

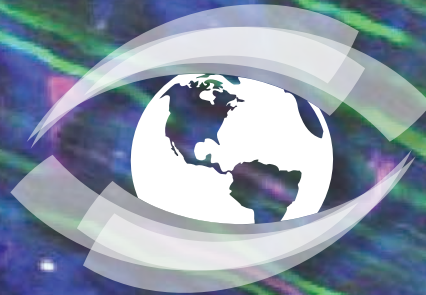


Department of Ophthalmology
and Visual Sciences

UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

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.

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***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

FROM THE CHAIR

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.



Terri L. Young, MD, MBA

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!

A handwritten signature in black ink, reading "Terri L. Young MD, MBA". The signature is fluid and cursive.

Terri L. Young, MD, MBA

Chair, UW-Madison Department of Ophthalmology and Visual Sciences

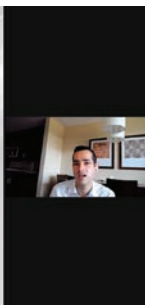
Peter A. Duehr Endowed Professor of Ophthalmology, Pediatrics and Medical Genetics

YEAR IN REVIEW 2021-2022

2021

Friends over at UW

- Manage complex strabismus, especially if you think they need a 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.

SEPTEMBER



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.

NOVEMBER

OCTOBER



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

DECEMBER



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

\$10.2 million

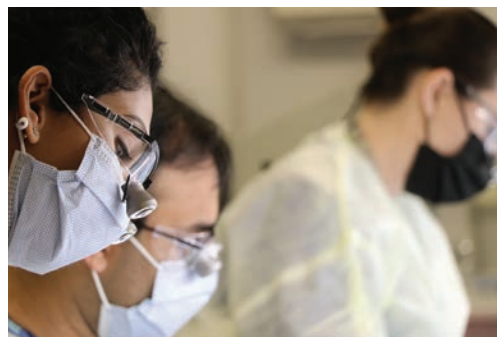
Total (\$) in grants awarded in 2021

2022



Team 'Glaucoma Cat' participate in the second annual virtual Trivia Night, along with other departmental friends and alumni.

JANUARY



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.

MARCH

FEBRUARY



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

121,984

**Total patient
visits at all
clinic sites**

7,401

Surgeries performed

**between September 2021 and August 2022*

2022



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.

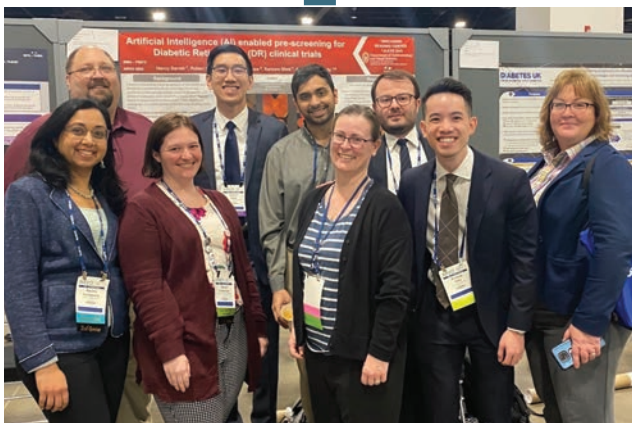
APRIL



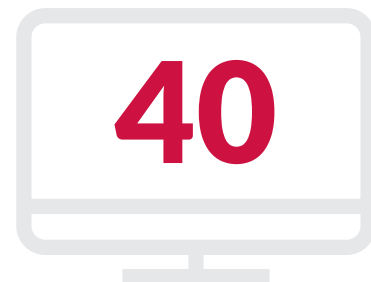
Ophthalmology Resident and Fellow Graduation Celebration held at the Pyle Center, Madison, WI.

JUNE

MAY



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



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."

