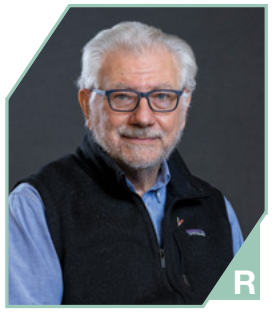
THOMAS
MAUGER M.D.
Professor, Chair | Additional Appointments: Director, WVU Eye Institute

RYAN
MCGUIRE M.D.
Assistant Professor, Division Director

BRIAN
MCMILLAN M.D.
Associate Professor, Glaucoma Fellowship Program Director, Anterior Segment Director

CHARLES
MOORE M.D.
Assistant Professor, Medical Director

JOHN
NGUYEN M.D.
Professor, Ophthalmic Plastic and Reconstructive Surgery Fellowship Director, Division Director



J. VERNON
ODOM PH.D.
Professor | Additional Appointment: Professor, Dept. of Neuroscience

JOEL
PALKO M.D.
Assistant Professor

NICOLE
PUMARIEGA M.D.
Assistant Professor

VISVANATHAN
RAMAMURTHY PH.D.
Professor, Vice Chair of Research | Additional Appointments: Chair, Prof. - Dept. of Biochemistry and Molecular Medicine

TONY
REALINI M.D., MPH
Professor, Vice Chair for Clinical Research

MICHAEL
ROBICHAUX PH.D.
Assistant Professor | Additional Appointment: Asst. Professor - Dept. of Biochemistry and Molecular Medicine

EZEQUIEL
SALIDO M.D., PH.D.
Research Assistant Professor | Additional Appointment: Research Asst. Professor - Dept. of Biochemistry and Molecular Medicine

KUMAR
SAMBHAV M.D.
Assistant Professor

LARRY
SCHWAB M.D.
Professor Emeritus

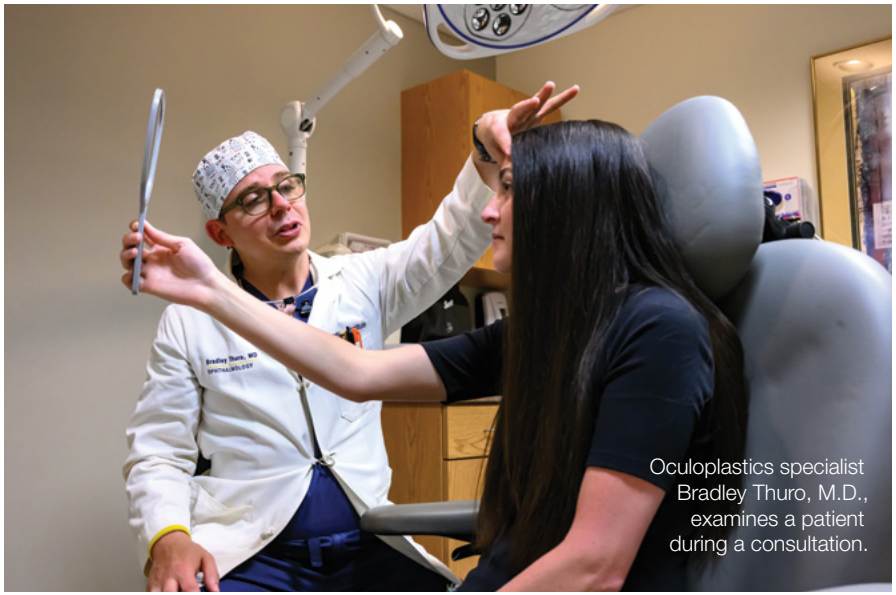
MAXIM
SOKOLOV PH.D.
Professor | Add'l Appointments: Prof. - Dept. of Biochemistry and Molecular Medicine; Prof. - Dept. of Neuroscience

BRADLEY
THURO M.D.
Associate Professor, Residency Program Director

THOMAS
UIHLEIN M.D.
Assistant Professor (WVU Medicine Wheeling Hospital)

LEE
WILEY M.D.
Professor Emeritus

YINXIAO
XIANG PH.D.
Postdoctoral Research Associate – Du Lab



Oculoplastics specialist Bradley Thuro, M.D., examines a patient during a consultation.

RESIDENCY

Extensive and explorative ophthalmology training through residency

The West Virginia University Department of Ophthalmology and Visual Sciences offers a three-year residency program, with a joint transitional year internship program, at the WVU Eye Institute in Morgantown, West Virginia. It is led by Residency Program Director Bradley Thuro, M.D., and supported by Associate Residency Program Director Lingo Lai, M.D.

The program accepts four residents per year from approximately 500 medical student applications. Of those applicants, the committee selects a total of 50 candidates to interview in the fall. The matching process occurs in the winter, bringing a new class of residents to WVU each year. Residents arrive on campus to begin their training in July, initially as hospital interns through the joint transitional year program, before transitioning to full-time residents in ophthalmology for the next three years of their training.

Starting in July 2025, the WVU Department of Ophthalmology and Visual Sciences will welcome five new residents per year. This will mark the first time the program has increased the residency class size since expanding to four residents per year in 2018.

The joint transitional year program enables all ophthalmology interns to have experiences training in ophthalmology while they begin their training

Ophthalmology resident Deena Dahshan, M.D., performs an eye exam on a patient.

at WVU. Each intern will receive three months of ophthalmology training during the transitional year, with the remaining nine months spent pursuing rotations in a variety of other specialty areas.

Ophthalmology residents will conduct the majority of their training at the WVU Eye Institute, which proudly serves as the only tertiary eye care center in the state of West Virginia, providing service to patients from across the state and the neighboring states of Ohio, Pennsylvania and Maryland. Residents will spend two rotations per year at the Louis A. Johnson Veterans Administration Hospital in Clarksburg, West Virginia.

During their three years of ophthalmology residency, residents will rotate in all ophthalmology subspecialty areas including comprehensive ophthalmology, medical and surgical retina, glaucoma, pediatric ophthalmology, neuro-ophthalmology, oculoplastics and cornea. Residents can expect to treat many patients with a variety of complex ocular disorders from throughout West Virginia and other neighboring states during their training.

Ophthalmology residents will conduct the majority of their training at the WVU Eye Institute, which proudly serves as the only tertiary eye care center in the state.

PGY 4 RESIDENTS

ANDREW **BEITER M.D.**

PARKER **CAIN M.D.**

APRIL **ENGER M.D.**

AMI **PATEL M.D.**

PGY 3 RESIDENTS

DEENA **DAHSHAN M.D.**

YONAH **LEVY M.D.**

MICHAEL **SHI M.D.**

SANYA **YADAV M.D.**

PGY 2 RESIDENTS

RAWAN **ELHAMDANI M.D.**

ROBERT **FINLEY M.D.**

HASEEB **MAHMUD M.D.**

OMAR **SADAT M.D.**

PGY 1 RESIDENTS

STEPHEN **CHEN M.D.**

FORREST **CLARK M.D.**

SABRINA **DUONG M.D.**

DENIZ **SISO M.D.**

RESIDENCY

Transitional Year Program provides WVU Ophthalmology Residents with Crucial Skills Ahead of Specialized Training

Now in his second year of residency in the Department of Ophthalmology and Visual Sciences Residency Program, Omar Sadat, M.D., said his experiences through the Transitional Year Residency Program have added some crucial tools to his toolbelt for his next several years of specialized training.

The Transitional Year Residency Program at the West Virginia University School of Medicine is a one-year, ACGME-accredited program for first-year residents at associated WVU residency programs that provides a strong foundation in clinical education through rotations across several areas of medicine.

Dr. Sadat explained that first-year ophthalmology residents at WVU are required to complete their first year of training in the Transitional Year Program, where they spend three months of the year on ophthalmology rotations and nine months on rotations spanning a variety of medical specialties such as internal medicine, emergency medicine, pediatrics and plastic surgery.

Sadat said many of the skills and techniques he learned through the Transitional Year Program have already proved useful during his specialized ophthalmology training, including properly utilizing electronic medical records, submitting orders and general patient assessment tips. He added that the operating room experiences through his plastic surgery rotation were especially beneficial, as it allowed him to practice and learn more about suturing, a common technique utilized by ophthalmologists for various ocular procedures.

Sadat said the hands-on training experiences across various specialties not only taught him several valuable skills but also provided him with some new perspectives on medicine.

"As physicians, each of us will eventually choose to specialize in a certain field, with some opting to narrow that scope even further by exploring a subspecialty," Sadat explained. "Thanks to the transitional year, we as young physicians get a chance to not only see what our peers in other fields experience, but we get to experience the reality of that field for ourselves right along with them. It allows you to see medicine in a whole new way."

Through these various rotations, Sadat said he worked with several different patient populations, including children through pediatrics rotations, critically ill patients through ICU rotations and veteran patients through an outpatient rotation at a local veterans' facility. He said he is grateful to the program for exposing him to so much during his first year of residency.

"Because of the various rotations that we do through the Transitional Year Program, we have the benefit of being exposed to such a wide breadth of patient populations and medical conditions prior to beginning our specialized training," Sadat said. "Those experiences help us as residents to build our skillsets and become more confident and independent physicians."

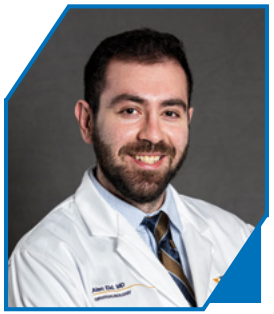
FELLOWSHIP

State-of-the-Art Specialized Training Through Fellowships

The Department of Ophthalmology and Visual Sciences offers four distinct fellowship programs in the areas of cornea, glaucoma, ophthalmic plastic and reconstructive surgery and retina. The Department supports up to five clinical fellows each academic year across the four programs.

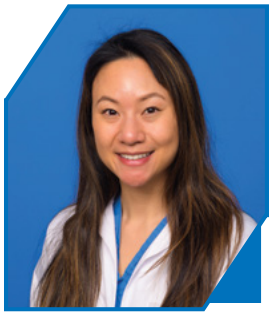
Each fellow serves as a member of Department of Ophthalmology and Visual Sciences faculty and functions as an instructor and mentor to residents and medical students in addition to their clinical duties. Fellows work closely with physicians in their given subspecialty, gradually developing their skills and knowledge to work independently in the clinic and operating room.

JAMES **DOSSETT M.D.**
Fellow, Vitreoretinal Fellowship Program



ALEN **EID M.D.**
Fellow, Vitreoretinal Fellowship Program

EVAN **FRIGOLETTO M.D.**
Fellow, Cornea Fellowship Program



DIANE **WANG M.D.**
Fellow, Ophthalmic Plastic and Reconstructive Surgery Fellowship Program

Cornea Fellowship Program

The Cornea Fellowship Program is led by program director Lingo Lai, M.D., and supported by cornea specialists Annahita Amireskandari, M.D., Lena Chen, M.D., and Thomas Mauger, M.D. The one-position, one-year fellowship provides extensive hands-on surgical training and offers clinical opportunities in an academic setting.

The fellow should expect to encounter a full-range of corneal diseases and surgeries during the fellowship including PK, DALK, DSAEK, DMEK, K Pro, ocular surface reconstruction, corneal neurotization, LASIK/PRK, PTK, anterior stromal puncture and corneal crosslinking. The fellow is expected to expand their cataract surgery skills and will have opportunities throughout the year to do so.

Glaucoma Fellowship Program

The Glaucoma Fellowship Program is led by program director Brian McMillan, M.D. The one-year fellowship program is supported by glaucoma specialists Kevin Halenda, M.D., Joel Palko, M.D., and Tony Realini, M.D., MPH. The program, which supports one fellow per year, provides an advanced level of subspecialty training in the diagnosis and management of medical and surgical glaucoma.

Fellows provide outpatient glaucoma care alongside faculty three-to-four days per week, seeing between 110-120 patients in a typical week. Fellows also accompany faculty to the operating room one-to-two days per week to perform and/or assist in 10-15 surgical cases. Fellows can expect to be the primary surgeon on 40-50 trabeculectomy and/or tube shunt procedures, 70-80 MIGS procedures, 100+ phacoemulsification procedures, 100+ laser procedures and a variable number of revisions, examinations under anesthesia and other miscellaneous cases.

Ophthalmic Plastic and Reconstructive Surgery Fellowship Program

The Ophthalmic Plastic and Reconstructive Surgery Fellowship Program is led by program director John Nguyen, M.D., and supported by ophthalmic plastic and reconstructive surgery specialist Bradley Thuro, M.D. The two-year fellowship supports one fellow per year and provides fellows with a well-

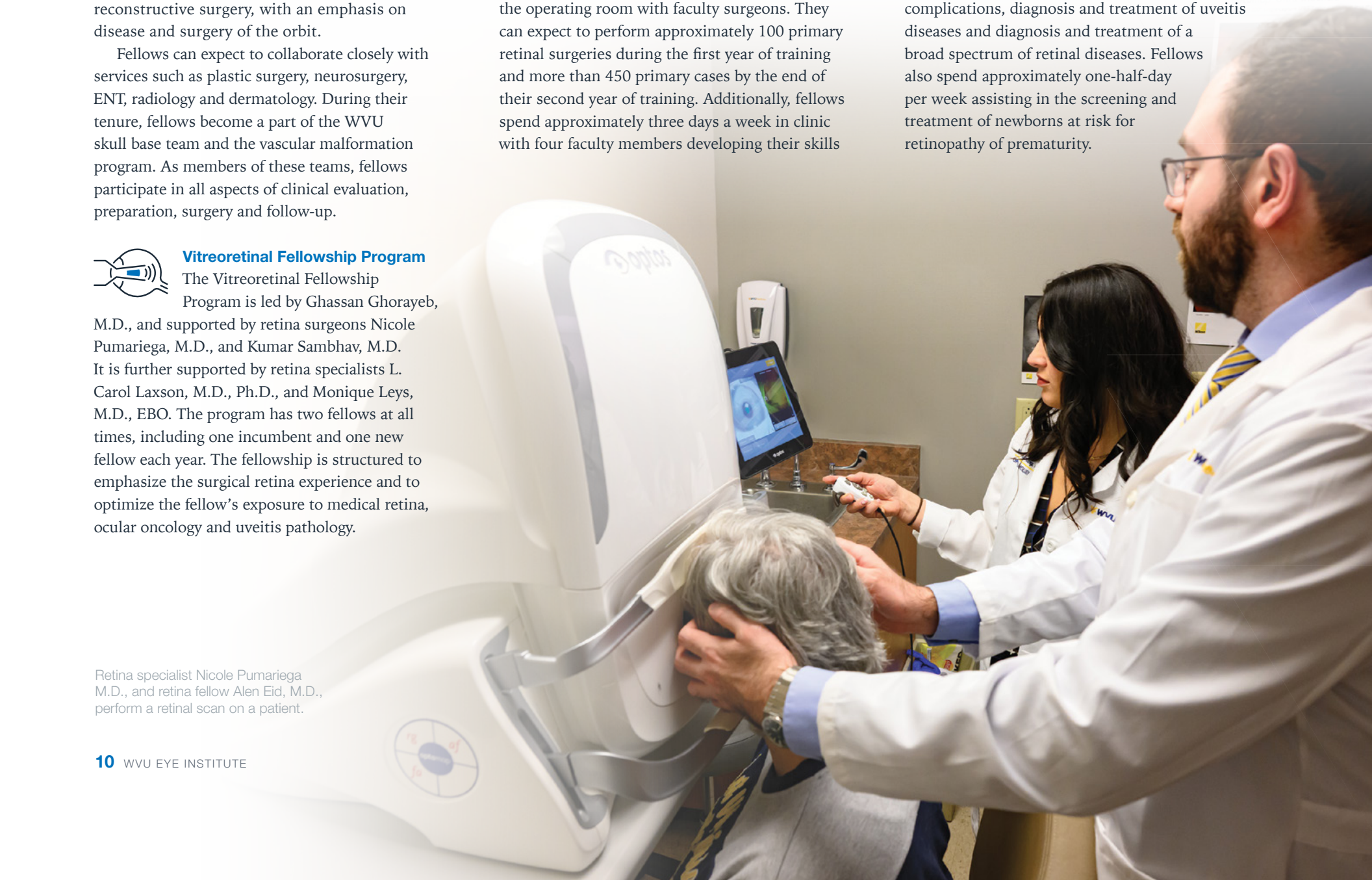
rounded experience in ophthalmic plastic and reconstructive surgery, with an emphasis on disease and surgery of the orbit.

