TRANSFORMING VISION

2017 ANNUAL REPORT

Department of Ophthalmology
and Visual Sciences
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

TRANSFORMING VISION

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

FROM THE CHAIR

Dear Friends,

It is my sincere honor and privilege to serve as the chair of the University of Wisconsin-Madison Department of Ophthalmology and Visual Sciences. In my role, I have the opportunity to partner with many of you in caring for patients with complex eye diseases, as well as lead the department through an era of unprecedented change in health care policy and regulation, advances in multidisciplinary research, and necessary pedagogical evolution to provide unparalleled learning experiences to tomorrow's leaders in vision care and discovery.

We are growing, and the department is burgeoning. All of this is in large part due to the steadfast commitment in the mission, journey and success of the people and their good work in this department.

In these pages of our 2017 Annual Report, you will read stories of determination, impactful discovery, and hope, including the examples outlined below:

- Our ophthalmology resident education team developed an innovative cataract surgery wet lab protocol that has leap-frogged over standard technologies of learning.
- Our "Resident Mom" piece underscores our core ethos of "It takes a village," and of how we are supportive of each other and stronger when working together.
- Our researchers and clinicians are world-renowned and work doggedly to not only define eye disorders, but also to determine creative ways to cure them using the latest molecular genetics techniques, stem cell technologies, repurposing of FDA-approved medications and innovative treatment protocols. The story of both discovering a new causative gene and developing a treatment of a rare retinal dystrophy that renders young babies blind–a condition called Leber congenital amaurosis - is heartwarming and inspiring.
- A patient shares her story of courage and resolve after her sudden vision loss, the struggle for answers, the special expertise and commitment of our Neuro-ophthalmology and Low Vision providers, and the found community and peace emanating from that journey.
- Another patient story describes how transformative and empowering it was to receive spectacles for the first time as a young child. Our Pediatric Optometrist recognized this need, and prescribed more than just corrective glasses.

As always, we are pleased to work side-by-side with you to give our very finest to our patients, to our learners, and to each other. Please feel free to contact me at any time if you have thoughts on how we might better meet the needs of our community. We are deeply grateful for your commitment to this department.

On, Wisconsin!

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

2017
BY THE NUMBERS

Our researchers, clinicians, educators and learners are at the forefront of saving sight locally and beyond - see their impact on stopping the progression of blinding diseases.

