OUR VISION
Global leadership in saving sight.

OUR MISSION
To improve vision-related quality of life by collaboratively creating, integrating, transmitting and applying knowledge in ophthalmology and visual sciences.

Mouse optic nerve image provided by McDowell Lab.
How far you go in life depends on your being TENDER with the young, COMPASSIONATE with the aged, SYMPATHETIC with the striving, and TOLERANT of the weak and strong. Because someday in your life you will have been all of these.

– George Washington Carver
Dear Friends,

As I reflect back on the year that was, there are two words that consistently spring to mind: resiliency and grace. While the COVID-19 pandemic continues to impact our daily lives in both expected and unexpected ways, our faculty and staff have never wavered from our mission of saving sight and providing hope. It comforts me to know that even when times are tough, our department’s deep commitment to finding new cures for eye diseases, educating the next generation of vision-related advocates and leaders, and servicing our patients with the latest treatments/technologies never falters. In fact, that commitment grows stronger by the minute.

The UW Department of Ophthalmology and Visual Sciences has formally been in existence for more than 50 years. It’s no secret that the catalyst for our success has been our people. Today, our team includes clinical and research ophthalmologists and optometrists, research faculty, lab scientists, clinical and administrative leaders and staff, educators, learners, community partners, foundations, and many others. Working together, our team has achieved remarkable progress through purpose and resolve.

In our 2022 annual report, you’ll see the impact that our people make every day. In the pages that follow, you’ll learn about:

• Novel research which shows that retinal organoid photoreceptors – derived from human pluripotent stem cells – are capable of replicating the complex process of converting light wavelengths to neural energy.

• Our brand-new clinical Medical Retina and Uveitis fellowship, which will begin in 2023. The program offers complex care training with a mix of patient care and clinical research opportunities.

• A former pediatric strabismus patient who now works alongside the staff who once cared for her as a child at UW Health’s Eye Clinics.

• Updates from our Department of Ophthalmology Equity Alliance- an open-armed, grassroots program that provides a safe-space for discussions and continued learning on issues of otherness.

• Highlights from our world renowned Wisconsin Reading Center, and of our new Vision Rehabilitation Clinic.

• And much more!

As always, we couldn’t do this work without your ongoing support. As a friend of the department we can only repeat how grateful we are to you for your continued partnership. We hope this report not only informs but inspires you. After all, when we work together, anything is possible.

Thank you and On, Wisconsin!

Terri L. Young, MD, MBA
Chair, UW-Madison Department of Ophthalmology and Visual Sciences
Peter A. Duehr Endowed Professor of Ophthalmology, Pediatrics and Medical Genetics
2021

$10.2 million
Total in grants awarded in 2021

SEPTEMBER

Friends over at UW

- Manage complex strabismus, especially if you think they need surgery consult
- Team of pediatric ophthalmologists and orthoptists
- We are also here to help empower you in your clinic

Alexander Miranda, MD, assistant professor and pediatric ophthalmologist presents virtually at the 21st annual Current Concepts in Eye Care for Optometrists continuing education symposium.

OCTOBER

Faculty and staff gather for the annual Right to Sight Free Eye Clinic at the central University Station Clinic in Madison, WI.

NOVEMBER

Richard Patterson, OD, is pictured with Terri Young, MD, MBA at his retirement party.

DECEMBER

Department Chair Terri Young, MD, MBA, is honored as a 2021 President’s Guest of Honor at the American Academy of Ophthalmology annual meeting in New Orleans.

2021

$10.2 million
Total in grants awarded in 2021
Team ‘Glaucoma Cat’ participate in the second annual virtual Trivia Night, along with other departmental friends and alumni.

FEBRUARY

Resident trainee physicians are celebrated with a cake and other goodies on “Thank a Resident Day.”

MARCH

Ophthalmology resident trainees obtain hands-on experience learning eyelid and orbit anatomy with dissections, as well as essential oculoplastics techniques for functional and reconstructive procedures.

2022

121,984
Total patient visits at all clinic sites

7,401
Surgeries performed
*between September 2021 and August 2022
2022

April

Creative costumes and a handmade diagram of the eye on display at the “Odyssey Into Ophthalmology” event for local high school students provided by UW Ophthalmology faculty.

May

Wisconsin Reading Center staff and faculty present research discoveries during the 2022 Association for Research in Vision and Ophthalmology annual meeting.

June

Ophthalmology Resident and Fellow Graduation Celebration held at the Pyle Center, Madison, WI.

Conference presentations by medical students, residents, fellows, and T32 trainees
Faculty, learners, staff, family and friends gather at Brittingham Park in Madison, WI for the annual first-of-the-academic-year gathering, “The Eye Opener.”

Learners from 10 institutions nationwide participate in the annual two-day cataract surgery skills Phacoemulsification Course hosted jointly by the UW Department of Ophthalmology and Visual Sciences, the UW School of Veterinary Medicine, the University of Iowa, and the Medical College of Wisconsin.

Students, Residents and Fellows

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<thead>
<tr>
<th>Category</th>
<th>Number</th>
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<tbody>
<tr>
<td>Postdoctoral research fellows</td>
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<td>Clinical fellows</td>
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<td>Pathology/Wisconsin Reading Center pre-residency fellows</td>
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More than 160 Peer-reviewed publications

*between September 2021 and August 2022

ANNUAL REPORT 2022
Cat Burkat, MD, Honored at University of Wisconsin-Madison Outstanding Women of Color Award Ceremony

During a ceremony on March 3, 2022, Dr. Burkat was recognized with an Outstanding Woman of Color Award from the University of Wisconsin-Madison. These annual awards – now in their 14th year – acknowledge and honor women of color among university faculty, staff, students and in the greater Madison community who have made outstanding contributions to social justice, community service, scholarly research, and community building.

“I’m extremely honored and incredibly humbled to be receiving this award,” Burkat said. “Many people have helped me on my journey through the years, and I hope to repay some of it by helping and mentoring others, especially untapped diverse populations, to develop and cultivate a love of medicine. I’m honored to do that and hope it helps in some small way.”

Roomasa Channa, MD, Selected for Competitive Association for Research in Vision and Ophthalmology Leadership Program

Roomasa Channa, MD has been selected to participate in the Association for Research in Vision and Ophthalmology (ARVO) Women’s Leadership Development Program. This highly competitive program, which began in 2016, is open to early- to mid-career women scientists. The yearlong program provides emerging women vision science leaders with a highly interactive learning experience focused on leadership skill development and facilitates obtaining leadership opportunities and networking within the organization.

The one-year program runs from May 2022 to April 2023.

Sarah Gong, PhD, Wins Wisconsin Alumni Research Foundation Innovation Award

In December 2021, a team of interdisciplinary researchers – including Sarah Gong, PhD – was recognized with a Wisconsin Alumni Research Foundation (WARF) Innovator award for their project, “Nanoparticles to Render Tumors More Susceptible to Treatment.”

Combining radiation and immunotherapy is an approach that has seen early success in treating some forms of cancer, but researchers are striving to make this combination more effective in creating longer lasting remissions or higher cure rates. For Gong’s team, the solution was to create a particle that is injected into an irradiated tumor to stimulate a stronger immune response to fight the cancer.

“We basically engineered a multi-functional nanoparticle to greatly enhance the in-situ vaccine effect of radiation therapy,” Gong said.

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Four New Service Chiefs Named

The Department of Ophthalmology and Visual Sciences named four new clinical service chiefs during 2022.

Karina A. Conlin, OD, FAAO was named to the role of optometry service chief, a position previously held by Michele Martin, OD. Dr. Conlin joined the department’s optometry service in 2016 and became a clinical adjunct assistant professor in 2019.

Yao Liu, MD, MS, assistant professor (tenure track) and director of teleophthalmology, assumed the responsibilities of the glaucoma service chief on August 1, replacing Gregg A. Heatley, MD, MMM, who plans to retire in June 2023. Dr. Liu joined the department in 2013 and is an active clinical, surgical and research faculty member with a national academic reputation. She also serves as the glaucoma fellowship director.

Alexander R. Miranda, MD, assistant professor and director of informatics, assumed the pediatric ophthalmology and adult strabismus service chief position in July 2022. The position was previously held by Terri L. Young, MD, MBA who stepped down after four years of service. Dr. Miranda joined the department in 2019 and also serves as the DOVS Informaticist, interfacing with the UW Health Epic electronic medical record team on the department’s behalf.

John E. Temprano, MD, associate professor, returns to the role of service chief of comprehensive ophthalmology. Dr. Temprano joined the department in 1998 and held the position from 2004-2019. For the past three years, Stephen K. Sauer, MD held this honor and recently decided to relinquish the role.

Projects Funded Through Research to Prevent Blindness, Inc. Grants

The three departmental projects funded are:

• Colleen McDowell, PhD and Donna Peters, PhD: "Regulation of TLR4 Activation and Endocytosis in Trabecular Meshwork Cells."

• Mrinalini Hoon, PhD and Raunak Sinha, PhD: "Early Stages of Circuit Organization and Function in Primate Retina."

• Yao Liu, MD, MS and Maria Mora Pinzon, MD, MS: "TeleOjo: Advancing Integration of Teleophthalmology in Latinx Communities."
Clare F. Hutson, MD, passed away on January 10, 2022. He was 95 years old.

A Badger through and through, Hutson completed his undergraduate education at the University of Wisconsin-Madison (UW) in 1953 and received his MD also at UW in 1956. He later completed his ophthalmology residency training in the Department of Ophthalmology and Visual Sciences (DOVS) in 1962. He studied alongside retina specialist and inaugural DOVS department chair Matthew “Dinny” Davis, MD.

Hutson practiced ophthalmology at the Madison-based Davis-Duehr eye clinic for three decades, specializing in retinal care, while holding a faculty appointment with DOVS. He rose to the rank of clinical associate professor of vitreoretinal disease in 1979 and served in that role until his retirement from the department in 1996. Throughout the years, he remained active in various DOVS alumni activities and continued to support the department well into retirement.