Fellows can expect to collaborate closely with services such as plastic surgery, neurosurgery, ENT, radiology and dermatology. During their tenure, fellows become a part of the WVU skull base team and the vascular malformation program. As members of these teams, fellows participate in all aspects of clinical evaluation, preparation, surgery and follow-up.

Vitreoretinal Fellowship Program

The Vitreoretinal Fellowship Program is led by Ghassan Ghorayeb, M.D., and supported by retina surgeons Nicole Pumariega, M.D., and Kumar Sambhav, M.D. It is further supported by retina specialists L. Carol Laxson, M.D., Ph.D., and Monique Leys, M.D., EBO. The program has two fellows at all times, including one incumbent and one new fellow each year. The fellowship is structured to emphasize the surgical retina experience and to optimize the fellow's exposure to medical retina, ocular oncology and uveitis pathology.

Fellows spend two-to-three days a week in the operating room with faculty surgeons. They can expect to perform approximately 100 primary retinal surgeries during the first year of training and more than 450 primary cases by the end of their second year of training. Additionally, fellows spend approximately three days a week in clinic with four faculty members developing their skills in post-operative care and management of surgical complications, diagnosis and treatment of uveitis diseases and diagnosis and treatment of a broad spectrum of retinal diseases. Fellows also spend approximately one-half-day per week assisting in the screening and treatment of newborns at risk for retinopathy of prematurity.



Retina specialist Nicole Pumariega M.D., and retina fellow Alen Eid, M.D., perform a retinal scan on a patient.

Dr. Frigoletto Discovers Passion for Corneal Care, Finds New Home Through Residency and Fellowship at WVU

Evan Frigoletto, M.D., arrived on the West Virginia University Health Sciences Campus in 2020 as a first-year resident, eager to explore the field of ophthalmology and visual sciences. In the years since, he has found what he considers his new home while igniting a passion for treating and managing corneal diseases.

Upon completing his residency in the summer of 2024, Dr. Frigoletto was accepted to the Department of Ophthalmology and Visual Sciences Cornea Fellowship Program, a one-year, ACGME-accredited fellowship that prepares ophthalmologists for the medical and surgical management of corneal diseases.

Frigoletto's interest in this subspecialty began to build as he volunteered in the wet lab with corneal faculty members throughout his residency. He said he's found the cornea to be a particularly satisfying area of focus, as so much of what causes pain and disability in the eyes occurs there.

"The invisible and intricate nature of the anatomy in the cornea makes treating its disease unique," he said. "The way light bends, reflects and moves through the tissue is as poetic as it is clinically engaging. Being able to replace and restore vision through corneal surgery affords me the opportunity to make a crucial difference that can improve patients' lives."

He cited his tenure as chief resident in his final year as a crucial educational experience for him, as it provided him with the opportunity to hone his mentor skills while he provided guidance and support to his junior residents. These skills have proved useful for him as his role as a mentor in the Department has expanded during his fellowship where he oversees both the resident and VA clinics.

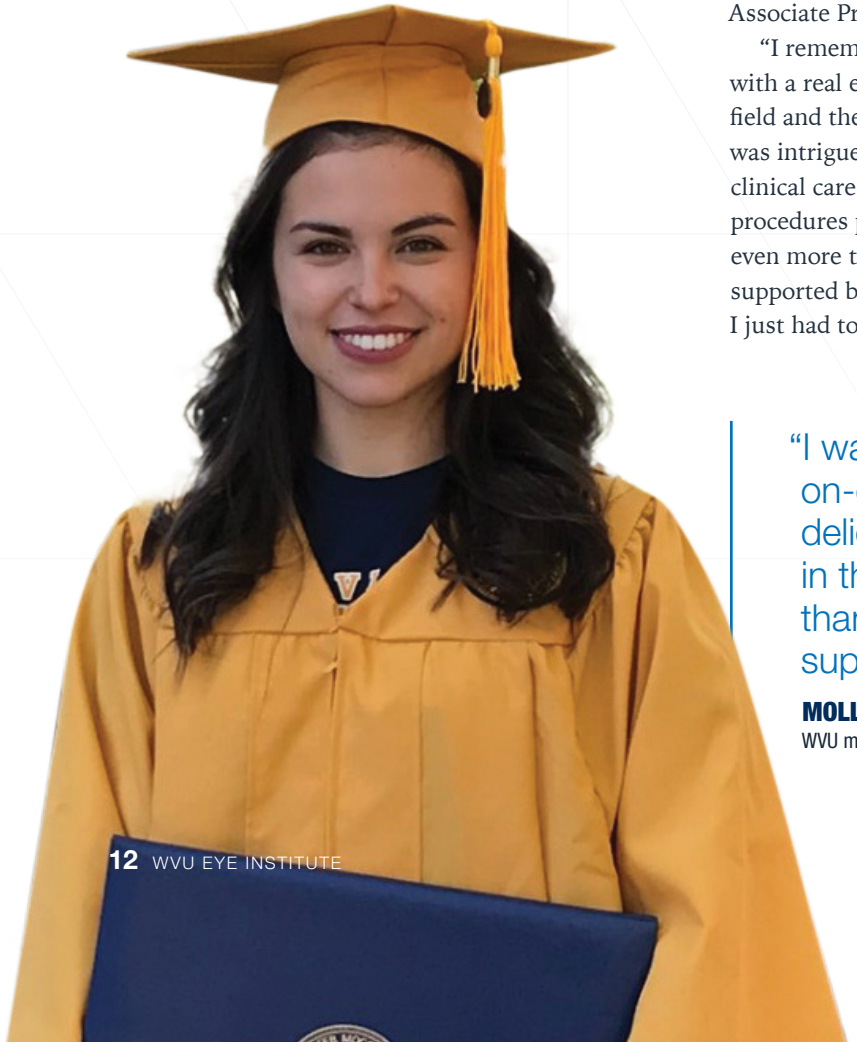
Frigoletto will continue to build on and utilize his teaching skills in the next phase of his career as a faculty member for the Department of Ophthalmology and Visual Sciences.

As a new graduate of the Cornea Fellowship Program, Frigoletto will transition into a role as an assistant professor and cornea specialist for the WVU Eye Institute in the summer, becoming the fourth former fellow to join the department as a faculty member since 2020.

"I feel very much at home here in Morgantown and my mentors in the cornea division have been nothing short of exceptional. When I discovered there may be an opportunity to stay on at the Eye Institute as faculty, I knew immediately it was something I wanted to pursue," he said. "We have a great team here, and I can't wait to start working side-by-side with them as an attending this summer."

> "Being able to replace and restore vision through corneal surgery affords me the opportunity to make a crucial difference that can improve patients' lives."
>
> **EVAN FRIGOLETTO, M.D.**
> Fellow, Cornea Fellowship Program

Meet Our Students — Molly Shott



Inspired by her childhood ophthalmologist and a family tradition of Mountaineer graduates, fourth-year medical student Molly Shott said it is no surprise that she found a home with the West Virginia University Department of Ophthalmology and Visual Sciences through the School of Medicine's Ophthalmology Interest Group.

Shott's first exposure to ophthalmology came during her first year of medical school, when she had an oculoplastics shadowing opportunity with Associate Professor Bradley Thuro, M.D.

"I remember leaving that shadowing opportunity with a real eagerness to learn more about the field and the various subspecialties," she said. "I was intrigued by the unique blend of one-on-one clinical care with patients and the delicate surgical procedures performed in the operating room. But even more than that, I just felt really welcomed and supported by the faculty and residents. I left knowing I just had to come back."

Shott joined the School of Medicine's Ophthalmology Interest Group soon after, where she now serves as the organization president in her final year of medical school. Through the program, Shott has participated in several hands-on trainings including slit lamp and suture workshops, attended regular recurring meetings led by faculty and connected with faculty and residents about research opportunities.

Shott said she is grateful for all of her experiences thus far in the Ophthalmology Interest Group and that she encourages all medical students, regardless of their preferred specialty, to become involved in the student organization that best aligns with their academic interests.

"Participating in organizations like the Ophthalmology Interest Group is great for us as medical students because it provides us with opportunities to get outside the classroom and experience the patient side of medicine while learning more about a specialty. I highly encourage any student to explore the wide range of student organizations offered at the School of Medicine and become involved in any way they can," Shott said.

As she reflects on her time in medical school and looks ahead to applying for ophthalmology residency programs, Shott said she is grateful for all

> "I was intrigued by the unique blend of one-on-one clinical care with patients and the delicate surgical procedures performed in the operating room. But even more than that, I just felt really welcomed and supported by the faculty and residents."
>
> **MOLLY SHOTT**
> WVU medical student, Ophthalmology Interest Group president

Students in the WVU School of Medicine's Ophthalmology Interest Group practice their suturing skills during a training workshop hosted at the Eye Institute.

her experiences with the Department of Ophthalmology and Visual Sciences.

"I can't thank the ophthalmology faculty and residents enough for helping me further build my passion for visual sciences by providing me with a welcoming and encouraging learning environment over the last three years," she said. "Thanks to their support I have learned so much that I know will prove invaluable during my final year of medical school and in the next phase of my medical journey."

NEI Grant will Support Undergraduate Research at WVU as Faculty Researchers and Students Partner to Explore Relationship Between Vision and the Brain

Since launching his lab in 2019, West Virginia University School of Medicine Assistant Professor Eric Horstick, Ph.D., has emphasized the importance of student participation in research at the undergraduate level by providing students with opportunities to work directly on major research projects.

A new grant awarded to the University from the National Eye Institute will help strengthen this initiative, as it provides funding for undergraduate students to work alongside faculty researchers as they further explore the relationship between vision and the brain.

Dr. Horstick said he hopes that these opportunities will ignite a passion for research among students, similar to the way it did during his time as an undergraduate student.

"My fascination for research began as an undergraduate student, where I had my first opportunity to work in a lab and engage in hands-on experiments with mentors and other students," he said. "It was then that I began studying the neurological activity of zebrafish and now nearly 20 years later, I am continuing that same work alongside students in my own lab. I hope that I can help other students discover a lifelong passion for science and research."

The three-year renewable grant will provide approximately $400,000 of funding for research that will explore the relationship between the thalamic area of the brain and visual experience. Horstick said this research is a continuation of a project he began in 2023, where he worked alongside an undergraduate student enrolled in the Summer Undergraduate Vision Research Fellowship Program to examine how the changes in lighting conditions affected the behavior of zebrafish.

Horstick explained that the thalamus, an egg-shaped structure in the brain that acts as a relay station for sensory and motor information, is a deep-rooted structure that was recently discovered to have independent and crucial roles in visual experience. He added that because of where the thalamus is located in the brain, it can be much harder to examine than more exposed areas such as the cortex.

Zebrafish, however, do not have a cortex, allowing the thalamus to be clearly examined with standard microscopes. Horstick said the funding will enable students to participate in research that produces tangible results, as they will have the rare opportunity to be on the ground floor of making novel discoveries about the thalamus and vision.

"Students will partner with faculty researchers as we use neuron-level resolution to examine how the thalamus responds to visual changes in real-time and make groundbreaking discoveries on the relationship between the two," he said. "If we can develop a better understanding of how the brain reacts to visual experience at all levels, we can better address the issues and ocular conditions that can arise during crucial developmental stages."

In addition to his duties as an assistant professor, Horstick also serves as a pilot project leader in the NIGMS-supported Visual Sciences Center of Biomedical Research Excellence at the University and as a faculty mentor for the Summer Undergraduate Vision Research Fellowship Program.

Distinguished Alumni Charlie Moore

A lifelong resident of Morgantown, West Virginia, Charlie Moore, M.D., said it came as no surprise that he found a permanent home at the West Virginia University School of Medicine. A journey that began during his time as an undergraduate student soon led to medical school, residency and ultimately, a nearly three-decade-long career at the WVU Department of Ophthalmology and Visual Sciences.

Dr. Moore traced his passion for medicine back to the summer between his freshman and sophomore years of undergraduate studies, when he got a job as an orderly for WVU Hospitals. Moore said he became fascinated with the clinical process and knew he wanted to pursue a career in patient care.

"Subsequent summers led to me working as a scrub technician for the ophthalmology service, where I was lucky enough to be taken under the wing by the then-chair Dr. George Weinstein," Moore explained. "Dr. Weinstein and the talented team of ophthalmologists helped introduce me to the fascinating world of visual sciences and inspired me to pursue ophthalmology as a career. I wouldn't be where I am today without their guidance and support."