$13.0M

Total Research Grant and Contract Funding

110,000+

Patient Visits in 2017

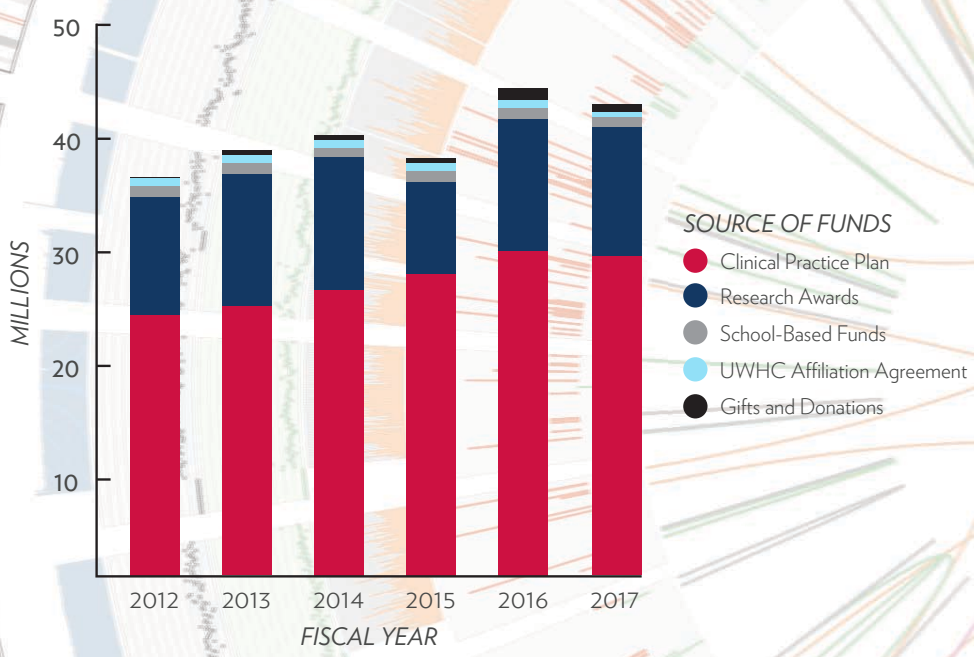
13

Outreach and Madison Area Eye Clinics

3,583+

Cataract Surgeries Performed

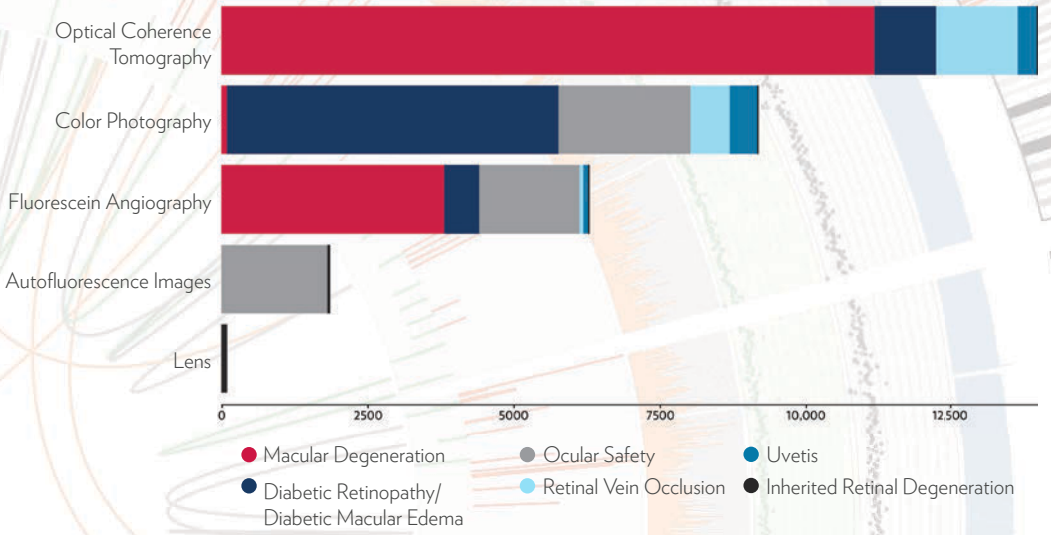
OPHTHALMOLOGY AND VISUAL SCIENCES



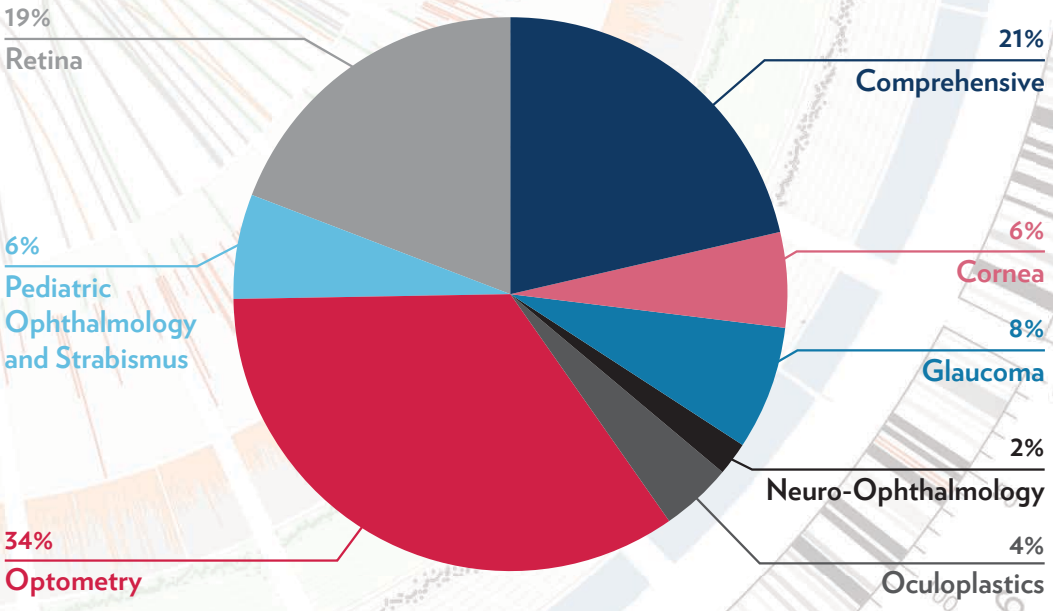
	2012	2013	2014	2015	2016	2017
Clinical Practice Plan	$24.6	$25.8	$26.6	$27.8	$30.3	$29.0
Research Awards	$10.3	$12.2	$11.2	$8.9	$12.4	$13.0
SMPH Mission Aligned Management Allocation	$1.1	$1.2	$1.1	$1.1	$1.1	$1.1
UWHC Affiliation Agreement	$0.5	$0.6	$0.5	$0.5	$0.6	$0.8
Gifts/Donations	$0.1	$0.8	$0.7	$0.7	$1.1	$0.7
Total Sources of Funds *($ in Millions)*	$36.6	$40.6	$40.1	$39.0	$45.4	$44.4

3-2-1 The clinical trials unit has aided in 3 standard of care treatments, 2 new drugs and 1 supplement.

FUNDUS PHOTOGRAPH READING CENTER: EYES GRADED



PATIENT VISITS BY SPECIALTY



#1

In Publication Productivity in US Academic Ophthalmology Programs Per Faculty Member*

217+

Department Team Members

27

Active Clinical Trials

3RD

in National Eye Institute Rankings for Research Funding

*Journal of Clinical and Academic Ophthalmology, Volume 8, Issue 1, 2016

YEAR IN

20

JULY 1
New Residents and Fellows Begin
(Meet them: pg 12-13)

JULY 13
Frontiers In Vision Research: Visiting Professor: Colleen McDowell, PhD, North Texas Eye Research Institute

JULY 20
Inaugural Evening of Gratitude with with the DOVS Advisory Board and the Lions Eye Bank of Wisconsin

AUGUST 18-19
Annual Multiphasic Phacoemulsification Course

AUGUST 21
Viewing Great American Solar Eclipse

SEPTEMBER 9
17th Annual Current Concepts in Ophthalmology Symposium

SEPTEMBER 14
Frontiers in Vision Research: Visiting Professor: James Handa, MD, Massachusetts Eye and Ear Infirmary

SEPTEMBER 8
Inaugural Guillermo and Marta De Venecia Lecture with Dr. Antonio Say

OCTOBER 13
Matthew D. Davis Lecture: Daniel Martin, MD, Chair, Cole Eye Institute

OCTOBER 14
Annual Right to Sight Free Clinic

OCTOBER 26
Saving Sight Session: Julie Mares, PhD: What Are Plant Pigments Doing In Our Eyes? What Can They Tell Us?