JULY

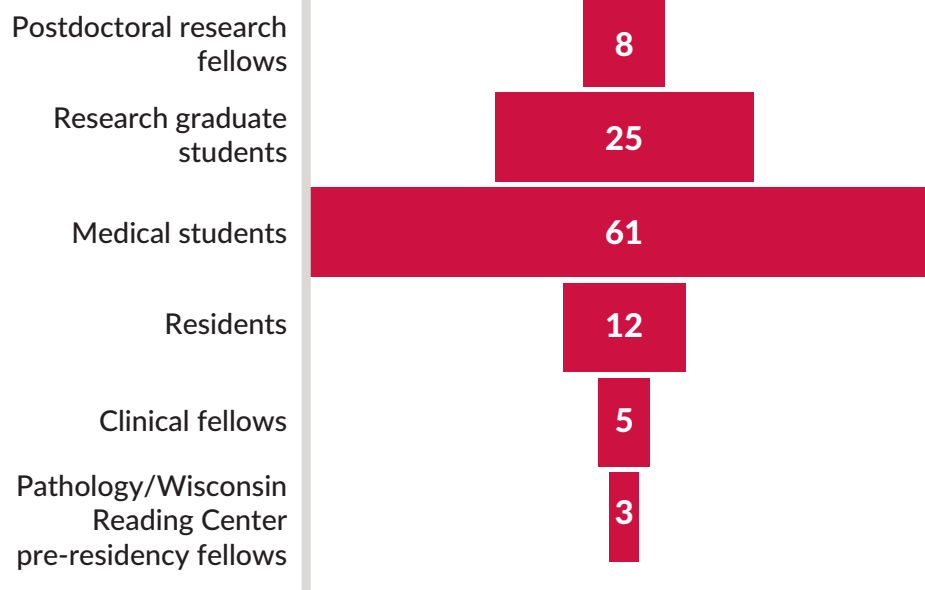


Photographer, Andy Manis

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.

AUGUST

Students, Residents and Fellows



More than 160

Peer-reviewed publications

**between September 2021 and August 2022*



HONORS



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.

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."

WE REMEMBER



Remembering Dr. Clare Hutson

1926-2022

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.”

DIVERSITY, EQUITY, AND INCLUSION CULTURE REVOLUTION

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."

CANINE TV PREFERENCES COULD LEAD TO ANSWERS IN PROTECTING DOGS' EYESIGHT

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.



*Freya Mowat, PhD,
BVSc*

"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.”

UW STUDY: PHOTORECEPTOR CELLS FROM RETINAL ORGANOIDS CAN REPLICATE KEY FUNCTION OF VISION

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.



Raunak Sinha, PhD

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 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

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.



David Gamm, MD, PhD

“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 sub-cellular 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.”

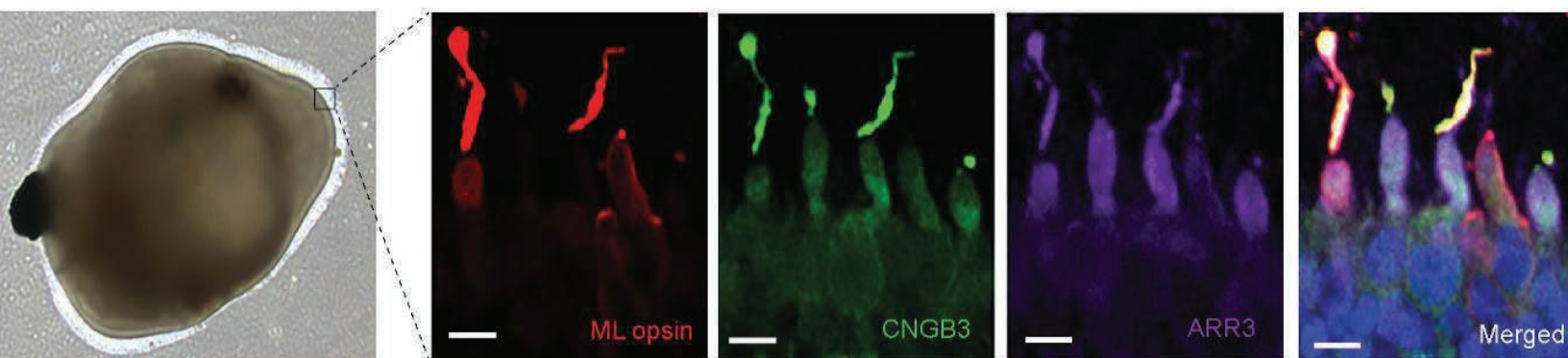
Sinha and Gamm have now turned their efforts toward improving the retinal organoids’ light-evoked electrical responses and bringing them closer to the performance of actual human fovea.