Moore graduated from the WVU School of Medicine in 1984, where he also completed his residency in ophthalmology in 1988. He returned to the University in 1996 as a faculty member, which Moore said felt like coming home.

"When I had the chance to return to the Department of Ophthalmology and Visual Sciences as faculty, I knew it was something I needed to pursue," he said. "Being a part of the WVU School of Medicine allows me to directly serve the people of West Virginia. My roots run deep here and I am proud to be in a position where I can serve my fellow West Virginians."

In the nearly 30 years since then, Moore has done just that. As an assistant professor for the Department of Ophthalmology and Visual Sciences and an ophthalmologist at the WVU Eye Institute, Moore has helped train the next generation of eye physicians while delivering crucial eyecare services to patients in need from across the region.

"My roots run deep here and I am proud to be in a position where I can serve my fellow West Virginians."

CHARLIE MOORE, M.D.
assistant professor

His dedication to service has also reached far beyond the boundaries of the Eye Institute throughout his career, thanks in large part to his participation in several WVU outreach initiatives.

Moore has been a longtime collaborator with Kids Insight, an outreach initiative that involves physicians traveling to St. Lucia in the Caribbean to deliver critical eyecare to underserved pediatric ophthalmology patients. He is also a member of physician staffing for the Appalachian Vision Outreach Program, which hosts traveling clinics across the state to provide services to West Virginians who may not have access to eyecare due to geographical or financial obstacles.

In addition to these outreach efforts, Moore has also established a satellite eyecare clinic in Summersville, West Virginia, where he helps deliver remote eyecare services to patients in need.

"To me, being an alumnus of the School of Medicine means being a part of something bigger than myself. I am honored to play a role in the advancement of eyecare across West Virginia, the surrounding region and beyond," he said.

Save the Date!

2025 WVU Department of Ophthalmology and Visual Sciences **AAO Reception**

RSVP by **October 3**, 2025 to reserve your space!

Scan the code to RSVP.

WHERE

Pinstripes Orlando, located at
11643 Daryl Carter Parkway, Orlando, FL 32821

WHEN

Friday, Oct. 17, 6-9 p.m.

WHO

WVU Department of Ophthalmology faculty, fellows, residents & alumni attending AAO 2025

WHAT

The WVU Department of Ophthalmology and Visual Sciences AAO Reception is an annual event for WVU ophthalmology faculty, fellows, residents and alumni hosted on-site at the American Academy of Ophthalmology's annual meeting. This event allows Mountaineers past and present to reconnect with friends and mentors while attending the AAO annual meeting.

WVU Scientists Magnify Vision Studies with Research to Prevent Blindness Grant

THOMAS MAUGER M.D.
Professor, Chair | Additional Appointments: Director, WVU Eye Institute

VISVANATHAN RAMAMURTHY PH.D.
Professor, Vice Chair of Research | Additional Appointments: Chair, Prof. - Dept. of Biochemistry and Molecular Medicine

A $300,000 Research to Prevent Blindness Challenge grant will help West Virginia University scientists further their studies and enhance collaborative efforts in finding innovative solutions to treat vision threatening diseases common in rural areas.

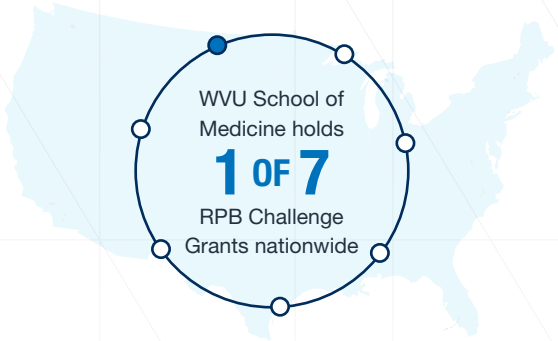
"There's a tremendous visual disparity in this state and grants like this are going to help us form teams and tackle some of these problems that are prevalent in rural America," said Visvanathan Ramamurthy, Ph.D., chair of Biochemistry and Molecular Medicine and professor in the Department of Ophthalmology and Visual Sciences at the WVU School of Medicine.

Among top interests for researchers is diabetic retinopathy, a complication of diabetes that effects the retina causing visual loss or blindness. Treatment can slow or stop the progression of the disease, but there is no cure since diabetes is a lifelong condition.

According to the American Diabetes Association, West Virginia has one of the highest rates of diabetes with 15.9% of adults diagnosed.

"We'll use the funds from the Challenge Grant to continue to foster our basic research and look for ways to collaborate in our clinical care of patients," said Thomas Mauger, M.D., professor and chair for the WVU School of Medicine Department of Ophthalmology and Visual Sciences. "It will be at the level of trying to come up with more effective new treatments for eye disease and use our basic research to help make that happen for people here in West Virginia."

The WVU School of Medicine holds one of seven RPB Challenge Grants nationwide.



The Challenge Grant is designed to enhance a department's environment and capability to conduct vision research, to facilitate collaborative studies of the visual system, and to attract researchers to the department. Ramamurthy said distribution of funding is classified as unrestricted, and can support vision research across WVU. In some ongoing studies, researchers in ophthalmology collaborate with those in other disciplines such as computer science, public health and biochemistry.

Earning the RPB Challenge Grant also makes WVU faculty eligible to apply for additional monies from the organization to further research in visual sciences.

Funding from the Challenge Grant can continue for up to four years based on approval of a two-year substantive progress report. After four years, recipients can apply for an RPB Unrestricted Grant, which provides additional flexibility in developing and expanding eye research programs.

"The RPB funding serves as a catalyst, driving us to address real-world problems, particularly in vision," Ramamurthy said. "If we continue to maintain this upward trajectory, it bodes well for our research efforts and helps sustain the impact of the Visual Sciences Center of Biomedical Research Excellence."

New NEI Grant Provides Funding for WVU Vision Researchers to Explore New Gene Therapies for Blinding Genetic Eye Disease

A new grant awarded to the West Virginia University School of Medicine from the National Eye Institute will provide funding for vision researchers to develop novel therapies for the blinding retinal disease known as retinitis pigmentosa.

The grant, awarded to the Departments of Ophthalmology and Visual Sciences and Biochemistry and Molecular Medicine, will provide approximately $1.9 million in funding over five years. The project is led by Assistant Professor Ezequiel Salido, M.D., Ph.D.

"Retinitis pigmentosa is a hereditary eye disease caused by mutations in genes that affect our ability to sense light," Dr. Salido explained. "Through this study, we aim to silence those affected genes and replace them with healthy new ones."

Symptoms of retinitis pigmentosa include night blindness, a narrowing of the visual field, sensitivity to bright light and, ultimately, a progressive loss of vision. In addition to developing novel gene therapies, this study seeks to further examine the relationship between retinitis pigmentosa and the extracellular matrix of the retina.

Salido specializes in the research of the extracellular matrix, a large network of proteins and other molecules that surround, support and give structure to most cells and tissues in the body. He explained that the retina is home to a specialized extracellular matrix that surrounds the light-detecting photoreceptor cells and plays a significant role in the health and function of the retina.

"Mutations affecting the extracellular matrix in the retina lead to blinding diseases; however, the specific role of the matrix in relation to blinding diseases like retinitis pigmentosa remains elusive. This project will explore the functions of two interdependent proteoglycan molecules within the matrix and how mutations in those molecules are associated with retinitis pigmentosa," Salido explained.

Salido said he is grateful to the National Eye Institute for this funding, which will enable him to establish a laboratory dedicated to studying extracellular matrices and their critical role in neuroscience.

"This funding not only boosts my confidence in developing future proposals but also provides me with the opportunity to hire and mentor talented young researchers in this exciting field," Salido said. "I am pleased to contribute to WVU's prestigious R1 research environment, strengthening the Eye Institute's research department and enhancing its funding and impact."

In addition to Salido, the project is supported by WVU School of Medicine vision researchers Wen Tao Deng, Ph.D., and Jianhai Du, Ph.D. The preliminary findings that supported this successful proposal were generated with the assistance of the Visual Function and Morphology Core, which is part of the Center of Biomedical Research Excellence (COBRE) in Visual Sciences, funded by NIGMS.

"This funding [...] provides me with the opportunity to hire and mentor talented young researchers in this exciting field."

EZEQUIEL SALIDO, M.D., PH.D.
assistant professor

RESEARCH

WVU Vision Researcher Awarded Knights Templar Eye Foundation Grant for Research into Early-Onset Blindness

Vision researcher Souradip Chatterjee, Ph.D., meets with KTEF representatives to formally accept a Career-Starter Research Grant.

Representatives from the Knights Templar Eye Foundation (KTEF) recently visited the West Virginia University Health Sciences Campus to formally present researcher Souradip Chatterjee, Ph.D., with a KTEF Career-Starter Research Grant for research into early-onset blindness in pediatric patients.

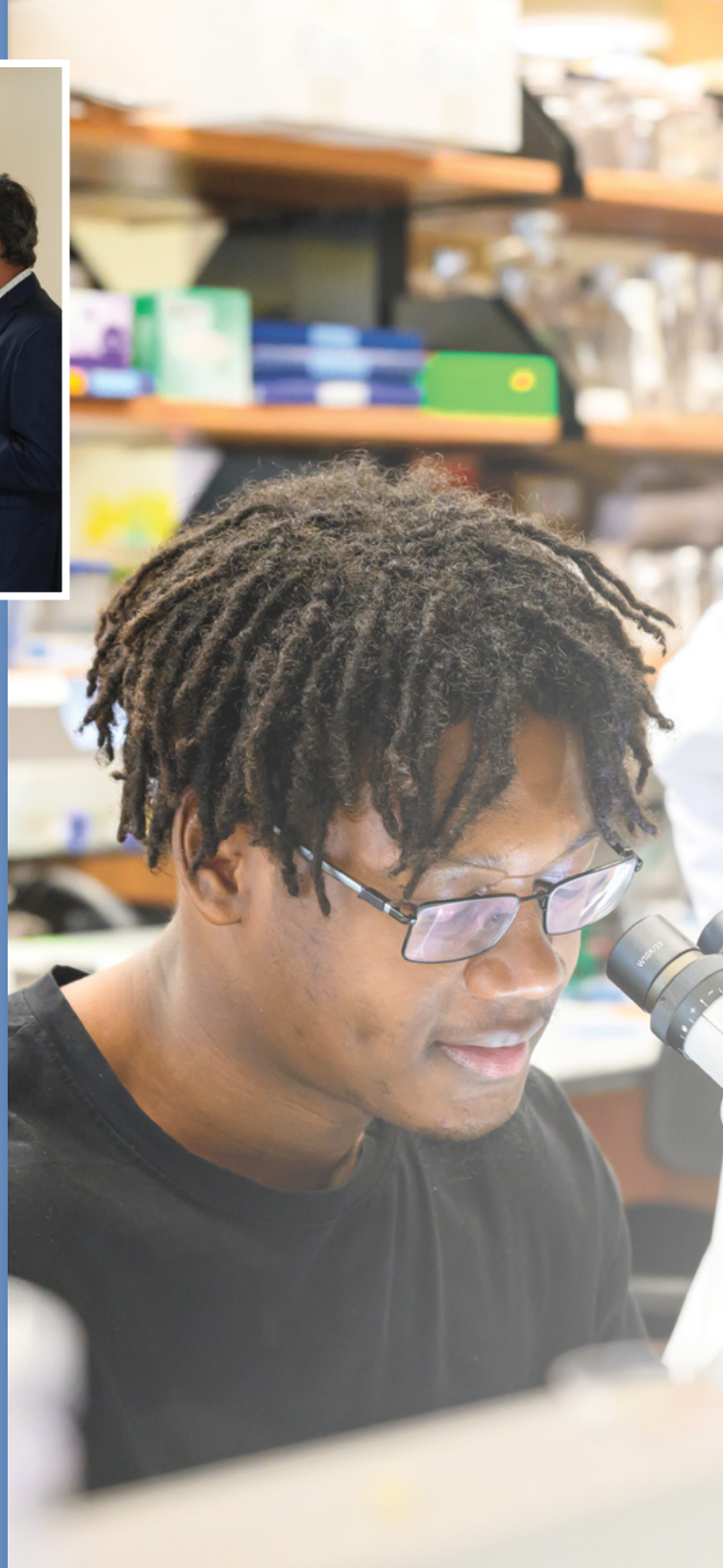
Dr. Chatterjee is a post-doctoral researcher in the lab of Visvanathan Ramamurthy, Ph.D., in the Departments of Biochemistry and Molecular Medicine and Ophthalmology and Visual Sciences. He was awarded a $90,000 grant from the KTEF for research examining how a process known as glutamylation can result in irreversible blindness.

"I am extremely grateful to the Knights Templar Eye Foundation for their invaluable support, which empowers young researchers like me to pursue a passion for innovative research that can translate into developing potential therapies to fight blindness," Chatterjee said.

Chatterjee explained that glutamylation is a highly-regulated process which involves adding glutamate amino acids to specific proteins. He added that glutamylation can contribute to photoreceptor degeneration, which can then lead to irreversible blindness in pediatric patients.

To gain deeper insights, Chatterjee and his team are developing a conditional knockout mouse model that replicates human blindness caused by impaired glutamylation. He explained that by studying this model, they aim to uncover the molecular basis of this vision loss and explore potential therapeutic strategies.

"The funds from KTEF have played a crucial role in establishing the careers of several researchers at WVU," Dr. Ramamurthy said. "The support form KTEF arrives at a critical time during fellowship years. Such funding during formative years are powerful motivators for young scientists like Dr. Chatterjee. We are grateful to KTEF and the Knights Templar for their continued support of vision research at West Virginia University."



Assistant Professor Dr. Robichaux works with student Hamza Abdul-Karim in the Summer Undergraduate Vision Research Fellowship Program in the Erma Byrd Biomedical Research Center.

WVU Assistant Professor Introduces Undergraduate Students to World of Vision Research through Collaborative Research Program

For the past several years, West Virginia University School of Medicine Assistant Professor Michael Robichaux, Ph.D., has spent his summers introducing undergraduate students to the world of vision research through the University's Summer Undergraduate Vision Research Fellowship Program.

The 10-week program is open to undergraduate students from institutions across the country and provides them with basic biochemistry and visual neuroscience research experience in areas that explore blinding diseases and new diagnostic treatment methods.

Students enrolled in the program are paired with a faculty mentor currently conducting vision-focused research in WVU's laboratory space. Together, they run a small-scale research project which they then present at a symposium at the conclusion of the internship in August.