REVIEW

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DECEMBER 9, 2016
Robert Nickells, PhD, Honored with Davis Professorship (p. 16)

FEBRUARY 24
Annual Oculoplastics Skills Seminar for Residents

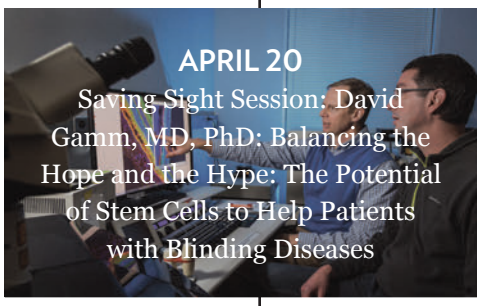
JANUARY 27
Visiting Professor: James Murakami, MD, Nationwide Children's Hospital

FEBRUARY 14
International 3rd Year Resident Rotation at Shroff's Charity Eye Hospital, New Dehli, India

FEBRUARY 10
Visiting Professor: Cheryl Khanna, MD, Mayo Clinic

MARCH 9
Frontiers in Vision Research, Visiting Professor: Janet Sparrow, PhD, Columbia University

APRIL 7
Annual George Kambara, MD, Vision Science Research Symposium



APRIL 20
Saving Sight Session: David Gamm, MD, PhD: Balancing the Hope and the Hype: The Potential of Stem Cells to Help Patients with Blinding Diseases

MAY 24
Women in Eye and Vision Research (WEAVR) Luncheon at ARVO 2017

APRIL 21
Visiting Professor: Andrew Lee, MD, Cullen Eye Institute

JUNE 16
Learner's Day with Medical College of Wisconsin

JUNE 23
Resident and Fellow Graduation

HONORS

F. A. DAVIS CHAIR PROFESSORSHIP

In late December 2016, the Department of Ophthalmology and Visual Sciences announced that Robert W. Nickells, PhD, was the next recipient of the Frederick A. Davis Chair of Ophthalmology and Visual Sciences Professorship. Dr. Nickells joined the faculty in 1994 and has been a tenured professor for 12 years. He received his BS, Honors, first class from the University of Victoria, British Columbia, Canada and his PhD from the University of Calgary, Alberta, Canada. He also completed a postdoctoral fellowship at the California Institute of Technology in Pasadena.

Dr. Nickells has significantly advanced the understanding of molecular mechanisms of early retinal ganglion cell death, a primary symptom in glaucoma. One of the leading causes of blindness worldwide, glaucoma is marked by the progressive death of ganglion cells. Dr. Nickells' lab has shown this mechanism is characteristic of apoptosis, a type of pre-programmed cell death regulated by a successive activation of genes in the dying cell. His work brings us closer to discoveries that could restore vision loss by preventing neuronal cell death with agents that interrupt biochemical pathways that are controlled by these genes.

A consummate educator and natural leader, Dr. Nickells' achievements in the Department have been extraordinary. He served as vice-chair for Research for eleven years and the Coordinator of the Glaucoma Research Group, one of the largest in the U.S., since 1996. He currently serves on the Editorial Board for Molecular Vision, a journal that publishes peer-reviewed methods on research in molecular and cell biology, and the genetics of the visual system.

The Frederick A. Davis Chair of Ophthalmology and Visual Sciences Professorship was named for the first chair of the Eye, Ear, Nose, Throat and Plastics Department at the UW. Born in Texas, Dr. Davis studied at the New York Eye & Ear Infirmary and in Europe. In 1925, the EENT/Plastics service was formed at UW's newly created medical school, and Dr. Davis was named its first chair. In the 29 years he served as chair, he built a busy practice (Davis, Neff and Duehr), published many scientific articles, including his timeless submission on direct ophthalmoscopy, and fathered two sons, Frederick J. and Matthew D. Davis, the latter becoming the first chair of the independent Department of Ophthalmology in 1970.

INAUGURAL DE VENECIA LECTURE

Visiting Professor Antonio Say, MD, Chair of Ophthalmology at Cardinal Santos Medical Center, San Juan, Philippines, presented the inaugural Guillermo and Marta De Venecia Lecture at the Department of Ophthalmology and Visual Sciences on Sept. 8, 2017. Say discussed working with Dr. Guillermo De Venecia in the Philippines, where they provided free eye care to those in need for several decades.

De Venecia and his wife, nurse Marta De Venecia, began traveling to the Philippines and working in rural communities in 1978. Their goal was to restore sight to thousands of people with limited healthcare access in the Philippines. The De Venecia's outreach program grew when they established the Free Rural Eye Clinic (FREC) in San Fabian, Pangasinan, Philippines.

Soon after, Dr. Say joined the project, which he described as the "Cataract Operation." According to Say, FREC performed over 33,000 cataract operations over the past 35 years.

Say shared patient success stories, including a heartwarming video of a reluctant and initially uncooperative patient who after the first eye cataract surgery regained his sight, and happily

obliged and even sang during the operation for his second eye.

Dr. Say stressed the importance of FREC and keeping the De Venecias' vision alive in the Philippines. Donations from the Wisconsin Lions and Lioness Clubs, and from others, continue. Only 15 US dollars is needed to underwrite the cost of a cataract surgical procedure.

The De Venecias, through the Free Rural Eye Clinics Corporation, recently gave a $422,000 gift to the University of Wisconsin-Madison Department of Ophthalmology and Visual Sciences. The Department will use the fund to continue the De Venecias' impactful work and support the department's international initiative.

The Department of Ophthalmology and Visual Sciences International Ophthalmology Program is co-directed by UW professor and oculoplastics specialist Cat N. Burkat, MD, FACS, and Yasmin S. Bradfield, MD, pediatric ophthalmologist and John W. Doolittle Professor. The program collaborates with institutions in Paraguay, India, China and Brazil, and administrates opportunities for international learning experience exchanges for eye providers and vision researchers.

L to R: Yasmin S. Bradfield, MD, Guillermo De Venecia, MD, Antonio Say, MD, Terri L. Young, MD, MBA, Cat N. Burkat, MD, FACS

KAUFMAN RECEIVES FRIEDENWALD AWARD

Claude Burgoyne, MD, Portland Oregon Devers Eye Institute and ARVO president, presents Paul Kaufman, MD the 2017 Friedenwald Award on May 10, 2017.