“Clare was really a great guy and an excellent retinal surgeon,” said Hutson’s longtime friend DOVS emeritus professor Frank Myers, MD. “Clare was also a great ‘talker’ and loved regaling listeners with experiences from his overseas travels. He became fast friends with many residents.”
Celebrating the diversity of our department, our university, and our community

In the University of Wisconsin Department of Ophthalmology and Visual Sciences (DOVS), we place people at the center of all we do. That means respecting and championing every person – no matter their race, gender identity, sexual orientation, age, ability, nationality, or creed. By providing programs and trainings for all faculty and staff, we ensured diversity, equity, and inclusion (DEI) was integrated into everything we did in 2022.

Equity Alliance

The Equity Alliance is a grassroots DEI learning group and support community. It hosts monthly meetings for faculty and staff, targeted at personal growth, fostering inclusion, and encouraging open dialogue. In the past year, the Equity Alliance hosted guest speakers, film screenings, book discussions, and other activities. The alliance’s work covered a variety of topics, including: LGBTQIA2+ identities and terminology, DREAMers and Documentation Status, accessibility, aging, and ableism, food distribution and disparities, and mental health inclusive language.

“I’ve learned how to be more aware of my language and how to be a more inclusive, supportive person,” reported one Equity Alliance program participant. “I also learned language I can use to gently but firmly pushback when discriminatory statements or behavior is exhibited.”

“I am learning how to be inclusive in society as it continues to change,” said another participant. “This is helpful to me as a health care provider since I see patients from all walks of life.”

Diversity, Equity, and Inclusion Training for All

The department first underwent a climate survey, and, as a result, a formal bias training program was requested from the UW Health Chief Diversity Office for the entire DOVS community. This 18-month program was enacted in addition to the events hosted through the Equity Alliance. Programming offered opportunities to develop skills and critically examine policies and procedures through an inclusive lens. Events included “Leading an Antiracist Environment,” “Navigating Challenging Conversations,” and “How to Manage Employee Experiences of Microaggressions.”

Training for the department’s entire 300 personnel included “Foundations of DEI,” “Understanding and Addressing Bias,” “Understanding Identity and Intersectionality,” “Moving from Cultural Competence to Antiracism,” and more. Jason Stephenson, MD, Associate Dean for Multicultural Affairs, also presented “Sustainable and Evidence-Based Equity Objectives for Health Professions Learners” at Grand Rounds on February 25, 2022.

“DEI is no longer an afterthought or checklist,” stated one program participant, in response to Dr. Stephenson’s training. “It is a more active and natural part of the thought process in the department.”
Television: It’s not just for people anymore

These days, programming created specifically for dogs is popping up on our screens. YouTube offers a nearly endless supply of dog-centered videos. There’s a growing number of television and streaming channels promising 24/7 content to keep pups entertained and even alleviate stress or separation anxiety while owners are away.

Despite this rise in popularity, very little is actually understood about how dogs engage with this kind of programming, and what kind of videos most appeal to them.

A new citizen-science study led by a University of Wisconsin–Madison (UW) professor in partnership with dog owners may shed some light on these questions. It’s no trivial business, as the results could lay the groundwork for developing better ways of assessing vision in dogs.

“The overarching goal of this study is to determine what dogs like to watch on television,” said Freya Mowat, a veterinary clinician-scientist. “This is interesting from a dog behavior standpoint, but as dog vision researchers, we also want to develop novel engaging methods to test dog vision in either the home or clinic.”

Mowat, an assistant professor with the UW Department of Ophthalmology and Visual Sciences and the UW School of Veterinary Medicine, says previous efforts to develop an eye test for dogs have resulted in more than a few “epic fails.” Trying to adapt human vision tests for dogs has proved challenging, at best, or required too much training to be viable.

But Mowat believes videos could potentially be the key to holding a dog’s attention long enough to gather and assess critical information about visual function. The trick is determining the type of content that’s most engaging and appealing to dogs.

To better understand what dogs might be most attracted to on screen, Mowat is seeking individuals from around the globe, and their canine companions, to participate in a “Dog TV” viewing survey. The unique questionnaire asks people to provide information on their dog’s screen-viewing habits, as well as information about the dog’s age, sex, breed, and where they live.

Participants can also take the optional step of showing their pooch four short videos of subjects potentially of interest to dogs, such as objects and other animals. Owners then rate their dog’s interest in each video and how closely the dog tracked the moving objects in the videos.

“We intend for this to be a fun activity for both dogs and their people,” Mowat said. “And we’d really love to get thousands of responses from individuals across the world, so we can better understand if dogs in Wisconsin like the same kind of videos as dogs in New York or Brazil, or any other location.”
Ultimately, Mowat said the study could help answer a question of interest to all dog owners: How do we help our four-legged friends age gracefully?

“As they get older, do dogs need brighter lighting in their environment to prevent them from tripping down the stairs in the middle of the night, or other visual cues to help them locate things? These are questions we genuinely don’t know the answers to,” Mowat said. “We do know that canine retinal function declines with age. So it’s more than likely that visual perception changes, but what that actually means from a lifestyle standpoint is the missing piece of the puzzle.”

A future goal is to compare how a dog’s vision ages compared with the human or humans they share a home with.

“After all, a dog has a much shorter lifespan than their owner, and so if there are emerging environmental or lifestyle factors that influence visual aging, it might well show up in our dogs decades before it shows up in us,” Mowat explained. “Our dogs could be our sentinels — the canine in the proverbial coal mine.”
New research from the University of Wisconsin School of Medicine and Public Health could unlock new therapeutic options for treating retina-associated vision loss.

Researchers have successfully shown that a retinal cell type derived from human pluripotent stem cells are capable of the complex process of detecting light and converting that signal to electrical waves. These organoid cone photoreceptors – which are laboratory-produced versions of light-responsive eye tissue – are similar to retinal cones in the primate fovea, a specialized area of the back of the eye responsible for high-definition vision.

It’s the first time that cone photoreceptors derived from stem cells exhibited the ability to respond to light, and the results have been published in the journal Cell Stem Cell. Retinal organoids could eventually serve as replacement sources for human photoreceptor cells.

“For diseases like macular degeneration where cones in the central-most part of the retina die, causing blindness, there are currently no treatment options,” said study author and UW–Madison neuroscience assistant professor Raunak Sinha, PhD. “But with the advent of stem cell technology, you can make these stem cells grow into three-dimensional mini retinas containing cones that can replicate the physiology and function of foveal cones.”

For more than 20 years, UW–Madison has been a pioneer in the discovery and study of human stem cells, and study co-author David Gamm, MD, PhD, has been on the forefront of creating three-dimensional retinal tissues known as retinal organoids.

“These retinal organoids look remarkably similar to real human retinas,” said Gamm, UW-Madison professor of ophthalmology and director of the McPherson Eye Research Institute. “They’ve got the correct cell types and the necessary subcellular structures to function appropriately. But it remained uncertain whether they could adequately replicate that fundamental feature of the retina, which is to detect light.”

Generating functional human photoreceptors in a dish is a complex process, but previous studies offered some tantalizing evidence that retinal organoids could get the job done. At issue are photoreceptor cells – rods and cones – which are key to vision. Both are found in the retina, with rods handling dim light and peripheral vision and cones handling brighter light, color, and high acuity vision.

Until now, scientists were unable to generate light-evoked electrical responses in retinal organoid photoreceptors that compared in strength to those measured in photoreceptors in intact primate retinas.
In their most recent study – a collaboration between the UW–Madison Department of Neuroscience and Department of Ophthalmology and Visual Sciences as well as the McPherson Eye Research Institute – Sinha and Gamm looked at cone photoreceptors from many different retinal organoids that were allowed to mature in the lab for roughly eight months to ensure uniformity.

Using advanced electrophysiological techniques to analyze electrical activity, the researchers elicited and demonstrated robust, graded, color-specific light responses in the organoid cones. Additionally, the lab-cultured cells functioned on par with cones present in the fovea.

“We went from important early studies showing weak light responses in rod photoreceptors that mediate dim light vision to seeing the potential for responses to light in the cone cells that humans rely on the most,” Gamm said. “The cells responded robustly, and could differentiate between red, green and blue light, just like in normal human cones. It's really quite remarkable.”

Sinha and Gamm have now turned their efforts toward improving the retinal organoids’ light-evoked electrical responses and bringing them closer to the performance of actual human fovea.

“We’ve shown very promising sensitivity, but there is room to improve,” Sinha said. “The immediate next step for us is to try and figure out how can we improve the sensitivity of these cones and what the missing components are in these organoids.”

Beyond that, Sinha and Gamm’s team – including researchers Aindrila Saha and Beth Capowski – will apply their findings to organoid models that resemble retinas with degenerative diseases, such as retinitis pigmentosa or macular degeneration.

“Using these patient-derived retinal organoids, we’ll use what we’ve learned to understand how retinal diseases impact the cellular function of photoreceptors and use viral-mediated gene delivery to see if we can restore normal function,” Sinha said. “That will give us key information that could eventually set the stage for a clinical trial.”

Gamm adds, “The more we can push retina organoids to perform at a high level in a [cell culture] dish, the more confidence we have that they may help patients with blinding disorders. So, it’s a big leap in human pluripotent stem cell technology in terms of its applications to retinal disease.”
The Clinical Eye Research Unit (CERU) has been on the forefront of vision research for more than 40 years. A robust team of experienced vision researchers, the CERU provides the infrastructure necessary to perform clinical trials for patients with various eye disorders.

“CERU has experienced a year of steady growth and an increase in new opportunities for our investigators, participants, and staff,” said CERU Director Mihai Mititelu, MD, MPH, FASRS. “We are enthusiastic about the continued development of the unit, as we combine the efforts and energy of our staff, trainees, faculty, sponsors, and friends.”