Robichaux emphasized that a major component of the program is the culture of collaboration it promotes, encouraging students to work closely with their faculty mentor and with each other as they share results, ideas and research techniques. He added that since the students become involved in in-depth research being done at WVU, that it is not uncommon for that collaboration to continue beyond the original scope of the program.

"Many of our students, both those from local institutions and those from universities around the country, will choose to continue these research projects and partnerships with faculty even after the internship concludes in August," he explained. "This helps them as young researchers by establishing crucial partnerships with our faculty and aids us in our goal of creating an interconnected and collaborative community of researchers across several institutions."

The program is co-led by Robichaux and Associate Professor Saravanan Kolandaivelu, Ph.D. Since the summer of 2022, Robichaux and Kolandaivelu have overseen great expansion within the program, which can be credited in large part to funding provided through a crucial National Institute of General Medical Sciences grant that funded the WVU Visual Sciences Center of Biomedical Research Excellence.

The program recently doubled its class size from four to eight students per year and has been restructured to operate similarly to a paid internship. Robichaux emphasized the importance of this growth, as it helps attract more students to WVU's campus who bring new ideas and perspectives to the table.

"Having a diverse group of young student researchers on our campus and in our labs provides us with new perspectives on science, research and the understanding of the visual system," he said. "It challenges our own ways of thinking and approaching research while also allowing us to showcase the wonderful tools, researchers and lab spaces we have here in Morgantown."

Past student projects have focused on areas such as examining the effects that a change in lighting conditions has on the behavior of zebrafish, determining the importance of electric impulse retinal function and examining how changes in ocular pressure can affect the blood vessels in the back of the eye.

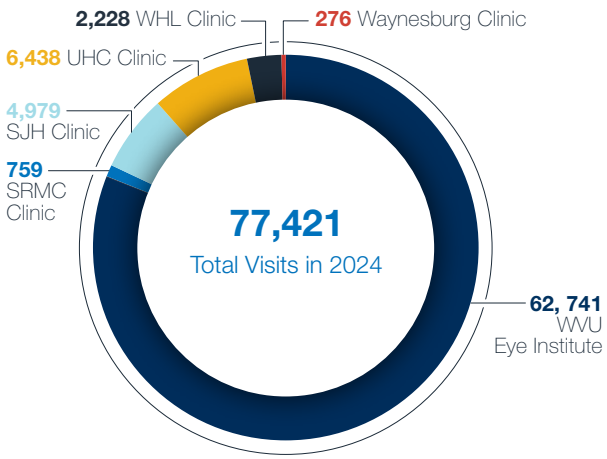
The program is supported through the WVU Visual Sciences Center of Biomedical Research Excellence.

Department of Ophthalmology and Visual Sciences At-A-Glance

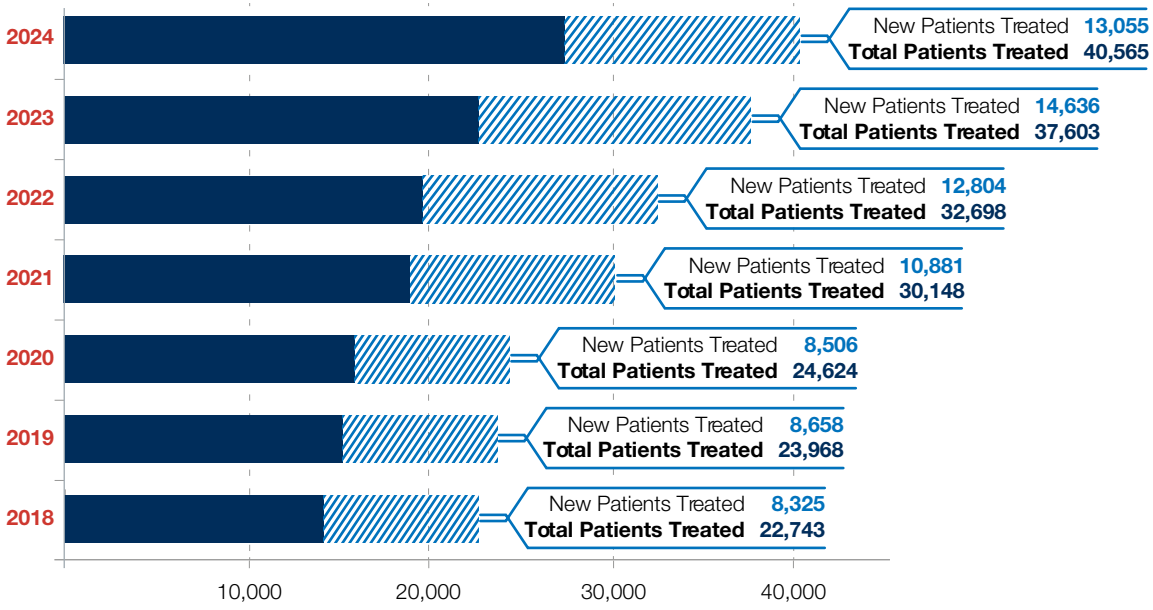
	2018		2019		2020		2021		2022		2023		2024	
	Patients	Surgeries	Patients	Surgeries	Patients	Surgeries	Patients	Surgeries	Patients	Surgeries	Patients	Surgeries	Patients	Surgeries
TOTALS	**43,192**	**3,114**	**48,137**	**3,462**	**47,301**	**3,656**	**59,018**	**4,387**	**64,336**	**4,428**	**71,959**	**4,946**	**77,421**	**5,640**
WVU Eye Institute	43,152	3,114	47,546	3,350	43,703	3,037	52,338	3,741	55,717	3,826	60,523	4,096	62,741	4,446
Gilbert Clinic	40	-	51	-	21	-	36	-	33	-	21	-	N/A*	-
SRMC Clinic	-	-	131	37	322	194	437	229	610	364	766	306	759	349
SJH Clinic	-	-	250	59	2,218	325	3,925	327	4,405	99	5,036	389	4,979	140
UHC Clinic	-	-	159	16	1,037	100	2,282	90	2,986	139	3,818	113	6,438	561
WHL Clinic	-	-	-	-	-	-	-	-	-	-	1,265	42	2,228	144
Waynesburg Clinic	-	-	-	-	-	-	-	-	585	-	530	-	276	-

Patient count represents number of distinct patients. *Ophthalmology services no longer available at Gilbert Clinic as of 2024

2024 Patient Visit Totals



Patients Treated



WVU Eye Institute to Expand Services with Construction of New $233 Million Facility

The WVU Eye Institute will expand its clinical, educational and research endeavors with the construction of a $233 million state-of-the-art eye care facility.

The more than 150,000 square-foot WVU Eye Institute will be located at the intersection of Van Voorhis Road and Elmer Prince Drive near the Erickson Alumni Center in Morgantown. Construction officially broke ground in January 2025 and is estimated to be completed in fall 2027.

Thomas Mauger, M.D., chair of the WVU Department of Ophthalmology and Visual Sciences, emphasized the importance of this expansion, which will allow ophthalmologists to better respond to the growing needs of patients in West Virginia and beyond.

"The need for highly specialized eye care in our region is great, and throughout the past several years, our talented team of physicians and technicians at the Eye Institute have made great strides at addressing this visual disparity," Dr. Mauger said. "This expansion will serve as a significant step forward in achieving our goal of meeting the visual health needs of patients from across West Virginia and the neighboring states of Ohio, Pennsylvania and Maryland."

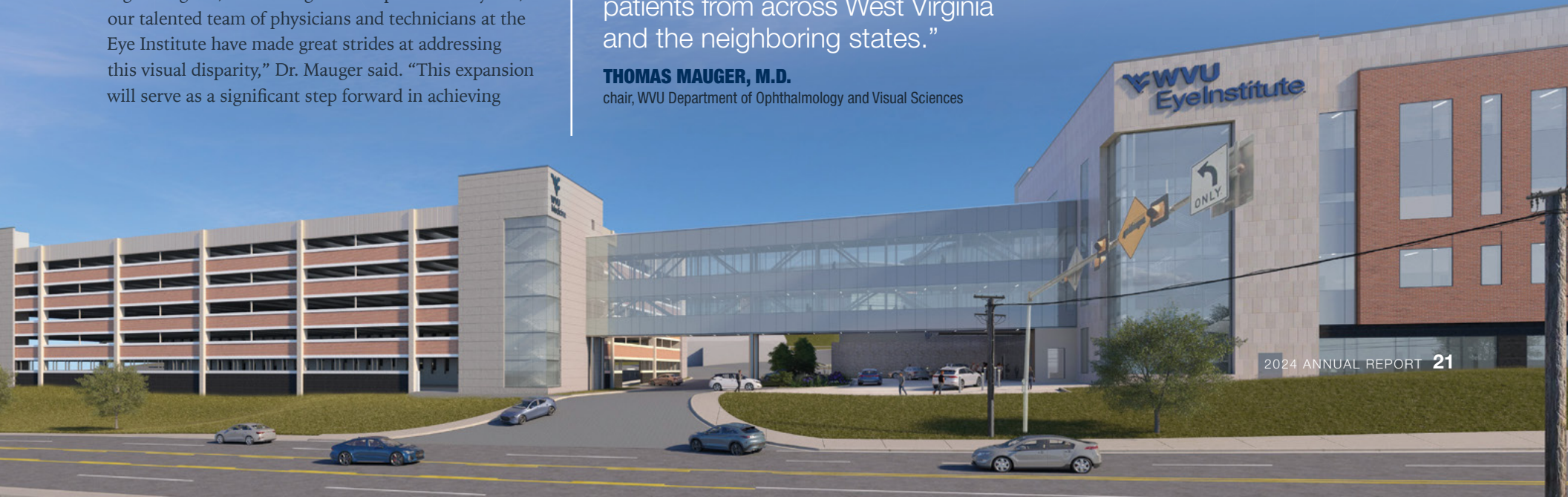
The Eye Institute will nearly double its clinical space with the new facility, increasing from 60 exam rooms and 13 testing rooms to 102 exam rooms and 44 testing rooms. The project also includes the addition of several new surgical suites and the construction of a multi-level parking garage with more than 1,100 spaces.

Mauger explained that the substantial increase in clinical space will allow them to not only see more patients but also recruit more physicians and expand the specialized services offered at the Institute.

Additionally, the new building will accommodate the Department of Ophthalmology and Visual Sciences' growing number of trainees. As of July 2025, the WVU Ophthalmology Residency Program has increased its class size from four to five residents per year.

"Serving as the lone tertiary eye care center in the state with the second-highest visual disparity in the nation, our team is constantly exploring new methods of preventing, treating and slowing the progression of blinding diseases," Mauger said. "With this new facility, we will be able to increase our space, faculty, trainees and funding to strengthen these efforts as we continue to propel toward making groundbreaking discoveries in the world of visual sciences."

> "The need for highly specialized eye care in our region is great […] This expansion will serve as a significant step forward in meeting the visual health needs of patients from across West Virginia and the neighboring states."
>
> **THOMAS MAUGER, M.D.**
> chair, WVU Department of Ophthalmology and Visual Sciences



Addressing the Needs of West Virginians

The WVU Eye Institute and WVU Department of Ophthalmology and Visual Sciences provides crucial outreach services to West Virginians through three unique statewide programs directed by Rebecca Coakley, MA, CLVT, each aimed at delivering much-needed ocular care to specific demographics.

Providing ocular care without boundaries

The Appalachian Vision Outreach Program (AVOP) provides ocular care to patients across West Virginia who may not have access to routine care due to geographic and financial obstacles.

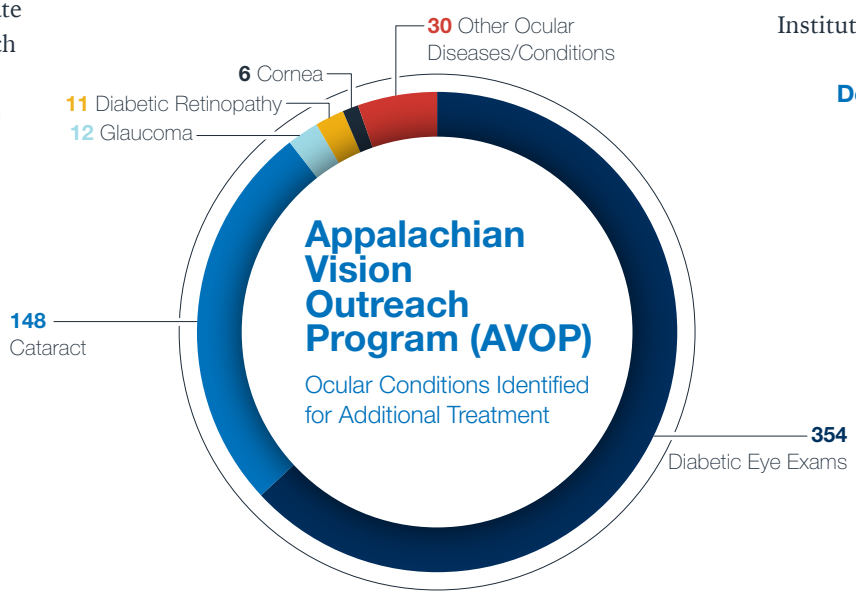
AVOP clinics consist of a team from the Eye Institute traveling to locations across the state to provide patients in need with services such as vision screenings, eye exams, glasses prescriptions, and referrals for specialty care and services. The clinics are held at various locations across West Virginia's 55 counties and typically attract patients from all over the surrounding region.

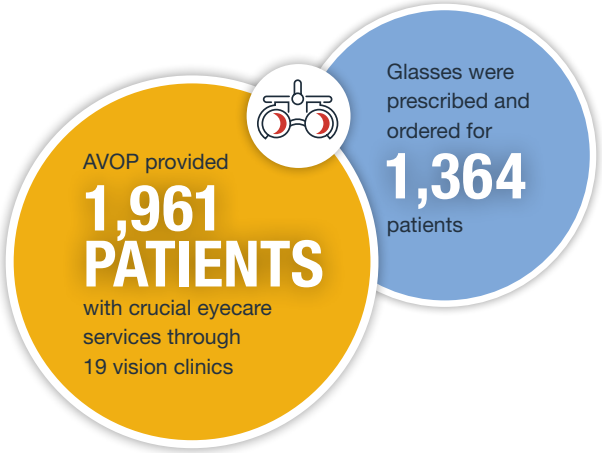
In 2024, AVOP provided 1,961 patients with crucial eyecare services through 19 vision clinics at 11 locations statewide. Glasses were prescribed and ordered for 1,364 patients and 561 patients received referrals for additional care from WVU ophthalmologists.