Paul L. Kaufman, MD, Ernst H. Bárány Professor of Ocular Pharmacology and Chair Emeritus received the 2017 Jonas S. Friedenwald Award honoring outstanding research in the basic or clinical sciences as applied to ophthalmology. This senior award is presented annually by the Association for Research in Vision and Ophthalmology (ARVO), the world's premier scientific society for research in the eye and visual system. As the award recipient, Dr. Kaufman presented the Friedenwald Award Lecture at the May 2017 ARVO Annual Meeting.

Jonas S. Friedenwald, MD, was a practicing ophthalmologist and researcher at the Wilmer Eye Institute at Johns Hopkins University in Baltimore from the 1920s to his death in 1955. In addition to being a stellar clinician, Dr. Friedenwald also performed important research in basic mechanics of vision and the pathophysiology of several major ocular diseases. He also became the role model for the modern ophthalmologist clinician scientist, combining the tools and understanding of ocular diseases into structural and molecular mechanisms to generate major pathophysiological insights and therapeutic targets for blinding diseases. The Friedenwald Award was established in 1957 as a memorial to this distinguished researcher whose contributions encompassed the entire field of ophthalmic investigations.

Dr. Kaufman served as chair of the Department of Ophthalmology and Visual Sciences from 2004 to 2014. An Ophthalmology faculty member since 1975, he received the American Academy of Ophthalmology Senior Achievement Award in 2013 and the Research to Prevent Blindness Stein Innovation Award in 2015.

AMAZING ALUMNI

DISTINGUISHED ALUMNI AWARD, 2016

Karla Johns, MD, Associate Professor, Clinical Ophthalmology & Visual Sciences at Vanderbilt University, Nashville, TN

Karla Johns, MD, with Burton Kushner, MD, at 2016 Ophthalmology Alumni Association Academy reception, Chicago, IL.

Karla Johns, MD, is an ophthalmologist who provides care for both adult and pediatric patients. She is actively involved in Vanderbilt medical student education in the Physical Diagnosis course and has co-authored and edited medical student textbooks for the American Academy of Ophthalmology.

"One of the happiest days in my life was the day I received acceptance to Ophthalmology residency at the University of Wisconsin. I am deeply grateful for the tremendous clinical education I received, and for the gracious collegiality of the Department. It has been gratifying to see how the UW Department of Ophthalmology has continued to grow and excel, continues to train future generations of ophthalmologists, and takes tremendous strides in research. It was a great honor to receive the Distinguished Alumni Award in 2016, to be recognized for the 30+ year career in Ophthalmology for which the Department prepared me well."

DISTINGUISHED EDUCATOR AWARD, 2016

Drs. Andy Thliveris, Michael Scott, Yasmin Bradfield and Terri Young at 2016 Ophthalmology Alumni Association Academy reception, Chicago, IL.

Michael H. Scott, MD, Retina Specialist at the Eye Clinic of Wisconsin in Wausau, WI

Michael H. Scott, MD, is a board certified ophthalmologist who specializes in medical and surgical care of the retina and vitreous. He supervised the Retina Clinic at the Middleton Memorial Veterans Hospital in Madison, Wisconsin for 10 years with our team of ophthalmologists, residents and others. Dr. Scott has also traveled with the flying eye hospital, Orbis International, which focuses on saving sight worldwide. Dr. Scott received the Distinguished Educator Award from the University of Wisconsin-Madison in 2016 at the annual American Academy of Ophthalmology meeting and alumni reception for his continued leadership in education and living our mission.

OPHTHALMOLOGY ALUMNI ASSOCIATION DIRECTORS:

Joshua P. Vrabec, MD - **President**
Burton J. Kushner, MD - **Executive Director**
Cat N. Burkat, MD, FACS - **Secretary**
Justin L. Gottlieb, MD - **Treasurer**

DEPARTMENT PARTNERSHIPS

PARTNERSHIP WITH LIGHTHOUSE GUILD TO INCREASE LOW VISION AWARENESS

LIGHTHOUSE GUILD
Vision+Health

Drs. Melanie Schmitt and Sanbrita Mondal have a vision: to improve the quality of life for patients with low vision diseases. Dr. Schmitt has had a long-standing passion for low vision patient care, and the development of the Low Vision Service at UW Health Eye Clinics was her brainchild. Dr. Mondal launched this clinic less than a year ago, in December of 2016.

Their vision is consistent with the mission of the Lighthouse Guild, a nationally renowned non-profit vision and healthcare organization based in Manhattan. The Lighthouse Guild has served the visually impaired community for over 200 years. The organization recently launched a new initiative that provides financial support and educational resources to university ophthalmology departments.

Reflecting on the partnership, Department Chair Dr. Terri Young noted, "We are honored to be one of only five university departments in the nation chosen by the Lighthouse Guild to participate in this initiative. The grant brings resources to the University of Wisconsin Department of Ophthalmology and Visual Sciences that elevate our strategies for improving the lives of patients with debilitating eye diseases leading to poor vision or blindness."

Dr. Mondal offered details on how the initiative will take shape within UW Health Eye Clinics. "First, on the clinical end, we will work to increase the awareness of low vision services that are available to our patients. We intend to do this not just within our department, but within UW Health as a whole and in the community. In fulfilling our mission as a research institution, we will collect data from patients who have low vision diseases. We will monitor the low vision services they receive, and then register and herald the services that have a measurable, positive impact."

Dr. Schmitt added, "On the educational front, we will provide additional low vision training to our residents and staff, teach all departmental members of the services that can be offered, and encourage patients to seek out these services early in their disease rather than waiting until their vision and quality of life have deteriorated significantly. In particular, we hope the residents will use this information in their future practices."