“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.”



A mature retinal organoid (left) and its cone photoreceptors

CLINICAL EYE RESEARCH UNIT

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 subspecialty 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.



NEW MEDICAL RETINA AND UVEITIS FELLOWSHIP

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.”



Laura Kopplin, MD, PhD and Kimberly Stepien, MD

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.

CLINICAL & RESEARCH FACULTY



**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

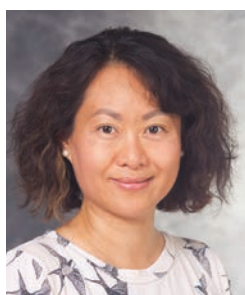


Roomasa Channa, MD
Assistant Professor

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



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



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



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

Clinical and Research Faculty, continued...



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;

glaucoma medical and surgical treatment

Research Interests: clinical pharmacology of glaucoma; glaucoma in nonhuman primates; patient experience; presbyopia in nonhuman primates; quality improvement of clinical care



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



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



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



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



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 periocular 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 periocular anatomy; thyroid eye disease clinical trials



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



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



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.



Alexander 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



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

Clinical and Research Faculty, continued...



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



Donna M. Neumann, PhD
Associate Professor

Research Interests: HSV-1 infections in corneal scarring and blindness; epigenetic controls regulating HSV-1 latency



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; epigenetic 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



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



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



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



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;

cataract surgery; comprehensive ophthalmology; ocular trauma

Research Interest: residency training



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



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



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

OPTOMETRY FACULTY



**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 & AFFILIATE FACULTY

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

VISITING PROFESSORS

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

Faruk H. Öрге, MD, FFAO, FAAP

Case Western Reserve University
February 18, 2022

April Maa, MD

Emory University School of
Medicine and Emory Eye Center
Frontiers in Vision Research:
*"Ophthalmologic Telemedicine:
See All the Possibilities"*
March 11, 2022

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

GLOBAL OPHTHALMOLOGY INITIATIVES – OUR LOCAL TO GLOBAL IMPACT

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.



Renata Martins Maia, MD (right) at the 2022 Right to Sight Eye Clinic

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.

I-TRUST STUDY SEEKS TO INCREASE EYE SCREENINGS FOR RURAL PATIENTS

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.

“Because 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.”

FELLOWSHIP ALUM BRINGS HOPE TO PHILIPPINES PATIENTS

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.



Catherine Macaraig, MD

“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.”

WELCOME

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 on-going 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, FELLOWS, POSTDOCTORAL & GRADUATE STUDENTS