Targeted low-vision care

The Adult Low Vision Program (ALVP) provides direct support to adult patients with low vision through in-depth screenings and follow-up training. Adult low vision patients are classified as those with a visual acuity of 20/70 or worse that cannot be corrected despite best glasses correction.

The program provides patients with an evaluation performed by a certified low-vision therapist at the WVU Eye Institute. Following the screenings, patients can trial low-vision devices and technology and receive orientation and mobility training with equipment such as white canes with the goal of reclaiming access to activities that were previously lost due to visual impairment. Patients may also receive referrals for additional treatment by Eye Institute ophthalmologists.





Dedicated support for blind and visually impaired children

The Children's Vision Rehabilitation Program (CVRP) is a needs-based program that responds to the individual needs of children with visual impairment, along with their parents, teachers and related professionals in West Virginia.

CVRP's mission is to provide comprehensive vision rehabilitation services to West Virginia's school-aged children who are blind and

(continued)

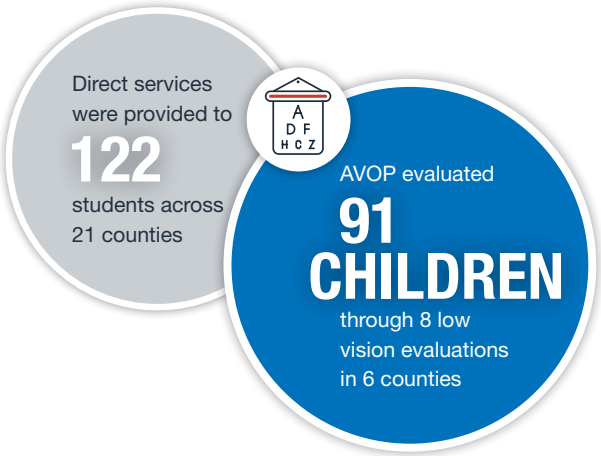
2024 AVOP Clinic Locations

- **Parkersburg**
- **Webster Springs**
- **Summersville**
- **Beckley**
- **Charleston**
- **Wheeling**
- **Weirton**
- **Morgantown**
- **Clarksburg**
- **Spencer**
- **Huntington**

2024 CVRP Clinic Locations

- **Princeton***
- **Martinsburg**
- **Parkersburg**
- **Morgantown**
- **Huntington***
- **Charleston**

*** Multiple clinics held over multiple days**



visually impaired, regardless of their ability to pay. The program aims to give children the tools they need to become independent and employable by optimizing visual function at home and school. CVRP provides access to the visual environment for children with incurable vision loss through medical eye care, optical devices, assistive technology, educational recommendations, support to local school systems and special educational events known as Institutes of Learning.

Learning skills and building a community through Institutes of Learning

Institutes of Learning provide a forum for children who are blind or visually impaired to receive direct instruction on specific skills and are typically multi-day camps hosted during the summer months when school is no longer in session. These events also present students with the unique opportunity to interact with their peers, building an interconnected community of blind and visually impaired children across the state.

In 2024, CVRP hosted eight Institutes of Learning, each focused on providing a unique experience for students, with a total of 215 children in attendance across the different camps.

Evaluating children's needs through low vision screenings

CVRP provides comprehensive low vision evaluations to children across the state through a traveling clinic led by a diverse team of professionals trained in all areas of low vision. The team consists of an ophthalmologist, a low vision technician, a low vision therapist, a technology specialist, a teacher of the visually impaired and an orientation and mobility specialist. The team evaluates how a student is functioning visually and explores a variety of tools, strategies and resources aimed at increasing a student's independence and employability.

In 2024, CVRP evaluated a total of 91 children through eight low vision evaluations in six counties across the state.

Meeting students where they are and addressing daily needs

On a daily basis, CVRP staff is out in the state providing direct care to children in their home districts. During the 2024 school year, direct services were provided to 122 students across 21 West Virginia counties.

This approach allows CVRP team members to get a candid look at the issues and barriers blind and low vision children are facing on a daily basis. This allows CVRP to address not only the direct needs of the students, but also what further education needs will need to be provided to the related professionals in West Virginia and beyond. CVRP bridges the gap between medicine and education by taking referrals from physicians and providing education and guidance to all school districts across the state.

CVRP provides comprehensive low vision evaluations to children across the state through a traveling clinic led by a diverse team of professionals trained in all areas of low vision.

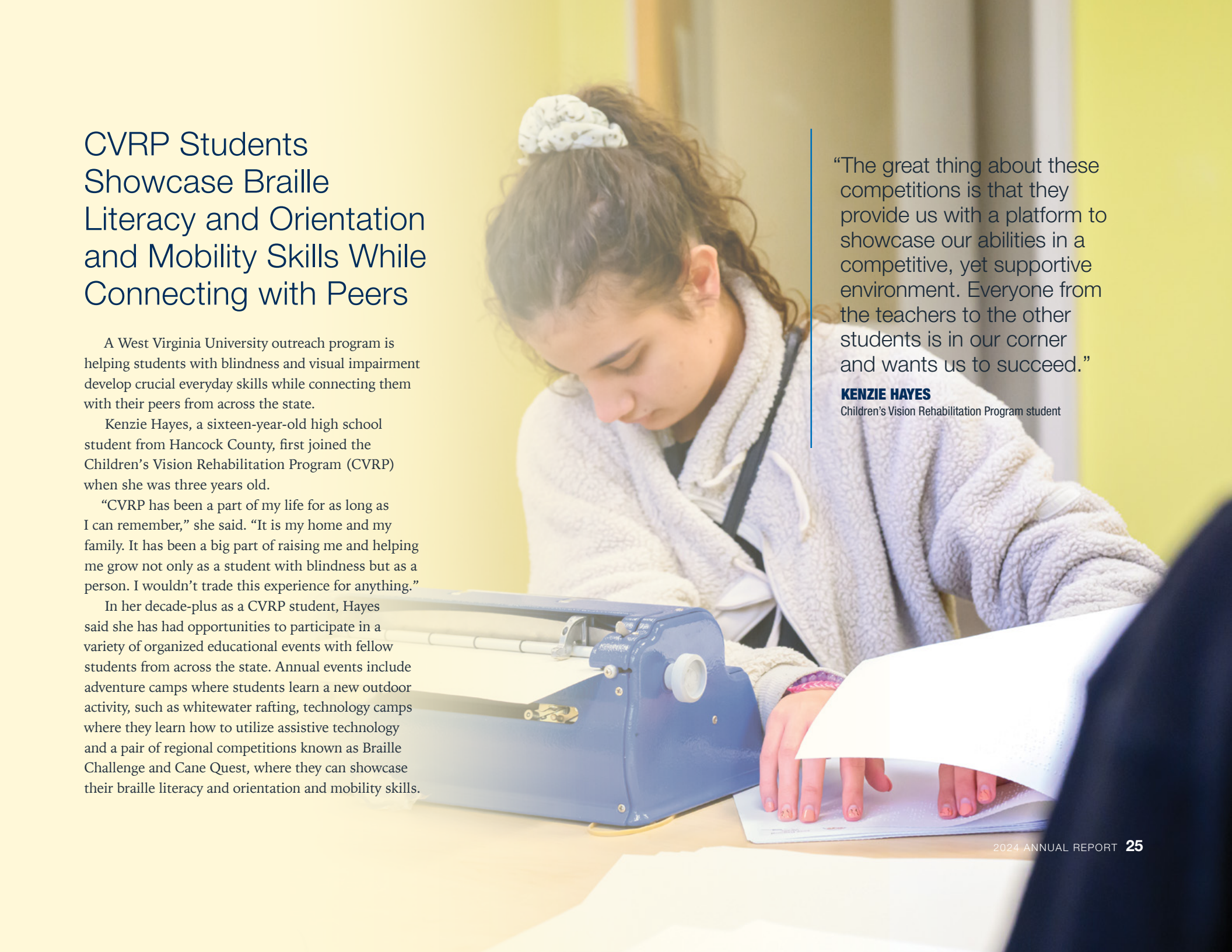
CVRP Students Showcase Braille Literacy and Orientation and Mobility Skills While Connecting with Peers

A West Virginia University outreach program is helping students with blindness and visual impairment develop crucial everyday skills while connecting them with their peers from across the state.

Kenzie Hayes, a sixteen-year-old high school student from Hancock County, first joined the Children's Vision Rehabilitation Program (CVRP) when she was three years old.

"CVRP has been a part of my life for as long as I can remember," she said. "It is my home and my family. It has been a big part of raising me and helping me grow not only as a student with blindness but as a person. I wouldn't trade this experience for anything."

In her decade-plus as a CVRP student, Hayes said she has had opportunities to participate in a variety of organized educational events with fellow students from across the state. Annual events include adventure camps where students learn a new outdoor activity, such as whitewater rafting, technology camps where they learn how to utilize assistive technology and a pair of regional competitions known as Braille Challenge and Cane Quest, where they can showcase their braille literacy and orientation and mobility skills.



"The great thing about these competitions is that they provide us with a platform to showcase our abilities in a competitive, yet supportive environment. Everyone from the teachers to the other students is in our corner and wants us to succeed."

KENZIE HAYES
Children's Vision Rehabilitation Program student

The 2025 West Virginia Regional Braille Challenge and Cane Quest were held in Morgantown over two days in March, where Hayes and more than 30 other CVRP students were in attendance. Hayes first participated in Braille Challenge and Cane Quest in 2024 and said she was looking forward to the opportunity to compete again this year.

"The great thing about these competitions is that they provide us with a platform to showcase our abilities in a competitive, yet supportive environment. Everyone from the teachers to the other students is in our corner and wants us to succeed. It's a great opportunity and I hope I have the chance to participate in these events again next year," she said.

Contestants for the Braille Challenge were divided into groups and tested across five key braille concepts, including reading comprehension, spelling, speed and accuracy, proofreading and understanding charts and graphs. During the competition, students honed in on various skills from the basics of loading the brailler and writing singular letters in braille, to deciphering complex charts and graphs and listening to audio while typing along for accuracy.

Cane Quest contestants were divided into three age groups and asked to demonstrate fundamental orientation and mobility skills and travel techniques such as sound localization, recognizing dropped objects and proper human guide techniques. Accompanied by an orientation and mobility specialist, students used their white canes to navigate the nearby area, where they practiced skills such as recognizing street signs, safely crossing the street and identifying entrances and exits to buildings.

Among the students in attendance was Amelie Jacks, a fourteen-year-old high school student from Monongalia County who has been enrolled in CVRP for two years. A relative newcomer to the program, Jacks said she was excited to have her first experience with these competitions.

"Reading braille and using a white cane are necessary to my everyday life, so it was great to

have an opportunity to demonstrate those skills in a supportive and welcoming environment," she said.

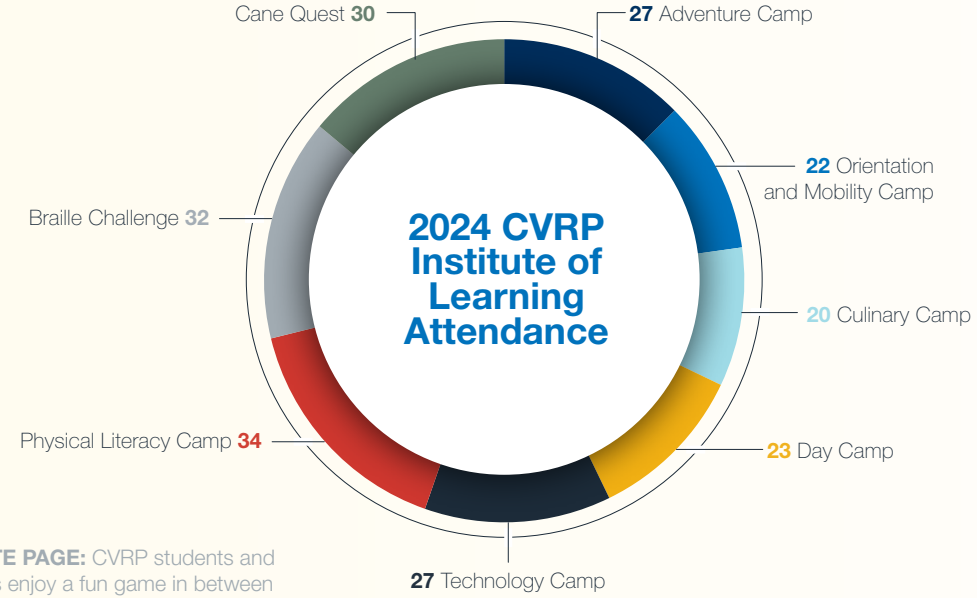
Jacks added that she also enjoyed the opportunity to meet and interact with the other CVRP students over the two days.

"It's just great to be able to meet so many people like me who understand where I come from and the unique barriers we face. I've already made so many great friends through this program and I always love the chance to meet new people at these events," she said.

This is CVRP's mission in action, says Program Director Rebecca Coakley, MA, CLVT.

"Our goal is to provide children with the tools and skills they need to be independent and employable as they prepare to enter young adulthood," Coakely said. "One of those tools is a strong sense of community. Through connecting kids with other students like them from across the state, we empower them by embedding them within a growing community of blind and visually impaired students, mentors and the professionals dedicated to helping them learn and grow."

CVRP is an outreach program at the West Virginia University Eye Institute and Department of Ophthalmology and Visual Sciences that responds to the needs of blind and visually impaired school-age children, their parents and related professionals in West Virginia.



OPPOSITE PAGE: CVRP students and volunteers enjoy a fun game in between Braille Challenge testing sessions.

Braille Challenge and Cane Quest were founded by the Braille Institute of America. Regional Braille Challenge and Cane Quest events are held across the United States each spring, where students compete for a spot in the national finals held in the summer in Los Angeles, CA.

CVRP outreach specialists provide crucial support to students from across West Virginia.

Department of Ophthalmology and Visual Sciences Publications (Jan. 1 - Dec. 31, 2024)

Abboud JJ, Badawe H, **Nguyen J**, Khraiche ML, Sivak-Callcott JA. Kinematics of the upper eyelid and the globe during downward excursion with comparative analysis in patients with thyroid eye disease. Ophthalmic Plast Reconstr Surg. 2024 Mar-Apr 01;40(2):167-173. doi: 10.1097/IOP.0000000000002517. Epub 2023 Sep 11. PMID: 37695209.