This partnership will truly transform the physical and emotional landscape of a patient's low vision journey at UW-Madison.

LION'S CORNER

"We are grateful to be partners with the Department. Our work together has empowered our families to know that their precious, gift of sight is transforming the lives of transplant recipients as well as helping to pioneer more research to understand and stop blinding diseases. These last thirty years, we have touched thousands of lives positively. We look forward to continuing to collaborate, saving more sight together, in the years to come."

– Darice Langham, Executive Director, Lions Eye Bank of Wisconsin

CLINICAL & RESEARCH FACULTY

Michael M. Altaweel, MD
Professor
Retina, Vitreous, macula, ocular melanoma

Richard E. Appen, MD
Professor Emeritus
Neuro-ophthalmology

Neal P. Barney, MD
Professor
Cornea and external disease, cornea and cataract surgery, uveitis, ocular immunology

Barbara A. Blodi, MD
Professor, Medical Director of the Fundus Photograph Reading Center and Clinical Trials Unit
Retinal diseases including macular degeneration and diabetic retinopathyuveitis, ocular immunology

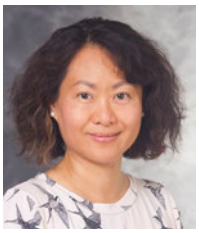
Yasmin S. Bradfield, MD
Dr. John Doolittle Professor Ophthalmology and Visual Sciences Vice-Chair/Education and Faculty Development
Pediatric ophthalmology and strabismus, pediatric glaucoma

Curtis R. Brandt, PhD
UW Medical Foundation Professor of Ophthalmology and Visual Sciences; Vice-Chair/Research
Virology, cell and molecular biology, genetic mapping and recombinant techniques, gene therapy

Cat N. Burkat, MD, FACS
Associate Professor
Ophthalmic reconstructive and cosmetic surgery

Suresh R. Chandra, MD
Professor Emeritus
Vitreoretinal disease, macular disease, ocular melanoma, trauma, international ophthalmology

Jonathan S. Chang, MD
Assistant Professor
Retina, vitreous, macula



Yanjun (Judy) A. Chen, MD, PhD
Assistant Professor
Neuro-ophthalmology

Karina A. Conlin, OD
Clinical Optometrist
Optometry

Eugene D. Cropp, OD
Clinical Optometrist
Optometry

Karen J. Cruickshanks, PhD
Professor
Epidemiology of age-related ocular disorders, hearing loss, diabetes

Janet X. Cushing, OD
Clinical Optometrist
Optometry

Ronald P. Danis, MD
Professor
Macular degeneration, diabetic retinopathy, retinal vascular diseases and posterior ocular inflammatory disorders

Matthew D. Davis, MD
Professor Emeritus
Vitreoretinal disease, diabetic retinopathy, clinical trials

Richard K. Dortzbach, MD
Professor Emeritus
Ophthalmic plastic and reconstructive surgery, surgical techniques

Thomas D. France, MD
Professor Emeritus
Pediatric ophthalmology and strabismus, amblyopia, visual function testing

David M. Gamm, MD, PhD
Associate Professor
Pediatric and adult strabismus management and surgery, comprehensive pediatric ophthalmology, genetic retinal disorders, tear duct surgery, double vision disorders, eyelid abnormalities

Justin L. Gottlieb, MD
Professor
Retina, vitreous, macula

Gregg A. Heatley, MD, MMM
Associate Professor
Vice-Chair/Clinical Affairs
Glaucoma, anterior segment and cataract surgery

Celeste K. Jend, OD
Clinical Optometrist
Optometry

Ronald E. Kalil, PhD
Professor
Neural cell death and repair after brain damage

Paul L. Kaufman, MD
Professor Emeritus
Glaucoma, aqueous humor dynamics, anterior segment physiology and pharmacology, presbyopia

Marilyn C. Kay, MD
Associate Professor
Neuro-ophthalmology

Barbara E. K. Klein, MD, MPH
Professor
Glaucoma, comprehensive ophthalmology, cataracts, diabetic retinopathy, epidemiology, preventive medicine

Ronald E. Klein, MD, MPH
Professor
Vitoretinal disease, diabetic retinopathy, age-related eye diseases, epidemiology

Tracy L. Klein, OD
Clinical Optometrist
Optometry

Daniel W. Knoch, MD
Director Medical Student Education, Associate Residency Director, Associate Professor
Comprehensive ophthalmology, cataract surgery

Burton J. Kushner, MD
Professor Emeritus
Pediatric ophthalmology and strabismus, amblyopia, surgical techniques

Aparna Lakkaraju, PhD
Associate Professor
Retinal cell biology, pathogenesis of retinal degenerations, identification of therapeutic targets

Leonard A. Levin, MD, PhD
Professor
Neuro-ophthalmology, ganglion cell death

Yao Liu, MD
Assistant Professor
Adult and pediatric glaucoma, cataract surgery, anterior segment surgery

Mark J. Lucarelli, MD, FACS
Richard K. Dortzbach Professor of Ophthalmic Facial Plastic Surgery
Oculoplastic, cosmetic facial and orbital surgery

Julie A. Mares, PhD, MSPH
Professor
Epidemiology of eye disease, nutritional epidemiology

Michele M. Martin, OD
Clinical Optometrist
Optometry

Gillian J. McLellan, BVMS, PhD
Assistant Professor
Glaucoma pathogenesis and identification of new therapeutic targets

Mihai Mititelu, MD, MPH
Assistant Professor
Retinal vascular diseases, age-related macular degeneration, retinal dystrophies

Anna C. Momont, MD
Clinical Assistant Professor
Glaucoma, anterior segment surgery, optic nerve imaging