Clinical Trials

In partnership with industry and other large-scale collaborative clinical investigative programs, clinical trials are a valuable means of providing alternate treatments for our patients who have exhausted other options. By evaluating the safety and efficacy of new procedures aimed at combating ophthalmic diseases, clinical trials have led to new medications, supplements, methods for disease detection, and technologies that have saved or improved the eyesight of millions of people.

The CERU’s mission is to enhance ophthalmic care and develop methods to prevent and treat blindness by providing service in clinical research, clinical trials, research education, as well as through interdepartmental and interdisciplinary collaborations. While the CERU serves as the primary clinical research team for the department, researchers actively collaborate in clinical trials initiated by other departments within the UW–Madison School of Medicine and Public Health. This collaboration extends across campus and includes the UW Hospital and Carbone Cancer Center and research programs of multiple clinical departments.

The CERU was involved in 54 such projects from July 1, 2021 through June 30, 2022. This work included federal and industry sponsored trials, investigator-initiated studies, and collaborations with other departments. Ophthalmologic subspeciality areas impacted include retina, uveitis, cornea, pediatrics, neuro-ophthalmology, and oculoplastics.

New Space

This spring, the CERU began operating in a fully integrated space on the third floor of the department’s central location—the University Station Clinic. The new, cohesive space allows for an expansion in patient care, clinical trials, and a growth in staff, all while providing a welcoming environment and concierge-like experience for patients and visitors. All patient care needs—including examination and procedure rooms, imaging, phlebotomy, electrophysiology, and visual fields—are in one location.

The CERU is self-sufficient in providing sponsor or departmental trial needed services that include technical assessments and direct patient care, patient education and advocacy, data collection and management, regulatory compliance, imaging/diagnostic technology, and phlebotomy lab services.
We are excited to announce a brand-new one-year clinical fellowship – medical retina and uveitis – which will officially launch in July 2023.

“We are excited to offer this new and unique fellowship,” said medical retina specialist and fellowship co-director Kimberly Stepien, MD. “In addition to medical retina training, this fellowship offers unique exposure to inherited retinal diseases and to uveitis—complex conditions that are important in the care of patients with retinal diseases.”

Over the course of a year, the medical retina and uveitis fellow will receive training on the diagnosis and management of medical retinal pathology, inflammatory ocular conditions, and retinal dystrophies. The fellow will also evaluate patients in UW’s Inherited Retinal Disease (IRD) and Uveitis clinics, gain experience in multimodal retinal imaging, and engage in clinical research to help advance novel treatments for uncommon eye conditions.

“Traditionally we have used systemic immunosuppressive agents that have been adapted from rheumatologic therapies and protocols to treat inflammatory eye conditions, but there’s expanding interest in conducting clinical trial work of these agents specifically for uveitis,” said fellowship co-director and uveitis specialist Laura Kopplin, MD, PhD. “So we need more trainees who are interested in learning about new therapeutics that are more site-targeted.”

In addition to Kopplin and Stepien, the fellow will receive instruction from eight additional faculty members who specialize in the medical and surgical care of the retina. The fellow will also actively be involved in ophthalmology resident physician education.

The department now offers seven clinical ophthalmology sub-specialty fellowships, from pediatrics to vitreoretinal surgery. A pre-residency ocular pathology and imaging fellowship is also available. Each fellowship offers hands-on experience and learning, as well as unique opportunities to pursue specific areas of personal interest.

“Fellows often bring different energy and diversity of thought and frequently take ideas of unmet need from our clinical practice and turn those ideas into a study with publishable results,” Kopplin said.

The inaugural medical retina and uveitis fellow will be selected in December 2022.
Michael M. Altaweel, MD  
Professor, Vitreoretinal Surgery Fellowship  
Director, Co-Director of the Wisconsin Reading Center, Monroe E. Trout Chair in Eye Research, McPherson Eye Research Institute

Subspecialties: surgical/medical retina, pediatric retina surgery, ocular oncology

Medical and Surgical Interests: adult and pediatric retinal detachment, diabetic retinopathy; dislocated lens/intraocular lens; epiretinal membrane; macular hole, macular degeneration; ocular trauma; ocular tumors/melanoma; retinal vascular occlusive disease

Research Interests: stem cell surgical delivery, retinal imaging - bio markers; diabetic retinopathy, uveitis, macular edema; macular degeneration, ocular melanoma, clinical trials

Barbara A. Blodi, MD  
Matthew D. Davis Professor, Retina Research Foundation  
Daniel M. Albert Chair, Wisconsin Reading Center Medical Director

Subspecialty: Retina, macula and vitreous diseases

Medical and Surgical Interests: age-related macular degeneration; diabetic retinopathy; posterior uveitis; retinal diseases; vein occlusion

Research Interests: adaptive optics; analysis of new retinal imaging modalities (ultra-widefield retinal imaging, OCT-angiography); artificial intelligence; telemedicine

Yasmin S. Bradfield, MD  
John W. Doolittle Pediatric Ophthalmology Professor, Co-Chair Global Ophthalmology Initiatives

Subspecialty: pediatric ophthalmology and adult strabismus

Medical and Surgical Interests: pediatric and adult strabismus; pediatric cataract and intraocular lenses; pediatric eyelid surgery; pediatric glaucoma; amblyopia; congenital tear duct obstruction

Research Interests: pediatric glaucoma and cataract anterior segment imaging; visual evoked potential testing for visual development; PEDIG clinical trials for amblyopia; education curriculum in global ophthalmology

Curtis R. Brandt, PhD  
UW Medical Foundation Professor; Vice Chair of Research

Research Interests: virology; cell and molecular biology; genetic mapping and recombinant techniques; gene therapy

Cat N. Burkat, MD, FACS  
Professor, Co-Chair Global Ophthalmology Initiatives, ASOPRS Fellowship Faculty

Subspecialty: oculoplastic, reconstructive and orbital surgery

Medical and Surgical Interests: Botox®, fillers; corneal neurotization; cosmetic blepharoplasty, Asian blepharoplasty; eyelid surgery, ptosis, ectropion, entropion; enucleation; eyelid and orbital tumors, cancer reconstruction; facial nerve palsy, blepharospasm, hemifacial spasm; laser skin resurfacing; pediatric ptosis, congenital birth defects; tear duct disorders; thyroid eye disease

Research Interests: ophthalmic reconstructive and cosmetic surgery

Jonathan S. Chang, MD  
Associate Professor, Vitreoretinal Surgery Fellowship Assistant Director, Chair, Funds Distribution Committee

Subspecialty: vitreoretinal surgery retina specialist

Medical and Surgical Interests: diabetic retinopathy; macular degeneration; pathologic myopia; ocular trauma; retinal detachment; retinal vascular disease; vitreoretinal surgery; large datasets

Research Interests: use of retrospective clinical data to review patient outcomes; determining cost-effectiveness and utility of clinical interventions; imaging in evaluation of retinal diseases; use of “big data” and informatics in clinical care
Roomasa Channa, MD
Assistant Professor
Subspecialty: retina, macula and vitreous diseases
Medical and Surgical Interests: diabetic retinopathy; epiretinal membranes; macular degeneration; macular holes; retinal detachment; retinal laser; vitreoretinal surgery
Research Interests: diabetic retinal diseases, leveraging health technology to prevent vision loss, retinal imaging

David M. Gamm, MD, PhD
Professor, Sandra Lemke Trout Chair in Eye Research, Retina Research Foundation Emmett A. Humble Distinguished Directorship, Director of the McPherson Eye Research Institute
Subspecialty: pediatric ophthalmology and adult strabismus
Medical and Surgical Interests: double vision; eyelid abnormalities; genetic disorders; pediatric and adult strabismus management and surgery; pediatric ophthalmology; tear duct surgery
Research Interests: diseases of the retina, stem cell biology; human pluripotent stem cells; disease modeling; regenerative medicine; retinitis pigmentosa; age-related macular degeneration; retinal, photoreceptor, and RPE cell development; retinal stem cell biology/human pluripotent stem cell biology; retinal developmental biology; inherited and acquired retinal degenerations; cell and gene therapies for retinal degenerations; stem cell-based retinal disease modeling

Yanjun (Judy) Chen, MD, PhD
Associate Professor, Neuro-ophthalmology Service Chief
Subspecialty: neuro-ophthalmology
Medical and Surgical Interests: vision loss associated with MS, brain tumor, stroke, nutritional deficiency and toxicity; hereditary optic neuropathy; double vision and nystagmus; abnormal pupil, pseudotumor cerebri
Research Interests: study pupil physiology in normal eyes and pupil change in the eyes with ocular diseases; use pupil reactivity to study brain function, such as cognition and attention, in a variety of brain conditions including brain aging, neurodegenerative disease, and traumatic brain injury

Amitha Domalpally, MD, PhD
Assistant Professor, Wisconsin Reading Center Research Director
Research Interests: discovery, development and translation of imaging biomarkers for clinical trials in retinal diseases; artificial Intelligence for retinal imaging; clinical trials in diabetic retinopathy, AMD, retinal vein occlusion and uveitis; imaging artifacts

Shaoqin (Sarah) Gong, PhD
Vilas Distinguished Professor and Advancing Vision Science Chair Professor
Research interests: multifunctional nanocarriers; CRISPR genome editing; cancer immunotherapy; tissue engineering scaffolds; antimicrobial materials; multifunctional polymer nanocomposites for various applications including flexible electronics, supercapacitors, nanogenerators, and sensors

Justin L. Gottlieb, MD
Professor, Retina Service Chief
Subspecialty: retina, macula and vitreous diseases
Medical and Surgical Interests: age-related macular degeneration; diabetic retinopathy; medical retina disease; retinal vascular disease
Research Interests: vitreoretinal clinical trials
Gregg A. Heatley, MD, MMM
Professor, Director of Quality Improvement and Peer Review
Subspecialty: glaucoma and cataract surgery
Medical and Surgical Interests: anterior segment surgery; cataract surgery;
Research Interests: clinical pharmacology of glaucoma; glaucoma in nonhuman primates; patient experience; presbyopia in nonhuman primates; quality improvement of clinical care