Aljammal R, Saravanan T, Guan T, Rhodes S, **Robichaux MA**, **Ramamurthy V**. Excessive tubulin glutamylation leads to progressive cone-rod dystrophy and loss of outer segment integrity. Hum Mol Genet. 2024 Apr 18;33(9):802-817. doi: 10.1093/hmg/ddae013. PMID: 38297980.

Bradford G. Total solar eclipses, while stunning, can damage your eyes if viewed without the right protection [Internet]. The Conversation; 2024. Available from: https://theconversation.com/total-solar-eclipses-while-stunning-can-damage-your-eyes-if-viewed-without-the-right-protection-221381

Brooks C, Kolson D, Sechrest E, Chuah J, Schupp J, Billington N, **Deng WT**, Smith D, **Sokolov M**. Therapeutic potential of archaeal unfoldase PANet and the gateless T20S proteasome in P23H rhodopsin retinitis pigmentosa mice. PLoS One. 2024 Oct 3;19(10):e0308058. doi: 10.1371/journal.pone.0308058. PMID: 39361629; PMCID: PMC11449290.

Brothers B, Barbera RJ, Sechrest ER, **Deng WT**. P307L and R330Q cone opsin missense mutant knock-in mice display a dominant negative blue cone monochromacy phenotype. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7). doi:4707

Cahill ME, Chmelik K, Sechrest ER, Markovitz D, **Deng WT**. Gene therapy rescued cones in an all-cone mouse model of blue cone monochromacy with the most common cone opsin missense mutation. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7). doi:6090

Cal K, Leyva A, Rodríguez-Duarte J, Ruiz S, Santos L, Colella L, Ingold M, Vilaseca C, Galliussi G, Ziegler L, Peclat TR, Bresque M, Handy RM, King R, Dos Reis LM, Espasandin C, Breining P, Dapueto R, Lopez A, Thompson KL, Agorrody G, DeVallance E, Meadows E, Lewis SE, Barbosa GCS, de Souza LOL, Chichierchio MS, Valez V, Aicardo A, Contreras P, Vendelbo MH, Jakobsen S, Kamaid A, Porcal W, Calliari A, Verdes JM, **Du J**, Wang Y, Hollander JM, White TA, Radi R, Moyna G, Quijano C, O'Doherty R, Moraes-Vieira P, Holloway GP, Leonardi R, Mori MA, Camacho-Pereira J, Kelley EE, Duran R, Lopez GV, Batthyány C, Chini EN, Escande C. A nitroalkene derivative of salicylate alleviates diet-induced obesity by activating creatine metabolism and non-shivering thermogenesis. Res Sq [Preprint]. 2023 Jul 12:rs.3.rs-3101395. doi: 10.21203/rs.3.rs-3101395/v1. PMID: 37502859; PMCID: PMC10371099.

Chang M, Schaefer J, Leonard A, Ellison PR, Cui R, Evans R, Calvert N, **Thuro B**, Fay A, **Nguyen J**. The effect of aromatherapy on anxiety and pain in patients undergoing oculoplastic surgery. Ophthalmic Plast Reconstr Surg. 2024 Nov-Dec 01;40(6):677-680. doi: 10.1097/IOP.0000000000002692. Epub 2024 May 22. PMID: 38776147.

Chen M, Wang Y, Dalal R, **Du J**, Vollrath D. Alternative oxidase blunts pseudohypoxia and photoreceptor degeneration due to RPE mitochondrial dysfunction. Proc Natl Acad Sci U S A. 2024 Jun 18;121(25):e2402384121. doi: 10.1073/pnas.2402384121. Epub 2024 Jun 12. PMID: 38865272; PMCID: PMC11194566.

Clavell CI, **Dossett JP**, **Yadav S**, **Patel A**, **Laxson LC**, **Ghorayeb G**. Multimodal imaging analysis of retinal and choroidal microvascular abnormalities in a case of ocular decompression sickness. Am J Ophthalmol Case Rep. 2024 Nov 6;36:102208. doi: 10.1016/j.ajoc.2024.102208. PMID: 39649384; PMCID: PMC11625142.

Dahshan D, **Mahmud H, Elhamdani R**, **Patel A**, **Coakley R**, **Moore CA**, **Amireskandari A**. Ophthalmic care in rural Appalachia: Appalachian Vision Outreach Program. Global Ophthalmology Summit 2024. In Chicago, Illinois.

Dietze J, Jawad S, **Chen S**, Cui R, Holmes G, **Palko JR**. Risk factors for layered hyphema following goniotomy or trabecular bypass stent placement combined with phacoemulsification. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7).

Dossett JP, Clavell CI, **Ghorayeb G**. Ocular manifestations of West Nile virus. Curr Opin Ophthalmol. 2024 Nov 1;35(6):521-525. doi: 10.1097/ICU.0000000000001080. Epub 2024 Aug 26. PMID: 39259651.

Dossett JP, Clavell CI, **Patel A**. Considerations for combined phacoemulsification vitrectomy. Retina Today [Internet]. 2024; Available from: https://retinatoday.com/articles/2024-nov-dec/considerations-for-combined-phacoemulsification-vitrectomy

Dossett JP, Clavell CI, **Pumariega N**, **Ghorayeb G**. Early vitrectomy for diagnosis and management of ghost cell pseudohypopyon. Am J Ophthalmol Case Rep. 2024 Sep 1;36:102148. doi: 10.1016/j.ajoc.2024.102148. PMID: 39319202; PMCID: PMC11419927.

Dossett JP, Clavell CI, **Pumariega N**, Sarraf D. The ASRS X-Files. Retina Times. Spring 2024; 42(1): 50,56

Eid A, **Yadav S**, **Dossett JP**, Clavell CI, **Nguyen J**, **Pumariega N**, **Ghorayeb G**. Utilizing generative AI to help create better patient education materials in retina: A comparative analysis in readability between ASRS educational materials and those made by popular AI models. Vit-Buckle Society Annual Meeting 2024. In Miami Beach, Florida.

Eid K, **Eid A**, **Wang D**, Raiker RS, **Chen S**, **Nguyen J**. Optimizing ophthalmology patient education via ChatBot-generated materials: Readability analysis of AI-generated patient education materials and the American Society of Ophthalmic Plastic and Reconstructive Surgery Patient brochures. Ophthalmic Plast Reconstr Surg. 2024 Mar-Apr 01;40(2):212-216. doi: 10.1097/IOP.0000000000002549. Epub 2023 Nov 16. PMID: 37972974.

Enger AD, **Dossett JP,** Clavell CI, **Eid A**, **Pumariega N**, **Ghorayeb G**. Delayed-onset endophthalmitis following injection of intravitreal dexamethasone implant. Women in Ophthalmology Summer Symposium 2024. In Carlsbad, California.

Enger AD, **Ellis BD**, Levy-Clarke GA, **Leys MJ**. A unique case of posterior reversible encephalopathy syndrome presenting with a cranial nerve 3 palsy, a bacillary layer retinal detachment, and bilateral serous retinal detachments. J Neuroophthalmol. 2024 Sep 4. doi: 10.1097/WNO.0000000000002246. Epub ahead of print. PMID: 39228038.

Grenell A, Singh C, Raju M, Wolk A, Dalvi S, Jang GF, Crabb JS, Hershberger CE, Manian KV, Hernandez K, Crabb JW, Singh R, **Du J**, Anand-Apte B. Tissue Inhibitor of Metalloproteinase 3 (TIMP3) mutations increase glycolytic activity and dysregulate glutamine metabolism in RPE cells. Mol Metab. 2024 Oct;88:101995. doi: 10.1016/j.molmet.2024.101995. Epub 2024 Jul 22. PMID: 39047907; PMCID: PMC11344013.

Haggerty KN, Eshelman SC, Sexton LA, Frimpong E, Rogers LM, Agosto MA, **Robichaux MA**. Super-resolution mapping in rod photoreceptors identifies rhodopsin trafficking through the inner segment plasma membrane as an essential subcellular pathway. PLoS Biol. 2024 Jan 8;22(1):e3002467. doi: 10.1371/journal.pbio.3002467. PMID: 38190419; PMCID: PMC10773939.

Halenda K, Bollinger K, Smith S. Filtration Surgery. In: Basic Techniques of Ophthalmic Surgery. San Francisco, California: American Academy of Ophthalmology; 2024. p. 243–52.

Hays RD, Tarver ME, Eydelman M, Spaeth GL, Parke DW 2nd, Singh K; Glaucoma Outcomes Survey Collaborative Study Group; Nguyen D, Saltzmann RM, Smith O, Shaw ML, Rosenberg L, Seibold L, Teymoorian S, Provencher LM, Bicket AK, Arora N, Junk AK, Chaya C, Salim S, Kuo D, Weiner A, Zhang Z, Rhee BFD, **McMillan B**, Choo C, Garris W, Noecker R, Fellman R, Caprioli J, Vold S, Pasquale L, Cui Q, Mbagwu M. A health-related quality of life measure for patients who undergo minimally invasive glaucoma surgery. Am J Ophthalmol. 2024 Oct;266:313-320. doi: 10.1016/j.ajo.2024.05.031. Epub 2024 Jun 15. PMID: 38880374.

Holmes G, Jawad S, **Chen S**, Cui R, Dietze J, **Palko JR**. Risk factors for hyphema following goniotomy or trabecular bypass stent placement combined with phacoemulsification. Graefes Arch Clin Exp Ophthalmol. 2024 Oct 5. doi: 10.1007/s00417-024-06647-y. Epub ahead of print. PMID: 39367280.

Jawad S, **Halenda K**. Late-onset *Pseudomonas aeruginosa* orbital cellulitis following glaucoma drainage device implantation. Am J Ophthalmol Case Rep. 2024 Apr 17;34:102054. doi: 10.1016/j.ajoc.2024.102054. PMID: 38680525; PMCID: PMC11046049.

Lee IJ, Pulido JS, Regillo CD, **Leys M**. **Multiple organ dysfunction syndrome and disseminated intravascular coagulation causing extensive multiple Amalric triangular choroidal infarctions.** Retin Cases Brief Rep. 2024 Mar 1;18(2):251-254. doi: 10.1097/ICB.0000000000001360. Epub 2022 Oct 29. PMID: 36730731; PMCID: PMC10885859.

Lu Y, Banna H, Yi H, Schlipp H, Liu M, Zhong F, Wang B, Theophanous A, Tahir S, Lee PY, **Palko JR**, Sigal IA. Elevated IOP reduces lamina cribrosa oxygenation both directly through capillary distortion and indirectly by reducing perfusion from the posterior ciliary arteries. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7).

Misra R, **Palko JR**, Schofield T, **Amireskandari A**, Gyawali P, **Ramamurthy V**, **Laxson LC**. Diabetes retinopathy and diabetic macular edema in rural patients with diabetes. National IDeA Symposium of Biomedical Research Excellence 2024. In Washington DC.

Mitchell B, Elwarfalli I, Banna H, **Palko JR**. Dynamic blood flow autoregulation measured using ultrasound localization microscopy in rat eyes with and without scleral stiffening. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7).

Motipally SI, Kolson DR, Guan T, **Kolandaivelu S**. Aberrant lipid accumulation and retinal pigment epithelium dysfunction in PRCD-deficient mice. Exp Eye Res. 2024 Sep;246:110016. doi: 10.1016/j.exer.2024.110016. Epub 2024 Aug 5. PMID: 39098587; PMCID: PMC11388538.

Nield LS, **Nguyen J**, Nguyen E, Vallejo MC. Rate of AI-generated text in medical school applicants' personal comments essays. J Gen Intern Med. 2024 Dec 9. doi: 10.1007/s11606-024-09247-y. Epub ahead of print. PMID: 39653995.

Nolan ND, Cui X, Robbings BM, Demirkol A, Pandey K, Wu WH, Hu HF, Jenny LA, Lin CS, Hass DT, **Du J**, Hurley JB, Tsang SH. CRISPR editing of anti-anemia drug target rescues independent preclinical models of retinitis pigmentosa. Cell Rep Med. 2024 Apr 16;5(4):101459. doi: 10.1016/j.xcrm.2024.101459. Epub 2024 Mar 21. PMID: 38518771; PMCID: PMC11031380.

Odom JV, **Leys MJ**. Clinical Visual Electrophysiology: A tool for studying inherited retinal disorders. In: Essentials in Ophthalmology., Singapore: Springer; p. 1–34. (Advances in Vision Research; vol. 4).

Palko JR, Mitchell B, Banna H, Elwarfalli I. Volumetric blood flow of the rat eye using high-frequency ultrasound localization microscopy. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7).

Patel A, Eid C, **Eid A**, **Dossett JP**, Clavell CI, **Pumariega N**, **Ghorayeb G**. Can AI chat bots outperform educational content from the AAO website?: A comparison of readability in ophthalmic patient education materials. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7).

Rajala A, Rajala R, Bhat MA, Eminhizer M, Hao J, **Du J**, Rajala RVS. Age-related retinal degeneration resulting from the deletion of Shp2 tyrosine phosphatase in photoreceptor neurons. Cell Death Dis. 2024 Aug 8;15(8):577. doi: 10.1038/s41419-024-06924-y. PMID: 39117618; PMCID: PMC11310310.

Realini T, **Halenda K**, **Palko JR**, **McMillan B**, Balasubramani GK. Test-retest reliability of intraocular pressure measurements with office-based versus home-based rebound tonometers. J Glaucoma. 2024 Oct 1;33(10):758-762. doi: 10.1097/IJG.0000000000002441. Epub 2024 May 27. PMID: 38814353.

Rizwan S, Toothman B, Li B, Engel AJ, Lim RR, Niernberger S, Lu J, Ratliff C, Xiang Y, Eminhizer M, Chao JR, **Du J**. Metabolic phenotyping of healthy and diseased human RPE cells. bioRxiv [Preprint]. 2024 Jul 18:2024.02.28.582405. doi: 10.1101/2024.02.28.582405. Update in: Invest Ophthalmol Vis Sci. 2024 Sep 3;65(11):5. doi: 10.1167/iovs.65.11.5. PMID: 38464098; PMCID: PMC10925320.

Sanzhaeva U, Boyd-Pratt H, Bender PTR, Saravanan T, Rhodes SB, Guan T, Billington N, Boye SE, Cunningham CL, Anderson CT, **Ramamurthy V**. TUBB4B is essential for the cytoskeletal architecture of cochlear supporting cells and motile cilia development. Commun Biol. 2024 Sep 14;7(1):1146. doi: 10.1038/s42003-024-06867-2. PMID: 39277687; PMCID: PMC11401917.