Sanbrita Mondal, OD
Clinical Optometrist, Director — Low Vision Clinic
Optometry, low vision

Frank L. Myers
Professor Emeritus
Retina

Sarah M. Nehls, MD
Associate Professor
Refractive surgery, cornea and external disease, cornea and cataract surgery, uveitis

Robert W. Nickells, PhD
Frederick A. Davis Chair of Ophthalmology and Visual Sciences Professor
Molecular biology of cell death in glaucoma and retinoblastoma

T. Michael Nork, MD, MS, FARVO
Professor
Diseases and surgery of the retina and vitreous

Nayan R. Patel, OD
Clinical Optometrist
Optometry

Richard W. Patterson, OD
Clinical Optometrist
Optometry

Heather A. D. Potter, MD
Associate Professor
Comprehensive ophthalmology, ophthalmic pathology, cataract surgery, refractive surgery

Shilpa G. Reddy, MD
Assistant Professor
Comprehensive ophthalmology

Patricia C. Sabb, MD
Assistant Professor
Comprehensive ophthalmology, cataract surgery, refractive surgery

Stephen K. Sauer, MD
Associate Professor
Comprehensive ophthalmology, cataract surgery

Melanie A. Schmitt, MD
Assistant Professor
Pediatric ophthalmology and strabismus, ophthalmic genetics

Nader Sheibani, PhD
Professor
Diabetic retinopathy, retinopathy of prematurity, animal models and retinal vascular cell biology and signal transduction

Kimberly E. Stepien, MD
Associate Professor, Vice Chair/Clinical Affairs
Retina, macula, inherited retinal degenerations

Gary W. Sterken, MD
Assistant Professor
Comprehensive ophthalmology, cataract surgery, glaucoma

Thomas S. Stevens, MD
Professor Emeritus
Vitreoretinal disease, macular disease, diabetic retinopathy, proliferative vitreoretinopathy

Michael C. Struck, MD
Professor
Pediatric ophthalmology and strabismus, retinopathy of prematurity, pediatric cataract surgery and intraocular lens implantation, pediatric glaucoma

John E. Temprano, MD
Associate Professor
Comprehensive ophthalmology, cataract surgery

Andrew T. Thliveris, MD, PhD
Professor, Vice Chair, Resident Education, Residency Director Chief of Ophthalmology
William S. Middleton Memorial Veterans Hospital
Comprehensive ophthalmology, cataracts, ocular genetics

Amy L. Walker, OD, MBA, FAAO
Clinical Optometrist, Vice Chair/Clinical Affairs
Optometry

Terri L. Young, MD, MBA
Peter A. Duehr Professor of Ophthalmology, Pediatrics and Medical Genetics, Chair, Department of Ophthalmology and Visual Sciences
Pediatric ophthalmology adult strabismus, ophthalmic genetics

RESIDENTS & FELLOWS

CLASS OF 2018

Roman Krivochenitser, MD
Dr. Roman Krivochenitser earned his BA in Accounting from Michigan State University, East Lansing, MI. Dr. Krivochenitser received his MD from Michigan State University.

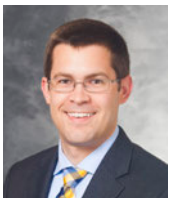
Jennifer Larson, MD
Dr. Jennifer Larson received her BS in Biomedical Sciences from Marquette University, Milwaukee, WI. Dr. Larson received her MD from the UW-Madison.

Paul Selid, MD
Dr. Paul Selid earned his BS in Chemistry from the University of North Dakota, Grand Forks, ND, where he also received his MD.

CLASS OF 2019

Randy (Chris) Bowen, MD, MS
Dr. Randy (Chris) Bowen earned his BS in Biochemistry and Biology at Utah State University in Logan, Utah and MS in Bioengineering. Dr. Bowen received his MD at Utah State University.

Nathan Matthews, MD
Dr. Nathan Matthews earned his BS in Neuroscience at the University of Michigan Ann-Arbor. Dr. Matthews received his MD at the Medical College of Wisconsin in Milwaukee.



Christopher Spearman, MD
Dr. Christopher Spearman earned his BS in Biochemistry and Molecular Biology at Penn State University, University Park. Dr. Spearman received his MD at Thomas Jefferson University in Philadelphia, PA.

CLASS OF 2020

Braden Burckhard, MD
Dr. Braden Burckhard earned his BA in Biology and Chemistry at Minot State University in Minot, ND. Dr. Burckhard also earned his MD from the University of North Dakota, Grand Forks, ND.

Meisha Raven, DO
Dr. Meisha Raven earned her BS in Biomedical Science from Grand Valley State University in Allendale, MI. Dr. Raven received her DO from A.T. Still University in Mesa, AZ, and completed her Ocular Pathology Fellowship at UW-Madison.

Alana Trotter, MD
Dr. Alana Trotter earned her BS in Biology and African American Studies at UW-Madison. Dr. Trotter received her MD from the Medical College of Wisconsin in Milwaukee.

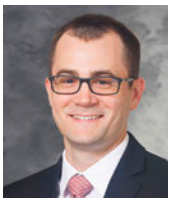
CLINICAL FELLOWS

Susie Drake, MD
Study Area: Cornea
Dr. Susie Drake earned her BS at the University of Michigan-Ann Arbor and her MD from UW-Madison. Dr. Drake completed her ophthalmology residency training at the Illinois Eye and Ear Infirmary at the University of Illinois at Chicago.

Nitasha Gupta, MD
Study Area: Glaucoma
Dr. Nitasha Gupta earned her BA and her MD at Northwestern University, Chicago, IL. Dr. Gupta completed her ophthalmology residency training at the University of Chicago.