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

**Chintan Pathak, MD,
Chief Resident**

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

Class of 2024

Jacob Abou-Hanna, MD

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

Class of 2025

Breanna Aldred, MD

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

Georges Guillaume, MD

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

Samuel Whittier, MD

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

Class of 2026

Jackson Korger, MD

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

Rushi Mankad, MD

Medical School: University of New
Mexico, Albuquerque, NM

Kevin Schneider, MD

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

CLINICAL FELLOWS

Class of 2022

Gordon Crabtree, MD

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

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

Current Clinical Fellows

Katy Coggins, MD

Glaucoma

Residency: The University of Texas
Southwestern Medical School, Texas

Internship: Saint Joseph Hospital,
Denver, CO

Medical School: The University of Texas
Southwestern Medical School, Texas

Elaine Downie, MD

Oculofacial Plastic Surgery

Internship: Hennepin County Medical
Center, Minneapolis, MN

Medical 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

PRE-RESIDENCY FELLOWSHIP PROGRAM

Class of 2023

Nikki Duncan, MD

Ophthalmic Pathology/Imaging Fellow

Medical School: Baylor College of Medicine, Houston, TX

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

POSTDOCTORAL STUDENTS

Dongdong Li

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

GRADUATE STUDENTS

Jacobus Burger

Program: biomedical engineering

Advisor: Sarah Gong, PhD

Raymond Doudlah

Predoctoral T32 Vision Research Trainee

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

Predoctoral T32 Vision Research Trainee

Program: cellular and molecular biology; medical scientist training program

Advisor: Mrinalini Hoon, PhD

Allison Ludwig

Program: comparative biomedical sciences

Advisor: David Gamm, MD, PhD

Kayley A Manuel

Program: microbiology doctoral training program

Advisor: Donna Neumann, PhD

Virginia Mathu

Program: comparative biomedical sciences

Advisor: Gillian McLellan, PhD, BVMS

Steven Mayerl

Program: cellular and molecular pathology

Advisor: David Gamm, MD, PhD

Nicole Muench

Program: cellular and molecular pathology

Advisor: Robert Nickells, PhD

Jarron Roy

Program: cellular and molecular biology; medical scientist training program

Advisor: Sarah Gong, PhD

Michele Salzmänn

Program: comparative medical sciences

Advisor: Freya Mowat, PhD, BVSc

Abhilash Sawant

Program: cellular and molecular biology

Advisor: Mrinalini Hoon, PhD

Tanya Sharmin

Program: comparative medical sciences

Advisor: Colleen McDowell, PhD

Mason Shipley

Program: cellular and molecular pathology

Advisor: Donna Neumann, PhD

Samantha Shrum

Program: biophysics

Advisor: Jeremy Rogers

Yong-Seok Song

Program: environmental toxicology

Advisor: Nader Sheibani, PhD

Yao Tong

Program: biomedical engineering

Advisor: Sarah Gong, PhD

Odalys Torne Escude

Program: comparative biomedical sciences

Advisor: Gillian McLellan, PhD, BVMS

Serena Wisner

Program: neuroscience training program

Advisor: Mrinalini Hoon, PhD

Ziyun Ye

Program: microbiology doctoral training program

Advisor: Donna Neumann, PhD

Nisakorn Yodsanit

Program: biomedical engineering

Advisor: Sarah Gong, PhD

Jingcheng Zhu

Program: biomedical engineering

Advisor: Sarah Gong, PhD

Min Zhu

Program: chemistry

Advisor: Sarah Gong, PhD

EYES ON THE FUTURE: FORMER PATIENT WORKS ALONGSIDE STAFF THAT TREATED HER

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."



Yasmin Bradfield, MD

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.



Yasmin Bradfield, MD and Veronica Blumer - in 2007 and today.

"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."

VISION REHABILITATION SERVICES

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.



Sanbrita Mondal, OD

“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

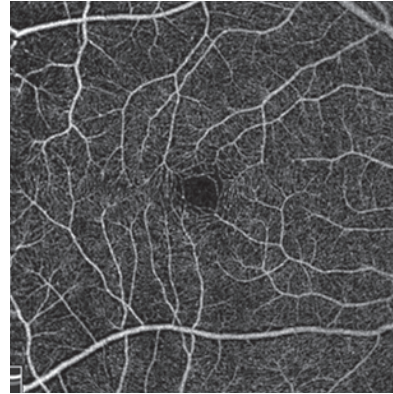
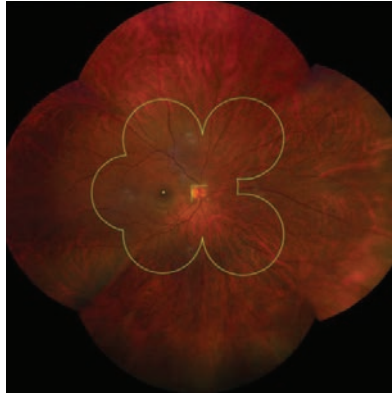
Another new project will bring together a diverse group of stakeholders—that of doctors, low vision occupational therapists, certified low vision specialists, certified adaptive technology specialists, teachers of the visually impaired, and orientation mobility specialists—to shed light on the barriers 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



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.

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Boeke PS, **Altaweel MM**. Reservoir Technique: A Novel Method for Pressure-Controlled Silicone Oil Infusion using the Constellation Vitrectomy System. *Retina*. June 1, 2022.

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