Sanzhaeva U, Wonsettler NR, Rhodes SB, **Ramamurthy V**. TUBB4B is essential for the expansion of differentiating spermatogonia. Sci Rep. 2024 Sep 7;14(1):20889. doi: 10.1038/s41598-024-71303-8. PMID: 39244620; PMCID: PMC11380678.

Sechrest ER, Barbera RJ, Brothers B, Cahill ME, **Deng WT**. Side-by-side comparison of high transduction AAV8-Y733F-mediated gene therapy in two BCM mouse models. Investigative Ophthalmology & Visual Science. 2024 Jun;65(7). doi:5355

Sechrest ER, Barbera RJ, Ma X, Dyka F, Ahn J, Brothers BA, Cahill ME, Hall I, Baehr W, **Deng WT**. Expression of red/green-cone opsin mutants K82E, P187S, M273K result in unique pathobiological perturbations to cone structure and function. Front Neurosci. 2024 Feb 12;18:1368089. doi: 10.3389/fnins.2024.1368089. PMID: 38410159; PMCID: PMC10895044.

Sechrest ER, Ma X, Cahill ME, Barbera RJ, Wang Y, **Deng WT**. Structural and functional rescue of cones carrying the most common cone opsin C203R missense mutation. JCI Insight. 2024 Jan 23;9(2):e172834. doi: 10.1172/jci.insight.172834. PMID: 38060327; PMCID: PMC10906232.

Shang P, Ambrosino H, Hoang J, Geng Z, Zhu X, Shen S, Eminhizer M, Hong E, Zhang M, Qu J, **Du J**, Montezuma SR, Dutton JR, Ferrington DA. The Complement Factor H (Y402H) risk polymorphism for age-related macular degeneration affects metabolism and response to oxidative stress in the retinal pigment epithelium. Free Radic Biol Med. 2024 Nov 20;225:833-845. doi: 10.1016/j.freeradbiomed.2024.10.307. Epub 2024 Nov 2. PMID: 39491736; PMCID: PMC11662989.

Stein JD, Zhou Y, Andrews CA, Kim JE, Addis V, Bixler J, Grove N, **McMillan B**, Munir SZ, Pershing S, Schultz JS, Stagg BC, Wang SY, Woreta F; SOURCE Consortium. Using natural language processing to identify different lens pathology in electronic health records. Am J Ophthalmol. 2024 Jun;262:153-160. doi: 10.1016/j.ajo.2024.01.030. Epub 2024 Feb 1. PMID: 38296152; PMCID: PMC11098689.

Thrasher J, **Amireskandari A**, Gyawali P. Enhancing retinal disease classification from OCTA images via active learning techniques. International Conference on Medical Image Computing and Computer Assisted Intervention 2024. In: arXiv [Internet]. Marrakesh; 2024. Available from: https://arxiv.org/abs/2407.15293

Wang D, Maliakkal J, **Sadat O**, Codrea V, **Nguyen J**. Acellular fish skin grafts for treatment of periocular skin defects. Ophthalmic Plast Reconstr Surg. 2024 Nov-Dec 01;40(6):681-684. doi: 10.1097/IOP.0000000000002699. Epub 2024 May 31. PMID: 38819161; PMCID: PMC11527377.

Wang Y, Becker S, Finkelstein S, Dyka FM, Liu H, Eminhizer M, Hao Y, Brush RS, Spencer WJ, Arshavsky VY, Ash JD, **Du J**, Agbaga MP, Vinberg F, Ellis JM, Lobanova ES. Acyl-CoA synthetase 6 controls rod photoreceptor function and survival by shaping the phospholipid composition of retinal membranes. Commun Biol. 2024 Aug 21;7(1):1027. doi: 10.1038/s42003-024-06691-8. PMID: 39169121; PMCID: PMC11339274.

Yadav S, **Patel A**, **Dossett JP**, Clavell CI, **Pumariega N**, **Ghorayeb G**. Association between semaglutide use and diabetic retinopathy outcomes using a large multicenter database. American Society of Retina Specialists Annual Meeting 2024. In Stockholm, Sweden.

Yanardag S, Rhodes S, Saravanan T, Guan T, **Ramamurthy V**. Prominin 1 is crucial for the early development of photoreceptor outer segments. Sci Rep. 2024 May 7;14(1):10498. doi: 10.1038/s41598-024-60989-5. PMID: 38714794; PMCID: PMC11076519.

Glaucoma specialist Brian McMillan, M.D., utilizes one of the surgical microscopes in the WVU Eye Institute's wet lab.

Funding January 1 - December 31, 2024

Basic Science Grants

Wen Tao Deng, Ph.D., *Assistant Professor, Add'l Appt.: Assistant Professor, Dept. of Biochemistry and Molecular Medicine*
Disease mechanisms of cone opsin mutants and treatment strategies
US DHHS-NIH-National Eye Institute
Duration: 8/1/2021 - 7/31/2025
Total Award Amount: $1,472,492

Intravitreal AAV Gene Therapy for Blue Cone Monochromacy: test of capsids and cone promoters on animal models and proof of concept study
BCM Families Foundation
Duration: 1/1/2023 - 11/02/2025
Total Award Amount: $130,888

Jianhai Du, Ph.D., *Associate Professor, Add'l Appt.: Associate Professor, Department of Biochemistry and Molecular Medicine*
Proline metabolism in retinal health
US DHHS-NIH-National Eye Institute
Duration: 6/1/2021 - 3/31/2026
Total Award Amount: $1,888,600

Mitochondrial Pyruvate Transport in Retinal Health and Disease
US DHHS-NIH-National Eye Institute
Duration: 1/1/2021 - 11/30/2025
Total Award Amount: $1,980,105

Regulators of retinal metabolism in healthy and degenerating retinas
US DHHS-NIH-National Eye Institute – Subaward Univ. of Pittsburgh
Duration: 7/1/2023 - 6/30/2025
Total Award Amount: $81,780

Mitochondrial Defects in the Retinal Pigment Epithelium and the CFH Risk Allele for Age-related Macular Degeneration
US DHHS-NIH-National Eye Institute – Subaward Doheny Eye Institute
Duration: 9/30/2022 – 6/30/2025
Total Award Amount: $145,656

Metabolic dysfunction from ECM remodeling in diseases of human RPE
US DHHS-NIH-National Eye Institute - Univ. of Washington
Duration: 9/01/2022 – 6/30/2027
Total Award Amount: $560,706

Deciphering the Mechanisms Associated with High-risk AMD genotypes for ARMS2/HTRA1 and Complement Factor H
US DHHS-NIH-National Eye Institute – Subaward Doheny Eye Institute
Duration: 9/30/2022 – 8/31/2025
Total Award Amount: $148,038

Nutritional Strategies in Age-Related Macular Degeneration
International Retinal Research Foundation
Duration: 1/1/2024 - 12/31/2024
Total Award Amount: $43,000

AMD iPSC-derived
US DHHS-NIH-National Eye Institute - Univ. of Washington
Duration: 9/30/2022 – 8/31/2025
Total Award Amount: $460,642

Pathogenesis and motor neuron degeneration of a novel disease associated with a P158A mutation in NAMPT
US DHHS-NIH-National Eye Institute - Subaward University of Missouri
Duration: 4/1/2022 – 3/31/2027
Total Award Amount: $74,238

LysoPI/GPR55 pathway promotes endothelial activation, vascular inflammation and atherosclerosis
US DHHS-NIH-National Cancer Institute – Subaward Temple University
Duration 1/1/2024 – 12/31/2024
Total Award Amount: $13,756

Saravanan Kolandaivelu, Ph.D., *Associate Professor, Add'l Appt.: Associate Professor, Department of Biochemistry and Molecular Medicine*
Mechanisms Behind Retinal Photoreceptor Cells Outer Segment Biogenesis
US DHHS-NIH-National Eye Institute
Duration: 5/1/2018 - 4/30/2025
Total Award Amount: $1,852,500

Thomas Mauger, M.D., *Professor, Chair*
RPB Challenge Grant - West Virginia University
Research to Prevent Blindness
Duration: 7/1/2024 - 6/30/2028
Total Award Amount: $360,000

Joel Palko, M.D., Ph.D., *Assistant Professor*
Visual Sciences Center of Biomedical Research Excellence
US DHHS-NIH-National Institute of General Medical Sciences
Duration: 3/20/2022 – 1/31/2025
Total Award Amount: $674,310

Michael Robichaux, Ph.D., *Assistant Professor, Add'l Appt.: Assistant Professor, Department of Biochemistry and Molecular Medicine*
Visual Sciences Center of Biomedical Research Excellence
US DHHS-NIH-National Institute of General Medical Sciences
Duration: 3/20/2022 – 1/31/2024
Total Award Amount: $589,801

Maxim Sokolov, Ph.D., *Professor, Add'l Appt.: Professor, Department of Biochemistry and Molecular Medicine; Professor, Department of Neuroscience; Professor, Rockefeller Neuroscience Institute*
Protein-Unfolding Chaperones for the Treatment of Blindness
US DHHS-NIH-National Eye Institute
Duration: 6/1/2019 - 5/31/2024
Total Award Amount: $1,410,750

Visvanathan Ramamurthy, Ph.D., *Professor, Vice Chair of Research; Additional Appointments: Chairman, Professor, Department of Biochemistry and Molecular Medicine*
Biosynthesis and Trafficking of Phosphodiesterase in the Retinal Photoreceptors
US DHHS-NIH-National Eye Institute
Duration: 4/1/2020 - 3/31/2025
Total Award Amount: $1,921,805

Emily Sechrest, *Post-Doctoral Research Assistant (Deng Lab)*
Disease mechanism of blue cone monochromacy and gene therapy approaches to extend the therapeutic window
Knights Templar Eye Foundation Inc
Duration: 7/1/2023 - 6/30/2024
Total Award Amount: $90,000

Clinical Research Funding

Ghassan Ghorayeb, M.D., *Associate Professor, Vitreoretinal Fellowship Program Director, Vice Chair of Clinical Affairs, Vitreoretinal Division Director*
A Multicenter, Prospective, Observational Study Of The Progression Of Intermediate Age-Related Macular Degeneration
Genentech Incorporated
Duration: 8/8/2022 – 8/30/2024
Total Award Amount: $5,500

A Phase 2, Outcomes Assessor-Masked, Multicentre, Randomized Study To Evaluate The Safety And Efficacy Of Two Doses Of GT005 Administered as a Single Subretinal Injection in Subjects with Geographic Atrophy Secondary to Age-Related Macular Degeneration
Gyroscope Therapeutics, Ltd
Duration: 10/6/2021 – 2/28/2024
Total Award Amount: $4,000

A Randomized, Double-Masked, Active-Controlled Phase 2/3 Study of the Efficacy and Safety of High-Dose Aflibercept in Patients with Diabetic Macular Edema
Regeneron Pharmaceuticals, Inc.
Duration: 12/8/2022 – 6/9/2025
Total Award Amount: $44,234

A Phase 3, Multicenter, Double-masked, Randomized Study to Evaluate the Efficacy and Safety of Intravitreal OPT-302 in Combination with Aflibercept, Compared with Aflibercept Alone in Participants with Neovascular Age-related Macular Degeneration (nAMD)
Opthea
Duration: 5/24/2021 – 12/31/2025
Total Award Amount: $7,000

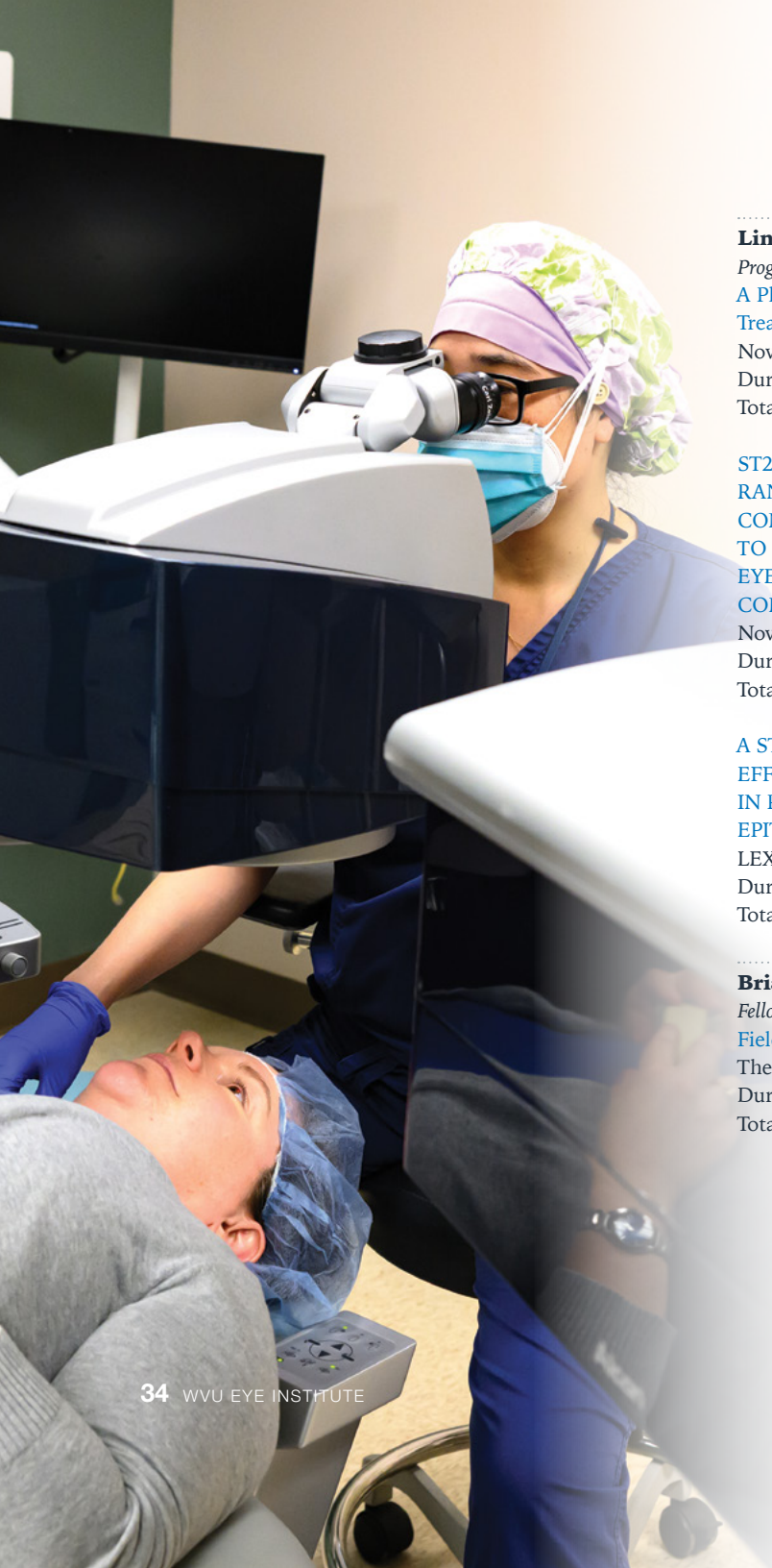
An Extension Study to Evaluate the Long-Term Outcomes of Patients who Received Treatment for Retinopathy of Prematurity in the VGFTE-ROP-1920 Study
Regeneron Pharmaceuticals, Inc.
Duration: 8/31/2022 – 11/04/2026
Total Award Amount: $16,137