Zackery Oakey, MD
Study Area: Retina
Dr. Zackery Oakey earned his BS at Brigham Young University and earned his MD at the University of Utah. Dr. Oakey completed his ophthalmology residency training at the University of California-Irvine.

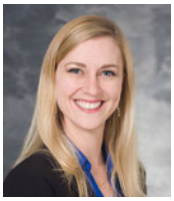
CLINICAL FELLOWS



Michael Possin, MD
Study Area: Retina
Dr. Michael Possin earned his BS in Biology and MD from the UW-Madison. Dr. Possin completed his ophthalmology residency training at the University of Missouri, Columbia, MO.

Suzanne Van Landingham, MD
Study Area: Oculoplastics
Dr. Suzanne Van Landingham received her BA in Music at Princeton University and MD from Johns Hopkins University School of Medicine. She completed her ophthalmology residency training at the Wilmer Eye Institute, Johns Hopkins Hospital in Baltimore, MD.

PRE-RESIDENT PATHOLOGY FELLOWS



Nicole Jody, MD
Study Area: Pathology
Dr. Jody earned her BS from the University of Arizona, Tucson, AZ. She received her MD at the University of Louisville School of Medicine, Louisville KY. Dr. Jody began her pre-residency pathology fellowship in May.

Brendan Lawson, DO
Study Area: Pathology
Dr. Lawson earned his BS from Lafayette College, Easton, PA. He received his MD in osteopathic medicine at Lake Erie College of Osteopathic Medicine, Lake Erie, PA. Dr. Lawson began his pre-residency pathology fellowship in June.

INTERNATIONAL RESIDENCY ROTATION

In February 2017, a team of our 3rd year residents, Drs. Alex Ringeisen, Angeline Wang and Han Kim, led by faculty members Drs. Heather Potter and Sarah Nehls, participated in an educational exchange with our ophthalmology partners at Shroff's Charity Eye Hospital in Delhi, India. The team delivered critical eye screenings, performed eye surgeries and provided educational presentations.

VISION RESEARCH GRADUATE & POST-DOCTORAL STUDENTS

GRADUATE STUDENTS

Sara Adelman
Research Assistant
Gillian McLellan Research Lab
Comparative Biomedical Sciences

Ryan Donahue
Research Assistant
Robert Nickells Research Lab
Molecular and Cellular Pathology

Juliana Falero-Perez
Research Assistant
Nader Sheibani Research Lab
Environmental Toxicology

Mitra Farnoodian
Research Assistant
Nader Sheibani Research Lab
Clinical Investigation

Margaret Maes
Research Assistant
Robert Nickells Research Lab
Molecular and Cellular Pathology

Christine McWilliams
Project Assistant/Associate Researcher
Karen Cruickshanks Research Lab
Epidemiology

Kazuya Oikawa
Research Assistant
Gillian McLellan Research Lab
Comparative Biomedical Sciences

Heather Schmitt
Research Assistant
Robert Nickells Research Lab
Molecular and Cellular Pathology

Li Xuan Tan
Research Assistant
Aparna Lakkaraju Research Lab
Pharmaceutical Sciences

POST-DOCTORAL TRAINEES

Nasim Jamili
Research Assistant
Nader Sheibani Research Lab
Cell and Molecular Biology

Eric Nguyen
Research Associate
Nader Sheibani Research Lab
Biomedical Engineering

Jebjani Phillips
Research Associate
David Gamm Research Lab
Stem Cell Research

Gurugirijha Rathnasamy
Research Associate
Aparna Lakkaraju Research Lab
Retinal Cell Biology

Mohammad Ali Saghiri
Research Associate
Nader Sheibani Research Lab
Biomedical Engineering

Divya Sinha
Research Associate
David Gamm Research Lab
Stem Cell Research

Keynote Speaker, Joan Miller, MD, FARVO, presenting at Annual Kambara Vision Research Symposium.

VISITING PROFESSORS

James Murakami, MD
Nationwide Children's Hospital
Columbus, OH
Grand Rounds
Orbital Sclerotherapy: Treating slow flow malformations
January 27, 2017

Cheryl Khanna, MD
Mayo Clinic
Rochester, MN
Grand Rounds
Mayo Clinic Glaucoma Team Model
February 10, 2017

Janet Sparrow, PhD
Columbia University
New York City, NY
Frontiers In Vision Research
Visual Cycle Adducts and Diseases of Retina
March 9, 2017

Joan Miller, MD, FARVO
Harvard Medical School
Boston, MA
Keynote Speaker, Kambara Vision Science Symposium
Treatment of AMD Beyond VEGF
April 7, 2017

Andrew Lee, MD
Houston Methodist Hospital
Houston, TX
Grand Rounds
Neuro-Ophthalmology in Space Flight
April 21, 2017

Gary Novack, PhD
Founder and CEO of Pharma-Logic Development, Inc.
Frontiers In Vision Research
Frontiers in Ophthalmic Drug Development with Special Attention to Drug Delivery
May 18, 2017

Colleen McDowell, PhD
North Texas Eye Research Institute
Frontiers In Vision Research
Crosstalk Between Transforming Growth Factor Beta-2 and Toll-Like Receptor 4 in the Trabecular Meshwork.
July 13, 2017

Alex Huang, MD, PhD
Doheny Eye Institute
Los Angeles, CA
Grand Rounds
Structural and Functional Assessment of Aqueous Humor Outflow
August 11, 2017

Antonio Say, MD
Cardinal Santos Medical Center
San Juan, Phillippines
Guillermo and Marta De Venecia Lecturer
Phacoemulsification for Brunescent Cataract in a Rural Community Setting: A 20-Year Experience
September 8, 2017

James Handa, MD
Johns Hopkins Wilmer Eye Institute
Baltimore, MD
Frontiers In Vision Research
How Does Environmental Stress Induce Retinal Pigment Epithelium Degeneration in Age-Related Macular Degeneration
September 14, 2017