Mrinalini Hoon, PhD
Assistant Professor, Retina Research Foundation
Rebecca Meyer Brown Professor, McPherson Eye Research Institute
Research Interests: disease of the retina; determining the molecular and activity-dependent mechanisms that regulate synaptic connectivity between retinal neurons during development and circuit assembly; determining the structural and functional impact of retinal disease on synaptic connectivity between outer and inner retinal neurons; correlating synaptic plasticity mechanisms during retinal development and during disease conditions; determining genetic and/or pharmacological strategies that can recover synaptic organization and function in retinal disease conditions

Paul L. Kaufman, MD
Ernst H. Bárány Professor of Ocular Pharmacology, Department Chair Emeritus
Research Interests: glaucoma, accommodation/presbyopia, intraocular pressure regulation/aqueous humor dynamics; devising methods for obtaining accurate, reproducible measurements of Schlemm’s canal pressure as the gateway to the distal aqueous outflow apparatus; developing gene therapies to enhance aqueous humor outflow and reduce intraocular pressure; studying the anatomic and pathophysiological relationship between presbyopia and glaucomatous optic neuropathy: characterizing all anatomical movements during accommodation (i.e., ciliary muscle, lens, sclera, choroid, vitreous fluid, vitreous membranes/ fibers/strands) and their changes with age: elucidating the full mechanism of accommodation and the extralenticular pathophysiology of presbyopia

Daniel W. Knoch, MD
Professor, Vice Chair of Education and Faculty Development, Director of Medical Student Education
Subspecialty: comprehensive ophthalmology and cataract surgery
Medical and Surgical Interests: cataract surgery; comprehensive ophthalmology; femtosecond laser cataract surgery; glaucoma; glaucoma laser procedures; macular degeneration; premium intraocular lenses
Research Interests: medical student education; surgical procedures

Laura J. Kopplin, MD, PhD
Assistant Professor, Uveitis Service Chief
Subspecialty: uveitis, comprehensive ophthalmology, and cataract surgery
Medical and Surgical Interests: cataract surgery; comprehensive ophthalmology; immunosuppressive therapy; inflammatory eye disease; uveitis
Research Interests: epidemiology and risk factors for inflammatory eye diseases; clinical trials of uveitis therapeutics; biomarkers for uveitis outcomes; clinical management of ocular inflammatory disease

Jennifer C. Larson, MD
Assistant Professor
Subspecialty: comprehensive ophthalmology and cataract surgery
Research Interest: medical student education

Yao Liu, MD, MS
Assistant Professor, Director of Teleophthalmology, Glaucoma Service Chief, Glaucoma Fellowship Director
Subspecialty: glaucoma and cataract surgery
Medical and Surgical Interests: adult and pediatric glaucoma; anterior segment surgery; cataract surgery;
glaucoma medical and surgical treatment; ocular imaging; telemedicine

Research Interests: telemedicine for diabetic eye screening; clinical trials of new glaucoma medications and surgical devices; macular pigment as a glaucoma risk factor; clinical and surgical glaucoma management

Mark J. Lucarelli, MD
FACS Richard K. Dortzbach Professor of Ophthalmic Facial Plastic Surgery, Oculoplastic and Reconstructive Surgery Service Chief, UW Health University Station Eye Clinic Medical Director

Subspecialty: oculofacial plastic and reconstructive surgery

Medical and Surgical Interests: blepharoplasty (eyelid lift); Botox® brow lift; cosmetic laser procedures; eyelid and periorcular skin cancer reconstruction; adult and pediatric lacrimal (tear duct) and orbital disorders; ptosis (drooping eyelid) surgery; thyroid eye disease; facial paralysis and facial synkinesis, blepharospasm, hemifacial spasm.

Research Interests: orbital, facial, and periorcular anatomy; thyroid eye disease clinical trials

Gillian McLellan, BVMS, DACVO, DECVO, PHD
Professor

Research Interests: glaucoma, neuroprotection, ocular development, drug development, genetic ocular disease in animals; comparative glaucoma, including imaging of the retina and optic nerve, electrophysiology, aqueous humor dynamics, genetics and pathology of glaucoma, Alzheimer's disease and age-related cognitive decline in animals and humans.

Julie A. Mares, PhD
MSPH Professor

Research Interests: epidemiology, diet and nutrition and eye diseases; assessing the status of retinal carotenoids and relationship to genotypes and phenotypes; retinal carotenoids to retinal neurodegeneration, and relation to age-related macular degeneration, glaucoma and vision function; epidemiological studies of the relationships of healthy diets and lifestyles to common age-related eye diseases

Alexandra R. Miranda, MD
Assistant Professor, DOVS Physician Informaticist, Pediatric Ophthalmology and Adult Strabismus Service Chief

Subspecialty: pediatric ophthalmology and adult strabismus

Medical and Surgical Interests: amblyopia; congenital tear duct obstruction; pediatric and adult strabismus; pediatric eye diseases; pediatric glaucoma; pediatric cataract surgery and intraocular lenses

Research Interest: eye disease registries; pediatric eye diseases

Colleen M. McDowell, PhD
William and Phyllis Huffman Research Professor

Research Interests: molecular mechanisms for glaucomatous trabecular meshwork damage; regulation of Intraocular Pressure (IOP); effect of elevated IOP on retinal ganglion cells (RGC) and optic nerve head (ONH) damage; cell culture models; multiple mouse model systems; profusion organ culture system for human donor eyes

Mihai Mititelu, MD, MPH
Associate Professor, Clinical Eye Research Unit Medical Director

Subspecialty: retina, macula and vitreous diseases

Medical and Surgical Interests: diabetic retinopathy; age-related macular degeneration; multimodal retinal imaging; retinal laser; retinal vascular disease; intravitreal injections

Research Interests: age-related macular degeneration; diabetic retinopathy; retinal toxicities; autoimmune retinopathy; clinical trials; international health; intravitreal injections; mentoring
Anna C. Momont, MD  
Assistant Professor, Associate Residency Program Director, Director of DOVS Saturday Free Clinics  
Subspecialty: glaucoma and cataract surgery  
Medical and Surgical Interests: anterior segment surgery; cataract surgery; medical and traditional surgical treatment for glaucoma; minimally invasive glaucoma surgery  
Research Interests: ergonomics in residency training; glaucoma therapies, clinical trials participation

Freya Mowat, PhD, BVSc  
Assistant Professor  
Research Interests: comparative ophthalmology; age-related decline in cognition, vision and other sensory organs, retinal metabolism; PPARGC1a or PGC1a on photoreceptor health in the aging retina; retinal diseases of dogs; sudden Acquired Retinal Degeneration Syndrome (SARDS)

Sarah M. Nehls, MD  
Professor, Cornea and Anterior Segment Service Chief  
Subspecialty: refractive surgery, cataract, cornea and external disease  
Medical and Surgical Interests: bladeless custom LASIK and PRK laser vision corrective surgery; cataract surgery; cornea and external disease; femtosecond laser cataract surgery; multifocal and toric intraocular lenses, implantable contact lens surgery  
Research Interests: clinical trials; cornea; dry eye; infectious eye disorders

Robert W. Nickells, PhD  
Frederick A. Davis Chair of Ophthalmology and Visual Sciences Professor  
Research Interests: glaucoma, neuroprotection; regulation of ganglion cell death and the role of Bax; epigentic changes in apoptotic ganglion cells leading to gene silencing; identification of ganglion cell death susceptibility alleles

T. Michael Nork, MD, MS  
FARVO Professor  
Subspecialty: retina, macula and vitreous diseases; ophthalmic pathology  
Medical and Surgical Interests: diabetic retinopathy; macular degeneration; retinal detachment; retinal disease; vitreoretinal surgery  
Research Interests: the mechanisms by which various ocular diseases affect the outer retina (especially the rods and cones); how injury to the outer retina might, in turn, affect disease pathogenesis

Heather Potter, MD  
Professor, Ophthalmic Pathology Service Chief, DOVS Wellness Director  
Subspecialty: comprehensive ophthalmology and ophthalmic pathology  
Medical and Surgical Interests: cataract surgery; comprehensive ophthalmology; femtosecond laser; cataract surgery; glaucoma laser procedures; LASIK/PRK; premium toric and multifocal lens implants for astigmatism and presbyopia; ophthalmic pathology  
Research Interest: pathology

Donna M. Neumann, PhD  
Associate Professor  
Research Interests: HSV-1 infections in corneal scarring and blindness; epigenetic controls regulating HSV-1 latency
Travis C. Rumery, DO  
Assistant Professor  
Subspecialty: comprehensive ophthalmology and cataract surgery  
Medical and Surgical Interests: cataract surgery; comprehensive ophthalmology; laser-assisted cataract surgery; premium intraocular lenses  
laser cataract surgery; glaucoma; LASIK surgery

Patricia C. Sabb, MD  
Assistant Professor  
Subspecialty: comprehensive ophthalmology and cataract surgery  
Medical and Surgical Interests: comprehensive ophthalmology; cataract surgery including multifocal and toric intraocular lenses; femtosecond laser cataract surgery; glaucoma; LASIK surgery

Stephen K. Sauer, MD  
Associate Professor  
Subspecialty: comprehensive ophthalmology  
Medical Interests: comprehensive eye care  
Research Interests: educational research into surgical competency and training