A Multi-Center, Randomized, Double-Masked Phase 2 Study to Assess Safety and Efficacy of ADVM-022 (AAV.7m8-aflibercept) in Anti-VEGF Treatment Experienced Patients with Neovascular (Wet) Age-related Macular Degeneration (nAMD) [LUNA]
PAREXEL INTERNATIONAL CORPORATION
Duration: 9/27/2022 – 9/26/2029
Total Award Amount: $7,350

A Two Stage Phase 2 Study: Stage 1: Single Subcutaneous Dose Open-label Assessment of Safety and Pharmacodynamic Response to D-4517.2
PHARMACEUTICAL RESEARCH ASSOC
Duration: 10/6/2022 – 10/6/2029
Total Award Amount: $3,000

A Phase III, Multicenter, Randomized, Double-Masked, Active Comparator Controlled Study to Evaluate the Efficacy and Safety of Farcimimab in Patients with Macular Edema Secondary to Central Retinal or Hemiretinal Vein Occlusion
GENENTECH, INC
Duration: 10/27/2020 – 12/31/2025
Total Award Amount: $33,652

Kevin Halenda, M.D., *Assistant Professor*
Mentoring for the Advancement of Physician Scientists (MAPS)
American Glaucoma Society
Duration: 12/01/2023 - 12/1/2025
Total Award Amount: $10,000



Lingo Lai, M.D., *Assistant Professor, Cornea Fellowship Program Director, Associate Residency Program Director*

A Phase 2 Open Label Trial of ST266 Eye Drops in the Treatment of Persistent Corneal Epithelial Defects (PED)
Noveome Biotherapeutics, Inc.
Duration: 2/5/2020 - 4/21/2030
Total Award Amount: $10,905

ST266-PED-202: A PHASE 2B, MULTI-CENTER, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY WITH OPEN-LABEL EXTENSION TO EVALUATE THE SAFETY AND EFFICACY OF ST266 EYE DROPS IN THE TREATMENT OF PERSISTENT CORNEAL EPITHELIAL DEFECTS
Noveome Biotherapeutics, Inc.
Duration: 1/27/2022 – 1/31/2027
Total Award Amount: $31,500

A STUDY TO EVALUATE THE SAFETY AND EFFICACY OF KPI-012 OPHTHALMIC SOLOUTION IN PARTICIPANTS WITH PERSISTENT CORNEAL EPITHELIAL DEFECT (PCED)
LEXITAS PHARMA SERVICES
Duration: 11/28/2023 – 12/31/2025
Total Award Amount: $3,500

Brian McMillan, M.D., *Associate Professor, Glaucoma Fellowship Program Director, Anterior Segment Director*

Field Test of Glaucoma Outcomes Survey
The Emmes Corporation
Duration: 2/4/2021 - 1/30/2031
Total Award Amount: $1,450

John Nguyen, M.D., *Professor, Ophthalmic Plastic and Reconstructive Surgery Fellowship Director*

A Phase 2b, Randomized, Double-Mask, Placebo-Controlled, Study to Evaluate the Safety, Pharmacokinetics and Efficacy of Linsitinib in Subjects with Active, Moderate to Severe Thyroid Eye Disease (TED)
SYNEOS HEALTH, LLC
Duration: 1/24/2022 – 8/31/2025
Total Award Amount: $83,419

A Multicenter, Extension Study to Evaluate the Efficacy, Safety, Pharmacokinetics, and Pharmacodynamics of Two Doses of Linsitinib in Subjects with Active, Moderate to Severe Thyroid Eye Disease (TED)
SYNEOS HEALTH, LLC
Duration: 4/17/2023 – 8/31/2025
Total Award Amount: $17,818

A Phase 4, Randomized, Double-masked, Placebo-controlled, Multicenter Trial to Evaluate the Efficacy and Safety of TEPEZZA(R) in Treating Patients with Chronic (Inactive) Thyroid Eye Disease
Horizon Therapeutics U.S.A., Inc
Duration: 6/20/2022 – 6/30/2026
Total Award Amount: $2,000

A Multicenter Phase 2b Randomized, Double-Masked, Placebo-Controlled Dose-Ranging Study of TOUR006 in Participants with Thyroid Eye Disease
SYNEOS HEALTH, LLC
Duration: 2/16/2024 – 2/2/2027
Total Award Amount: $12,625

An Open-label Extension Study for Participants who Completed Study IMVT-1401-3201 or Study IMVT-1401-3202 to Assess the Efficacy and Safety of Batoclimab for the Treatment of Thyroid Eye Disease (TED)
SYNEOS HEALTH, LLC
Duration: 4/5/2024 – 2/27/2033
Total Award Amount: $72,372

A Phase 3, Randomized, Double-masked, Placebo-controlled, Parallel-group, Multicenter Trial to Evaluate the Efficacy, Safety and Tolerability of Subcutaneous Teprotumumab in Participants with Moderate-to-Severe Active Thyroid Eye Disease
Horizon Therapeutics U.S.A., Inc
Duration: 4/29/2024 – 04/29/2031
Total Award Amount: $67,067

IMVT-1401-3202: A Phase 3, Multi-center, Randomized, Quadruple-masked, Placebo-controlled Study of Batoclimab for the Treatment of Participants with Active Thyroid Eye Disease (TED)
SYNEOS HEALTH, LLC
Duration: 03/22/2023 – 03/22/2033
Total Award Amount: $47,495

A Randomized, Controlled, Safety and Tolerability Study of VRDN-001, a Humanized Monoclonal Antibody Directed Against the IGF-1 Receptor, in Participants with Thyroid Eye Disease (TED)
PAREXEL INTERNATIONAL CORPORATION
Duration: 9/5/2024 – 1/31/2026
Total Award Amount: $9,198

A PHASE III, RANDOMIZED, DOUBLE-MASKED, PLACEBO-CONTROLLED, MULTICENTER STUDY TO EVALUATE THE EFFICACY, SAFETY, PHARMACOKINETICS, AND PHARMACODYNAMICS OF SATRALIZUMAB IN PARTICIPANTS WITH MODERATE-TO-SEVERE THYROID EYE DISEASE
GENENTECH, INC
Duration: 4/23/2024 – 4/22/2034
Total Award Amount: $34,090

Expansion of the Ocular Disease and Injury Iris Dataset
US DEPT OF JUST, BUR OF INVEST
Duration: 09/01/2023 – 2/28/2026
Total Award Amount: $226,095

Iris Recognition/Registration in Setting Before/After Pharmalogical, Disease Related, and Traumatic Dilation
US DEPT OF JUST, BUR OF INVEST
Duration: 03/01/2024 – 8/31/2025
Total Award Amount: $256,173

Tony Realini, M.D., M.P.H., *Professor, Vice Chair for Clinical Research*

Clarifying the Optimal Application of SLT Therapy (COAST) Trial
US DHHS-NIH-National Eye Institute
Duration: 9/30/2020 - 8/31/2025
Total Award Amount: $3,061,147

Clarifying the Optimal Application of SLT Therapy (COAST) Trial – Univ. of Pittsburgh
US DHHS-NIH-National Eye Institute
Duration: 8/1/2024 - 8/31/2025
Total Award Amount: $168,877

Service Grant Funding — State & Foundation Awards

Rebecca Coakley, MA, CLVT, *Director of Outreach, West Virginia University Eye Institute*

West Virginia Department of Vision Rehabilitation
State of West Virginia
Duration: 2024 | Total Award Amount: $345,000

Greater Kanawha Valley Foundation
Duration: 2024 | Total Award Amount: $98,800

Benedum Foundation
Duration: 2024 | Total Award Amount: $120,000

Teubert Foundation
Duration: 2024 | Total Award Amount: $59,961

Pallottine Foundation
Duration: 2024 | Total Award Amount: $25,000

Alcon Foundation
Duration: 2024 | Total Award Amount: 85,000

WVU NIP Grants
Duration: 2024 | Total Award Amount: $7,000

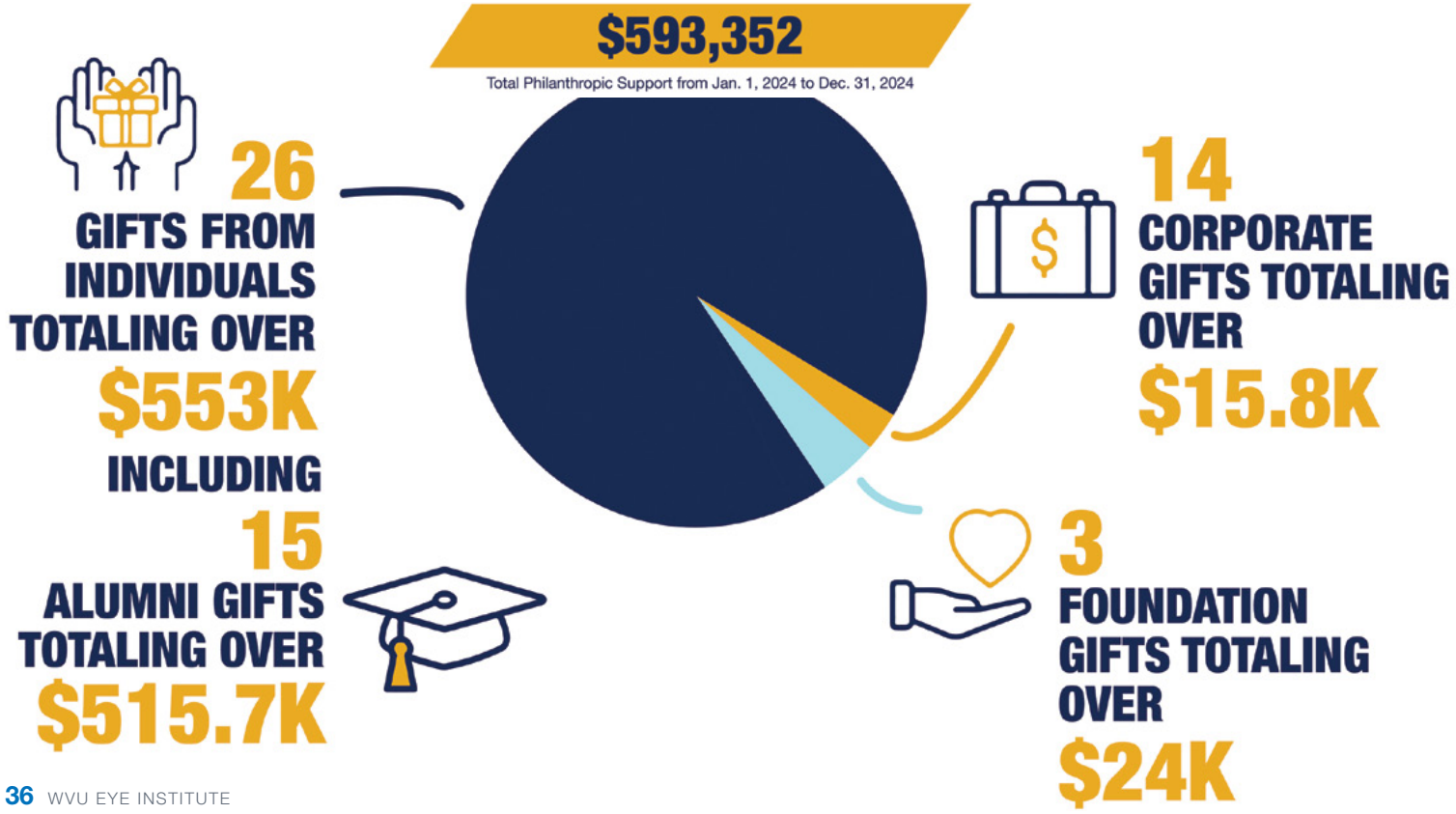
Parkersburg Area Foundation
Duration: 2024 | Total Award Amount: $5,250

Milan Puskar Foundation
Duration: 2024 | Total Award Amount: $50,000

Thank you!

We would like to extend our thanks to our benefactors, who have generously contributed more than half a million dollars in funding to the Eye Institute over the past year. In 2024, we received a total of $593,352 in funds from alumni, friends, grateful patients, corporations and foundations in support of our mission to protect and restore vision across West Virginia and beyond. This landmark funding comes at a crucial time for us, as we eagerly look ahead to the completion of the new West Virginia University Eye Institute in 2027.

When you give to the Eye Institute, you give the gift of vision. Private giving can often make the difference in the success of our programs by providing funding for additional support for an established program, financing a necessary piece of equipment, supplementing research projects and supporting our ophthalmology residents and fellows. Philanthropic support allows us to provide transformative vision care to our growing patient population across the region for years to come. We are grateful for your support of the Eye Institute; we could not accomplish what we do without your generosity and support.



This landmark funding comes at a crucial time for us, as we eagerly look ahead to the completion of the new West Virginia University Eye Institute in 2027.

To learn how you can become involved and make a gift to the WVU Eye Institute, scan the QR Code.

"Serving as the lone tertiary eye care center in the state with the second-highest visual disparity in the nation, our team is constantly exploring new methods of preventing, treating and slowing the progression of blinding diseases."

THOMAS MAUGER, M.D.
chair, WVU Department of Ophthalmology and Visual Sciences

WVU Eye Institute

West Virginia University
DEPARTMENT OF OPHTHALMOLOGY AND VISUAL SCIENCES

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