Kathleen R. Schildroth, MD  
Assistant Professor  
Subspecialty: retina, macula and vitreous diseases  
Medical and Surgical Interests: diabetic retinopathy; macular degeneration; ocular trauma; retinal detachment; retinal laser; retinal vascular disease; vitreoretinal surgery  
Medical Interests: age-related macular degeneration; diabetic retinopathy; inherited retinal disease; medical retina disease; ocular genetics; retinal dystrophies; retinal vascular diseases  
Research Interests: high-resolution retinal imaging, adaptive optics retinal imaging, inherited retinal diseases, ocular genetics, inherited retinal disease clinical trials, vitreo-retinal disease clinical trials

Melanie Schmitt, MD  
Assistant Professor, John W. and Helen Doolittle Professor, Director of Patient Centered Care Committee  
Subspecialty: pediatric ophthalmology and adult strabismus  
Medical and Surgical Interests: amblyopia; comprehensive pediatric ophthalmology; inherited retinal degenerations; nasolacrimal disorders; pediatric cataract surgery/lens implantation; pediatric and adult strabismus surgery; retinopathy of prematurity  
Research Interests: inherited retinal disorders; pediatric ophthalmology

Nader Sheibani, PhD  
Professor, Retina Research Foundation Alice R. McPherson Research Chair  
Research Interests: ocular vascular biology, diabetic retinopathy, retinopathy of prematurity, age-related macular degeneration, metabolism and vascular cellular function, drug screening and new treatment development

Kimberly E. Stepien, MD  
John W. and Helen Doolittle Professor of Ophthalmology, Co-Vice Chair of Clinical Affairs, Director, Adult Inherited Retinal Disease Clinic, Co-director, Ocular Genetics  
Subspecialty: retina, macula and vitreous diseases, inherited retinal disease, ocular genetics  
Medical Interests: age-related macular degeneration; diabetic retinopathy; inherited retinal disease; medical retina disease; ocular genetics; retinal dystrophies; retinal vascular diseases  
Research Interests: high-resolution retinal imaging, adaptive optics retinal imaging, inherited retinal diseases, ocular genetics, inherited retinal disease clinical trials, vitreo-retinal disease clinical trials
Clinical and Research Faculty, continued...

Michael C. Struck, MD  
Professor

Subspecialty: pediatric ophthalmology and adult strabismus

Medical and Surgical Interests: albinism; congenital tear duct obstruction; double vision; eye misalignment; pediatric cataract

Research Interests: albinism; pediatric ocular diseases

John E. Temprano, MD  
Associate Professor, Comprehensive Ophthalmology Service Chief

Subspecialty: comprehensive ophthalmology

Medical Interests: comprehensive eye care

Evan J. Warner, MD  
Assistant Professor, Lions Eye Bank of Wisconsin Medical Director

Subspecialty: cornea, cataract and external disease, refractive surgery

Medical and Surgical Interests: advanced femtosecond laser-assisted cataract surgery; advanced technology lens implants (multifocal and astigmatism-correcting lenses); bladeless LASIK and PRK laser vision correction; cataract surgery; cornea and external disease pathology; cornea transplantation (PK, DALK, DMEK, DSAEK); keratoconus and corneal collagen cross-linking treatment

Research Interests: cornea; clinical trials

Andrew T. Thliveris, MD, PhD  
Professor, Vice Chair of Resident Education, Veterans Affairs Hospital Service Chief

Subspecialty: comprehensive ophthalmology and cataract surgery

Medical and Surgical Interests: anterior segment; ocular trauma

Research Interest: residency training

Terri L. Young, MD, MBA  
Chair, Peter A. Duehr Professor of Ophthalmology, Pediatrics and Medical Genetics

Subspecialty: pediatric ophthalmology and adult strabismus

Medical and Surgical Interests: adult and pediatric strabismus; eye movement disorders; eyelid and nasolacrimal disorders; ocular genetic disorders; pediatric cataract; pediatric glaucoma; pediatric ophthalmology

Research Interests: pediatric ophthalmology, molecular genetics of eye diseases, myopia; gene discovery and animal modeling of childhood glaucoma; gene discovery and animal modeling of heritable, degenerative high-grade myopia

Suzanne W. van Landingham, MD  
Assistant Professor, ASOPRS fellowship faculty

Subspecialty: oculoplastic, orbital, and facial cosmetic surgery

Medical and Surgical Interests: adult and pediatric eyelid, orbital and lacrimal disorders; Botox®, fillers; cosmetic laser procedures; cosmetic oculofacial surgery; eyelid reconstruction; facial nerve palsy; synkinesis; thyroid eye disease

Research Interests: big data in ophthalmology – SOURCE and IRIS eye disease registries; facial nerve injury and facial synkinesis; functional impact of ophthalmic and adnexal disease, including the impact of vision loss on driving; clinical trials in thyroid eye disease
Karina A. Conlin, OD, FAAO, ABO  
Diplomate Clinical Adjunct Assistant Professor, Optometry Service Chief, Clinical Optometrist  
Subspecialty: scleral contact lenses

Janet Cushing, OD  
Clinical Adjunct Assistant Professor, Clinical Optometrist  
Subspecialty: primary care, contact lenses

Tracy A. Klein, OD  
Clinical Optometrist

Kevin D. Kurt, OD  
Clinical Adjunct Assistant Professor, Clinical Optometrist  
Subspecialty: urgent care

Michele M. Martin, OD, ABCMO  
Clinical Adjunct Assistant Professor, Clinical Optometrist  
Subspecialty: primary care  
Research Interests: contact lenses, dry eye disease

Sanbrita Mondal, OD  
Clinical Adjunct Assistant Professor/ Senior Research Scientist III, Clinical Optometrist, Chief of Vision Rehabilitation Services  
Subspecialty: low vision, vision rehabilitation, optometry  
Medical Interests: visual impairment, functional vision  
Research Interests: adaptive technology and innovations, population health, quality improvement

Nayan R. Patel, OD, ABO  
Diplomate Clinical Adjunct Assistant Professor, Clinical Optometrist  
Subspecialty: pediatrics and adult comprehensive exams, specialty contact lenses, myopia management  
Research Interests: CHAMP childhood atropine for myopia progression phase 3 study of atropine 0.01% and 0.02%, dry eye disease, myopia management, contact lenses

Kelsey L. Rickels, OD  
Clinical Optometrist  
Subspecialty: urgent care

Amy L. Walker, OD, MBA, FAAO  
Clinical Adjunct Assistant Professor, Clinical Optometrist, Co-Vice Chair of Clinical Affairs
Clinical Adjunct Faculty

James Bell, MD
Joseph T. Bergmann, MD
Stephen Boorstein, MD
Thomas Castillo, DO, MBA
Mark Duffy, MD, PhD
Daniel Fary, MD
Sarah Groessl, MD
Richard Heckert, MD
Amol D. Kulkarni, MD
Bradley M. Lemke, MD
Kevin Miller, MD
Asha Okorie, MD
Brett Pariseu, MD
Brian Perkovich, MD
William J. Reynders, MD
John G. Rose, MD
Kirk Scattergood, MD
Jeffrey L. Shere, MD
Wei-Chaun Wang, MD
Kevin Wienkers, MD
Mitchell Wolf, MD

Affiliate Faculty

Ronald E. Gangnon, PhD
Professor, Department of Population Health Sciences and the Department of Biostatistics and Medical Informatics

Anne Griep, PhD
Professor, Cell and Regenerative Biology

Jongrui Jian, PhD
Professor, Electrical and Computer Engineering

Olachi Mezu-Ndubuisi, MD, OD
Assistant Professor, Pediatrics, Edwin and Dorothy Gamewell Professor

Bikash Pattnaik, PhD, MPHIL
Assistant Professor, Pediatrics, Retina Research Foundation M.D. Matthews Research Professor

Donna Peters, PhD
Professor, Pathology and Laboratory Medicine

Raunak Sinha, PhD
Assistant Professor, Neuroscience, – David and Nancy Walsh Family Professorship in Vision Research
Vivian Lee, MD  
Scheie Eye Institute  
University of Pennsylvania  
“Advances in Molecular Pathology: Redefining the Defined”  
September 17, 2021

Joshua Stein, MD, MS  
Kellogg Eye Center  
University of Michigan  
“The Future of Big Data in Ophthalmology”  
October 8, 2021

Jennifer Lim, MD  
Chicago Eye and Ear Infirmary  
University of Illinois  
Matthew D. Davis Clinical Research Lecturer: “Artificial Intelligence in Ophthalmology: Screening for Retinal Disease”  
October 22, 2021

William Beltran, DVM, PhD  
University of Pennsylvania  
Frontiers in Vision Research: “Translational Retinal Gene Therapies: From a Dog’s Point of View”  
December 3, 2021

Remo Susanna, MD  
Ophthalmology Dept. Chair  
Universidade de São Paulo  
“Glaucoma: Childhood Glaucoma Genetics: Are We Doing Our Best? New Paradigms”  
April 1, 2022

Geoffrey Rose, BSc, MBBS, MRCP, FRCS, FRCOphth  
Moorfields Eye Hospital  
“Trends in Rehabilitation of the Patient with Thyroid Eye Disease”  
April 9, 2022

Inderjeet Keur, PhD  
L V Prasad Eye Institute  
T32 Vision Research Training: “Understanding the Pathogenesis of Retinopathy of Prematurity”  
April 28, 2022

Subhabrata Chakrabarti, PhD, FARVO  
Prof. Brien Holden Eye Research Centre  
L V Prasad Eye Institute  
T32 Vision Research Training: “Molecular and Evolutionary Insights from Primary Congenital Glaucomas”  
April 28, 2022

David Mackey, MD  
University of Western Australia  
“Prevalence and Risk Factors of Myopia in Young Adults: Review of Findings from the Raine Study in Western Australia”  
May 13, 2022

Arpan Gandhi, MBBS, MD  
Dr. Shroff’s Charity Eye Hospital (SCEH)  
“Variety Under Our Microscope - Eye Hospital in India”  
May 27, 2022
The University of Wisconsin Department of Ophthalmology and Visual Sciences (DOVS) has a longstanding legacy of sharing experiences, knowledge, and resources with doctors and learners worldwide.

Since the late 1970’s, DOVS has engaged in global projects and collaborations as part of a continued effort to combat vision-related health disparities at home and abroad. Under the co-direction of Yasmin S. Bradfield, MD and Cat Burkat, MD, FACS, the department established its present-day Global Ophthalmology Initiatives program in 2016 and four years later developed its novel 3-year global ophthalmology resident curriculum.

This global legacy continues today as the department educates learners and teachers worldwide through research, lectures, seminars, and bilateral exchanges that allow for the application of academic global ophthalmology experiences in local communities.

Cutting Edge Global Ophthalmology Curriculum

In August 2022, Dr. Bradfield and Hannah Baker, MA presented DOVS’ global ophthalmology resident curriculum to an audience of academic, non-profit, and supernational ophthalmic leaders and learners at the inaugural Global Ophthalmology Summit in Park City, Utah.

“Based on the interest our work received, it is apparent we are the model for this type of work nationally and internationally,” Bradfield said. “We are on the cutting edge with our curriculum. Participants left the summit looking at our department in a very different light.”

Bradfield said the intention is to publish the curriculum so that it may be shared widely with national and global partners.

Research and Clinical Observership Program

From 2017 to 2022, DOVS partnered with the non-profit Combat Blindness International (CBI) and the University of São Paulo to offer a Research and Clinical Observership Program. This five-week program provides a global ophthalmology resident the opportunity to contribute to IRB-approved research under the guidance of a DOVS faculty mentor, observe in clinical and surgical spaces based on their area of interest, and participate in residency didactic and educational offerings.

This year’s global resident, Renata Martins Maia, MD, travelled more than 5,000 miles from her home in São Paulo, Brazil to participate in the program, where she focused her clinical and surgical observations in...
oculoplastics and neuro ophthalmology. In addition, Maia contributed to a Botox research study under the mentorship of Dr. Burkat. This research aims to determine whether there is a correlation between forehead injections and diminished hand sensitivity. “We think of Botox as a cosmetic treatment,” Maia said, “without really understanding the potential long term medical implications.”

Perhaps most importantly, Maia learned new perspectives and techniques that will help her communicate more effectively with her patients back in Brazil. “You have handouts and other informational materials to assist in informing patients of their disease and the options for treatment. You use colored pencils and draw for them,” she said. “I’m going to do that at home.”

To date, four University of São Paulo residents have participated in this program.

**Everyone’s Right to Sight**

Since 2007, DOVS has partnered with UW Health and CBI to provide service to Dane County residents who are underinsured, or uninsured, and needing eye care. Patients who qualify may be referred to DOVS’ bimonthly Saturday clinic. They are provided with a full eye exam with refraction and dilation, as well as screening for common eye diseases.

DOVS also provides free eye care services at the World Sight Day – Right to Sight Eye Clinic in Madison, Wis. The clinic is offered as part of World Sight Day, an annual day of awareness, held in October, that focuses global attention on blindness and vision impairment. In 2022, 58 patients were provided with eye care services, and 34 pairs of glasses were also provided at no charge in less than six hours.

“We know how important regular eye checks are in ensuring the early detection and management of diseases that can lead to blindness,” said Anna Momont, MD. “I am grateful to Combat Blindness International and our volunteer faculty and staff for supporting this clinic, which is an important initiative to improve access to eyecare for everyone.”

37 DOVS employees participated in the 2022 Right to Sight Eye Clinic, including ophthalmologists, optometrists, medical students, residents, clinical fellows, technicians, schedulers, photographers, registered nurses, screeners, and interpreters.
More patients in rural areas across the nation could soon have increased access to vision-saving eye screenings based on a new multi-center clinical trial, led by an investigator at the University of Wisconsin Department of Ophthalmology and Visual Sciences (DOVS).

Yao Liu, MD, MS is an assistant professor and the director of the UW Teleophthalmology Program. In September 2021, her Implementation of Teleophthalmology in Rural Health Systems Study (I-TRUST) received $4.4 million in funding through a National Institutes of Health/National Eye Institute (NIH/NEI) UG1 grant. This will enable Liu to expand on her previous research to increase diabetic eye screenings in rural communities in Wisconsin and beyond.

Diabetic eye disease affects an estimated 4.2 million Americans and remains the leading cause of blindness among working-age adults in the United States. Early detection and treatment can prevent 90 percent of severe vision loss, but data shows nearly half of Americans living with diabetes are not obtaining their yearly eye screenings, as recommended by the American Diabetes Association.

That means over 17 million people – many of whom live in rural areas – are missing out on this important surveillance screening.

“For patients often have no symptoms until very late in the disease, we tend to see patients with diabetic eye disease at a point where we’ve lost a timely critical opportunity to intervene earlier,” Liu said. “Getting eye screenings and treatment early, using lasers and medications, makes it much more likely that we can prevent blindness from diabetes, preserving a patient’s vision and their independence.”

For rural patients, a major barrier is having to travel long distances to obtain eye screening from an eye care provider. But teleophthalmology, Liu said, represents an exciting solution to close the rural access to care screening gap.

Rather than traveling to an eye clinic, patients can have photographs of the inside back of their eyes, or retinas, taken conveniently at their primary care clinic using a special camera. The images are then electronically sent to and analyzed by an eye doctor who could be located hundreds of miles away.

While this service has worked well at the Veteran’s Affairs (VA) health system for decades, Liu noted that the technology hasn’t been widely used in the nation’s primary care settings, where the majority of rural patients with diabetes obtain care. So she set out to understand why that was happening and find a solution.

“We found that a major barrier is a lack of integration of this technology into the busy day-to-day workflow of a primary care clinic,” Liu said. “We wanted to find a way to make using this vision-saving technology easier for primary care clinicians, staff, and patients.”

To do this, Liu developed and launched Implementation for Sustained Impact in Teleophthalmology (I-SITE), in partnership with Mile Bluff Medical Center in rural Mauston. I-SITE is the first implementation program
specifically designed to overcome barriers to teleophthalmology use by tailoring its integration into rural primary care clinic workflows. In this program, a trained coach works with the primary clinic to implement strategies to better integrate and increase the use of this technology. Since I-SITE launched in 2017, the results have been highly promising.

“We were not only able to increase eye screening, which resulted in saving patients’ vision, but we were also able to show that the increase in screening was sustainable,” Liu said. “Previous studies of teleophthalmology often showed high screening rates initially, but within a year or so, the screening rates would decrease with inattention and disuse. But with I-SITE, we’ve been able to sustain that increase for over three years at Mile Bluff Medical Center.”

Now, with the launch of the I-TRUST Study, Liu is hoping to replicate this success at 8-10 rural health care systems across the United States. The hope is to see similar results across a variety of health systems and to learn more about what factors might predict the effectiveness of the I-SITE program, such as differences in the characteristics of individual health systems and clinics in different regions of the country.

Study investigators will also be looking for another key factor: whether patients actually follow-up for eye care after abnormalities are found on eye screening.

Knowledge gained from the I-TRUST study could be important for successfully implementing teleophthalmology programs in urban areas of need as well as where similar screening challenges exist. Dr. Liu’s team now partners with Outreach Community Health Centers, a federally-qualified health center in Milwaukee serving a low-income, predominantly African American patient population, to culturally adapt the I-SITE program for urban communities of color.

“It’s very rewarding to share what we learn with health systems and researchers to expand access to eye care locally, nationally, and worldwide,” Liu said. “At UW-Madison, we have an over 50-year history as international leaders in diabetic eye disease, from screening to imaging to treatment. With the I-TRUST Study, we’re building on our unique tradition and expertise to further benefit our communities around the world. It’s a great example of the Wisconsin Idea in action.”
During the early days of the COVID-19 pandemic – a time when very few people were voluntarily seeking surgical consults – patients throughout the Philippine islands still lined up to see Catherine Macaraig, MD.

Despite the risk posed by the coronavirus, they came to her seeking care for strabismus: a condition in which the two eyes do not line up in the same direction.

“That really highlighted the urgency of their need,” Macaraig said. “Looking ‘normal’ is really a goal for my patients, because frequently they aren’t hired for jobs if they have strabismus. It’s a socioeconomic issue.”

For Macaraig – a 1994 graduate of the University of Wisconsin (UW) Department of Ophthalmology’s (DOVS) Pediatric Ophthalmology and Adult Strabismus Fellowship Program – providing care for these patients, even during a pandemic, is a responsibility she takes seriously.

A native of Manila, Philippines, Macaraig is now a professor at the University of Santo Tomas (UST) and evaluates and treats patients of all ages through her private practice at UST Hospital, the Cardinal Santos Medical Center (CSMC), as well as at the Tzu Chi Eye Center, which provides free eye care and procedures to those who need it.

“Having the ability to give something back, it’s a big thing for me,” she said.

After completing her undergraduate education, medical school and a general ophthalmology residency training at UST, Macaraig decided to continue her sub-specialty training at the UW, in a department that’s had a long history with providing eye care services in the Philippines. In 1979, DOVS faculty member and Philippine native Guillermo de Venecia, MD, and his wife, nurse Marta de Venecia, established the Free Rural Eye Clinic (FREC) in the Philippines to provide cataract surgery and other ophthalmologic care to patients who otherwise couldn’t afford care. Since then, dozens of UW ophthalmologists, medical students, residents and clinical fellows have traveled to FREC to provide the latest care to patients.

In 2018, DOVS established an official partnership with the University of Santo Tomas, the Cardinal Santos Medical Center and Tzu Chi Eye Center, as part of the department’s Global Ophthalmology Initiatives (GOI) Program. Shortly thereafter, the partners piloted a one-week resident rotation at UST, sponsored by the Guillermo and Marta de Venecia Fund.

Due to the COVID-19 pandemic, this rotation was put on hold, but the global partnership flourished in other ways, including the creation of a new, quarterly Global Resident Cataract Symposium, where UST and UW learners share case studies in a virtual forum. UST and CSMC ophthalmology residents and fellows have also delivered presentations at the DOVS Global Journal Club, as well as the DOVS Learner’s Day research conference.

In addition to these global learning activities, partners have presented at each other’s virtual departmental conferences and DOVS has seen significant participation by Philippines colleagues in their weekly Grand Rounds.
“Just having this connection has brought us tremendous opportunities for both the ophthalmologists and the medical students of my department,” Macaraig said. “And we’re looking forward to being able to do more in the future.”

That includes resuming the Philippines in-person training rotation, as well as piloting a new short-term rotation for a UST learner to come to Wisconsin.

While the pandemic made travel between the two countries challenging, Macaraig was able to visit Wisconsin in March 2022. She says she looks forward to connecting with future residents and fellows, especially those who are interested in pediatric and adult strabismus care.

“I love my subspecialty of pediatric ophthalmology because I have the chance to help a child attain the best possible vision or look their best so that they can live a fruitful and happy life,” she said. “For adult strabismus, we have the opportunity to make a large impact in the lives of those afflicted by strabismus. They develop confidence, become more successful in their jobs and personal relationships, and have a brighter outlook. It is a blessing to be able to make such a difference in each patient’s life.”
Introducing Shaoqin (Sarah) Gong, PhD

Shaoqin (Sarah) Gong, PhD, joined the University of Wisconsin Department of Ophthalmology and Visual Sciences (DOVS) in December 2021 as a biomedical engineer. With more than 20 years of experience as a scientist and educator, she is a familiar face on the UW-Madison campus. A professor since 2010, she holds appointments with the Wisconsin Institute for Discovery and has collaborated with multiple other faculty members campus-wide on numerous research projects.

A Diverse Research Background

Dr. Gong oversees a research laboratory of nearly a dozen members. Many of her ongoing projects are multidisciplinary in nature, bridging engineering principles with materials science, chemistry, and the life sciences. Her work encompasses everything from cancer immunotherapy to CRISPR gene editing - a technique in molecular biology by which specific genes of living organisms are modified. She specializes in creating and manufacturing of new biotechnologies to deliver local payloads aimed at improving human health - including vision.

Her team’s research has created multi-functional nanoparticles - microscopic carriers that can be used for diagnosing or treating disease. That work has implications for diagnosing and treating various types of ophthalmic diseases, as well as multi-system cancers and other diseases.

A Cross-Campus Collaborator

Dr. Gong’s research is known for its reputation of quality and innovation. Her list of research collaborators is lengthy, and includes DOVS faculty such as David Gamm, MD, PhD. When Gamm’s research team successfully created new retinal photoreceptor cells from human stem cells derived from skin, they turned to Gong’s lab to help develop a technology to get the cells to the retina – and keep them there. The result was a tiny, implantable photoreceptor patch designed to inject under the retina.

In the realm of gene therapy, Gong has collaborated with both Gamm and Bikash Pattnaik, PhD. Among other initiatives, they’ve turned to CRISPR gene editing to seek new ways of treating genetically inherited retinal degenerative eye diseases, such as Leber congenital amaurosis – a blinding eye disorder in babies and young children. Beyond that, she is also collaborating with other DOVS faculty and McPherson Eye Research Institute members, including Robert Nickells, PhD, and Olachi Mezu-Ndubuisi, MD. Additionally, she’s launched a new collaboration with DOVS Vice Chair of Research Curtis Brandt, PhD.

“The eye is the second most complex organ in the body,” Gong said. “I’m interested in learning more about eye diseases and building future collaborations.”
A Wisconsin Alumni Research Foundation Innovation Award Winner

One of Gong’s collaborative research projects recently caught the eye of the Wisconsin Alumni Research Foundation (WARF). In December 2021, a team of interdisciplinary researchers – including Gong and Zach Morris, MD, PhD – was recognized with a WARF Innovator Award for their project, “Nanoparticles to Render Tumors More Susceptible to Treatment.”

In oncology, radiation therapy has long been relied upon to treat a variety of cancers and tumor types. But in recent years, immunotherapy—treatments that augment or suppress various immune functions to help fight disease—has become an increasingly viable tool in treating advanced cancers.

Combining radiation and immunotherapy is an approach that has demonstrated early success. Researchers seek to make this combination more effective to create longer lasting remissions and even cures. For Gong’s team, one solution was to create a nanoparticle that can be injected into an irradiated tumor to stimulate a stronger immune response to fight the cancer.

Education

Dr. Gong earned her PhD in materials science and engineering from the University of Michigan-Ann Arbor, and her MS in materials science and engineering from Tsinghua University in Beijing China. She also earned BS degrees in economics and management and materials science and engineering from Tsinghua University.
RESIDENTS

Class of 2022
Tyler Boulter, MD  
Medical School: Texas A&M University School of Medicine, College Station, TX

Paige Richards, MD  
Medical School: Michigan State University College of Human Medicine, East Lansing, MI

Kenneth Taylor, MD  
Medical School: Emory University School of Medicine, Druid Hills, GA

Class of 2023
Katherine Dalzotto, MD  
Medical School: Case Western Reserve University School of Medicine in Cleveland, OH

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Medical School: Northwestern University Feinberg School of Medicine in Chicago, IL

William Van De Car, MD  
Medical School: Michigan State University College of Human Medicine in Grand Rapids, MI

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Medical School: Northwestern University Feinberg School of Medicine, Chicago, IL

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Medical School: University of Utah School of Medicine, Salt Lake City, UT

Current Clinical Fellows
Katy Coggins, MD  
Glaucoma  
Residency: The University of Texas Southwestern Medical School, Dallas, TX  
Internship: Saint Joseph Hospital, Denver, CO  
Medical School: The University of Texas Southwestern Medical School, Dallas, TX

Elaine Downie, MD  
Oculofacial Plastic Surgery  
Residency: Hennepin County Medical Center, Minneapolis, MN  
Graduate School: University of Minnesota Medical School, Minneapolis, MN

Benjamin Fowler, MD, PhD  
Vitreoretinal Surgery, Second Year  
Residency: Bascom Palmer Eye Institute, Miami, FL  
Internship: University of Kentucky College of Medicine, Lexington, KY  
Graduate School: University of Kentucky College of Medicine, Lexington, KY  
Medical School: University of Kentucky College of Medicine, Lexington, KY

Paige Richards, MD  
Vitreoretinal Surgery  
Residency: University of Wisconsin-Madison, WI  
Internship: Spectrum Health, Grand Rapids, MI  
Medical School: Michigan State University College of Human Medicine, East Lansing, MI

Julia Shatten, MD  
Cornea, External Disease, Refractive Surgery  
Residency: University of Pittsburgh Medical Center, PA  
Internship: University of Vermont Medical Center, VT  
Medical School: University of Vermont College of Medicine, VT

Medical School: University of Washington School of Medicine, Seattle, WA

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Kevin Schneider, MD  
Medical School: University of Michigan Medical School, Ann Arbor, MI

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Vitreoretinal Surgery  
Residency: Geisinger Eye Institute, Danville, PA  
Internship: Reading Hospital, West Reading, PA  
Medical School: Thomas Jefferson University Sidney Kimmel Medical College, Philadelphia, PA

Rebekah Huffman, DO  
Cornea, External Disease and Refractive Surgery  
Residency: University of Kentucky College of Medicine, Lexington, KY  
Internship: University of Kentucky College of Medicine, Lexington, KY  
Medical School: Lincoln Memorial University DeBusk College of Medicine, Harrogate, TN

Michael Gutowski, MD  
Glaucoma  
Residency: Casey Eye Institute at Oregon Health and Science University, Portland, OR  
Internship: Providence Sacred Heart Medical Center, Spokane, WA

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Vitreoretinal Surgery  
Residency: Geisinger Eye Institute, Danville, PA  
Internship: Reading Hospital, West Reading, PA  
Medical School: Thomas Jefferson University Sidney Kimmel Medical College, Philadelphia, PA

Rebekah Huffman, DO  
Cornea, External Disease and Refractive Surgery  
Residency: University of Kentucky College of Medicine, Lexington, KY  
Internship: University of Kentucky College of Medicine, Lexington, KY  
Medical School: Lincoln Memorial University DeBusk College of Medicine, Harrogate, TN

Michael Gutowski, MD  
Glaucoma  
Residency: Casey Eye Institute at Oregon Health and Science University, Portland, OR  
Internship: Providence Sacred Heart Medical Center, Spokane, WA

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Medical School: University of Michigan Medical School, Ann Arbor, MI

Kevin Elwood, MD  
Medical School: University of Texas at Austin Dell Medical School, Austin, TX

Nenita Maganti, MD  
Medical School: Northwestern University Feinberg School of Medicine, Chicago, IL

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Breanna Aldred, MD  
Medical School: University of Wisconsin School of Medicine and Public Health, Madison, WI

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Medical School: Washington University School of Medicine, St. Louis, MO

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Ayala Gelique, MD
Imaging Fellow
*Medical School*: Medical College of Wisconsin, Milwaukee, WI

Christian Kim, MD
Ophthalmic Pathology/Imaging Fellow
*Medical School*: Loyola University Chicago Stritch School of Medicine, Maywood, IL

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*Advisor*: Sarah Gong, PhD

Philip Mzyk
Postdoctoral T32 Vision Research Trainee
*Advisor*: Colleen McDowell, PhD

Kamila Mizerska
*Advisor(s)*: Mrinalini Hoon, PhD; Raunak Sinha, PhD

Kazuya Oikawa
*Advisor*: Gillian McLellan, PhD, BVMS

Xiuxiu Wang
*Advisor*: Sarah Gong, PhD

Yuyan Wang
*Advisor*: Sarah Gong, PhD

Rousen (Alex) Xie
*Advisor*: Sarah Gong, PhD

Ying Zhang
*Advisor*: Sarah Gong, PhD

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*Program*: biomedical engineering
*Advisor*: Sarah Gong, PhD

**Raymond Doudiah**
*Program*: cellular and molecular biology
*Advisor*: Ari Rosenberg, PhD

**Kim Edwards**
*Program*: cellular and molecular pathology
*Advisor*: David Gamm, MD, PhD

**Emma Geiduschek**
*Program*: neuroscience training program
*Advisor*: Colleen McDowell, PhD

**Jamie Jones**
*Program*: biomedical engineering
*Advisor*: Sarah Gong, PhD

**Jacob Khoussine**
*Program*: cellular and molecular biology; medical scientist training program
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**Allison Ludwig**
*Program*: comparative biomedical sciences
*Advisor*: David Gamm, MD, PhD

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*Advisor*: Donna Neumann, PhD

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*Program*: cellular and molecular pathology
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**Nicole Muench**
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*Advisor*: Robert Nickells, PhD

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**Min Zhu**
*Program*: chemistry
*Advisor*: Sarah Gong, PhD
Seven years after her last strabismus surgery, Veronica Blumer once again finds herself in the eye clinic. But this time around, it’s for a much different reason.

The 22-year-old from Monticello, Wisconsin has been in-and-out of hospitals, operating rooms, and various clinics since birth.

“I was born two months early and had a brain bleed that caused hydrocephalus, which is a buildup of fluid on the brain,” Blumer said. “I’ve had several surgeries on my brain to correct the issue throughout my lifetime, but it put a lot of pressure on my eyes, and I developed double vision when I was six.”

In 2007, Blumer’s vision issues brought her under the care of UW Health pediatric ophthalmologist Yasmin Bradfield, MD, who observed not only the double vision but diagnosed bilateral superior oblique palsy which can be associated with hydrocephalus.

“She was trying to compensate for her double vision in downgaze by adopting a chin-down position to move her eyes up,” Bradfield said. “As a young child starting to read, that’s an extremely difficult issue to deal with.”

To correct the vision issues, Bradfield performed a complex strabismus surgery on Blumer to properly align her eyes. The procedure was successful in treating the double vision, and another surgery was performed ten years later to maintain Blumer’s eye alignment.

Throughout those ten years – and the many follow-up appointments during that time – both Blumer and her family developed a close relationship with Bradfield. At one point, the Blumer family even learned what kind of coffee drink Bradfield liked best – and made sure to hit up Starbucks prior to appointments.

“We always brought her cinnamon dolce lattes every time we came to the clinic,” Blumer said. “After my first surgery, we took a picture together, and she still has the picture to this day, which is really sweet.”

Since her last surgery in 2017, Blumer says her vision is now “pretty much perfect,” but plenty else has also changed in her life, including graduating from both high school and college, and recently landing her first job out of school.

Which is exactly why Blumer is back once again at the eye clinic; she’s now employed as a medical scheduler at UW Health’s University Station clinic, working alongside the staff that once treated her as a patient.

“I always knew I wanted to do something with medicine,” Blumer said. “And it’s always been my dream to work for UW Health. Ever since I was little, I wanted to work here.”

So when a recent opportunity arose to work a rotation in the pediatric clinic and see Bradfield again – this time as a colleague – Blumer jumped at the opportunity.
“I had tears in my eyes when I saw her,” she said. “And we got to take another picture together, which was just so cool.”

As for Bradfield, she says that she’s immensely proud of Blumer and is thrilled to watch her former patient find success in her personal and professional life. “One of the rewards of being a pediatric ophthalmologist is having that long-term continuity with patients and their families,” she said. “In Veronica’s case, the surgical intervention and subsequent care really allowed her to succeed in school, to be able to drive a car safely, and now to have a career in health care. It’s pretty amazing.”

Now, as a medical scheduler, Blumer is often the first point of contact with ophthalmology patients, both in-person and over the phone. Frequently, patients have questions or express feelings of stress and anxiety over an unresolved medical issue. But Blumer says she’s in a unique position to help these patients. Because after all, she’s been in their shoes. And while Blumer is happy to give back to patients in this way, she’s already looking ahead to how she can make an even bigger impact going forward.

“My past medical experiences really help me relate to patients, because you have an idea of what they’re going through and when they’re scared,” Blumer said. “Because it can be a pretty scary thing. I understand that and I think it helps me better relate with people.”
The National Eye Institute estimates more than 3 million Americans aged 40 and over have low vision, a vision impairment that affects their daily lives. Low vision cannot be corrected with glasses, contact lenses, procedures, or surgery.

Since its establishment in 2016, Vision Rehabilitation Services has been on the forefront of conducting research and providing interventions and strategies that help these individuals live well with their remaining functional vision. As a tier 3 multidisciplinary vision rehabilitation center with Sanbrita Mondal, OD as its chief, Vision Rehabilitation Services provides patients with low vision optometry, occupational therapy, and social work services in a coordinated, unified setting.

“We have been incredibly busy this year implementing a number of new initiatives,” Mondal, said. “This includes expanded vision rehabilitation services, a new registry and data repository, and exciting research to better understand how low vision patients use their eyes to interpret visual information.”

Introducing ‘WILVR’ – Wisconsin Low Vision Registry and Data Repository

Clinical trials are a key part of advancing low vision research while also improving the quality of life for those affected by vision impairment. Now, thanks to the Wisconsin Low Vision Data Repository (WILVR), it is easier than ever for patients with vision loss to participate in these studies. WILVR began recruiting patients in August 2022. This new resource will help UW investigators identify patients with vision loss and connect them to clinical trials involving novel low vision technologies/equipment or epidemiological research studies aimed at measuring quality of life improvements through vision rehabilitation services.

Closing the Gaps

Another new project will bring together a diverse group of stakeholders—that of doctors, low vision occupational therapists, certified low vision specialists, certified adaptive technology specialists, teachers of the visually impaired, and orientation mobility specialists—to shed light on the barriers and opportunities to accessing and receiving low vision rehabilitation services in Wisconsin. The multi-year project will pilot in Dane County and eventually expand to other areas of Wisconsin.

Extended Reality for All

These days augmented and virtual reality have become a household staple. With the proliferation of smartphones and virtual reality (VR) headsets, it’s easier than ever to experience these technologies. Unless of course, you have a visual impairment.

In partnership with UW Department of Computer Science and Human Computer Interaction Lab, Mondal is helping to develop and use software and technology to better understand how low vision patients use their eyes differently to view various forms of information. The results of this research will be used to further expand VR and artificial reality (AR) technology applied to common activities of daily living and vision rehabilitation programs.
The Wisconsin Reading Center (WRC) has been a leader in ophthalmic imaging evaluation for more than 50 years. The WRC systematically analyzes retinal images and provides an unbiased, comprehensive data source for clinical trials for diabetic retinopathy, age-related macular degeneration, uveitis, vein occlusion, and other ophthalmic diseases. It serves a wide range of academic institutions, foundations, pharmaceutical companies, and biotechnology firms, as well as government funding agencies such as the National Eye Institute (NEI), National Institute of Diabetes and Digestive Kidney Diseases, and the Department of Defense.

Formally established in 1970 as the Fundus Photographic Reading Center, the WRC was a collaboration with the NEI. Under the direction of Dr. Matthew Dinsdale “Dinny” Davis, it became the core image reading lab within the University of Wisconsin Department of Ophthalmology and Visual Sciences. The change in name from Fundus Photograph Reading Center to Wisconsin Reading Center acknowledged the growing portfolio of imaging types received and systematically analyzed through the WRC.

“The Reading Center has grown to handle more than just fundus photographs,” said Director of Operations Chris Hodges. “We handle a variety of imaging modalities such as fluorescein angiography, fundus autofluorescence, indocyanine green angiography, quantitative autofluorescence, spectral domain optical coherence tomography (OCT), and swept-source OCT. Most recently we have added OCT angiography, ultra-widefield imaging, and adaptive optics.”

**Staff Growth**

In the first seven months of 2022, the WRC read more than 61,000 images and led 46 clinical trials, including the recent FDA approved trials for Vabysmo, a drug to treat neovascular (wet) age related macular degeneration and diabetic macular edema. The volume of work resulted in the center nearly doubling in size with the hiring of 30 additional staff members. The WRC is currently comprised of 65 faculty and staff with retina specialist Barbara Blodi, MD, who serves as its medical director.

**Artificial Intelligence Research Unit**

The WRC, under the direction of Amitha Domalpally, MD, PhD, recently launched the Artificial Intelligence Research Unit (A-EYE) to utilize machine learning to detect associations between disease features. A-EYE collaborates with both NEI and industry partners to develop artificial intelligence algorithms for naming and organizing retinal images and for screening patients for clinical trials.
PUBLICATIONS

The UW Department of Ophthalmology and Visual Sciences is proud to be a leader among our peer institutions in publication output. Our success is the result of collaborations with one another, across campus and all over the world. The following list represents peer-reviewed publications from September 1, 2021, through August 31, 2022.


Faralli JA, Filla MS, Peters DM. Integrin Crosstalk and Its Effect on the Biological Functions of the Trabecular Meshwork/


Kushner BJ. Eccentric Gaze as a Possible Cause of “Zoom Fatigue.” Journal of Binocular Vision and Ocular Motility, October 2021.


Published Research


Sauter MM, Brandt CR. Knockdown of TRIM5a or TRIM11 Increases Lentiviral Vector Transduction Efficiency of Human Muller Cells. Experimental Eye Research. March 2021.


Publications, continued...


Visit eyes.wisc.edu for a complete list of faculty publications
Many thanks to the generous donors who help advance vision research and support training the next generation of eye surgeons and researchers. This list represents gifts to the University of Wisconsin Department of Ophthalmology and Visual Sciences between July 1, 2021 and June 30, 2022.

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