Daniel Martin, MD
Chair, Cole Eye Institute
Cleveland, OH
Grand Rounds
Managing Neovascular Age-Related Macular Degeneration: Important Clinical Pearls from CATT
October 13, 2017

Mirko Babic, MD
Universidade de São Paulo
São Paulo, Brazil
Grand Rounds
Ophthalmoscopic Aspects of Glaucoma Optic Neuropathy
November 9, 2017

Remo Susanna, MD
Universidade de São Paulo
São Paulo, Brazil
Grand Rounds
IOP Fluctuation and Peak, Myth or Truth
November 9, 2017

NATIONAL & INTERNATIONAL LEADERSHIP POSITIONS

MICHAEL M. ALTAWEEL, MD

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Founder and Co-Director, Ocular Imaging Conference, 2000-present
- President, Madison Ophthalmological Society, 2002-present
- Member, Board of Directors, Combat Blindness International, 2002-present

NEAL P. BARNEY, MD

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Medical Director, Lions Eye Bank of Wisconsin, 2017-present
- Member, Board of Directors, The Foster Ocular Immunology National Society, 2012-present

BARBARA A. BLODI, MD

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences; Medical Director, Fundus Photograph Reading Center; Medical Director, Clinical Trials Unit

- Executive Committee Member, Study of Comparative Treatments for Retinal Vein Occlusion 2 National Eye Institute, 2013–2018
- Executive Committee Member, the Diabetic Retinopathy Clinical National Research Network –National Eye Institute, 2014–2019

YASMIN S. BRADFIELD, MD

Dr. John Doolittle Professor of Ophthalmology and Vice Chair of Education and Faculty Development, University of Wisconsin-Madison, Department of Ophthalmology and Visual Sciences

- American Association of Pediatric Ophthalmology and Strabismus Nominating Committee, Dec. 2016
- American Academy of Ophthalmology Subspecialty Day Program Planning Committee of the American Association of Ophthalmology and Strabismus and the American Academy of Pediatrics, Co-Chair 2016, Chair 2017
- Chair, Pediatric Glaucoma Section, the American Association of Ophthalmology for Pediatric Ophthalmology and Strabismus, and the Strabismus and Pediatric Ophthalmology Society of India Joint Meeting, Jaipur India, 2016

CURTIS R. BRANDT, PHD, FARVO

Professor, Vice Chair of Research, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences and Medical Microbiology and Immunology; University of Wisconsin Medical Foundation Professor of Ophthalmology and Visual Sciences; Director, Vision Research Core.

- Chair, National Institutes of Health, Center for Scientific Review, Drug Discovery and Antimicrobial Resistance Mechanisms Study Section, 2015-2017
- Section Chair and Assistant Director, Fight for Sight Research Foundation, New York, New York, 2007-present

CAT N. BURKAT, MD, FACS

Associate Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Committee Member, Young Surgeons Task Force, American Academy of Cosmetic Surgery, 2005-present
- American Board of Ophthalmology Oculoplastics and Orbit Maintenance of Certification Written Examinations Panel: Invited Member, 2007-present; Chair,

Oculoplastics Exam Development Committee Panel for Ophthalmic Knowledge Assessment Program, Written Qualifying Exam, Oral Board Exam, and Maintenance of Certification Exam, 2012-present
- Member, American Society of Ocularists Medical Advisory Board, 2011-present
- Chair of the Oculoplastics/Orbit Committee for the EyeWiki AAO social media Project, American Academy of Ophthalmology, 2014-present
- Member, Foundation of the Swiss Academy of Ophthalmology, 2017-present

KAREN J. CRUICKSHANKS, PHD

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences and Population Health Sciences

- Member, Committee on Accessible and Affordable Hearing Health Care for Adults, National Academies of Science, Engineering and Medicine (Institute of Medicine), 2015-2017
- Member, Program Committee for the Sensory Impairment and Cognitive Decline Conference, Duke Medical Center and Durham VA Geriatrics Research, Education and Clinical Center, 2016-2017
- Member, External Advisory Board, The Medical University of South Carolina Clinical Research Center for Experimental and Clinical Studies of Presbycusis, 2014-present
- Chair, Data Monitoring and Oversight Committee, Conservation of Hearing Study, National Institute on Deafness and Other Communication Disorders, 2011-present
- Grant Reviewer, Yale Pepper Center Grants, 2017

THOMAS D. FRANCE, MD

Professor Emeritus, University of Wisconsin – Madison, Department of Ophthalmology and Visual Sciences

- Chair, Emeritus Committee of the American Ophthalmological Society, 2016-present
- Chair, Senior Pediatric Ophthalmology Group of the American Association for Pediatric Ophthalmology and Strabismus, 2016-present

DAVID M. GAMM, MD, PHD

Associate Professor, University of Wisconsin – Madison, Department of Ophthalmology and Visual Sciences. RRF Emmett A. Humble Distinguished Director, McPherson Eye Research Institute; Sandra Lemke Trout Chair in Eye Research

- Editorial Board Member, Translational Vision Science and Technology, 2011-present
- Founder and Chief Scientific Officer, Opsis Therapeutics, 2016

JUSTIN L. GOTTLIEB, MD

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Retina Section Representation, Fellowship Compliance Committee, Association of University Professors of Ophthalmology, March 2007-present
- Member, Board of Directors, American Society of Retina Specialists, August 2017-present
- Co-Chairman, Fellowship Directors Section, American Society of Retina Specialists, August 2017-present
- Member, Practicing Ophthalmologists Curriculum Retina Committee, American Academy of Ophthalmology, 2008-present

- Chair, Practicing Ophthalmologists Curriculum Retina Committee, 2016-present
- Member and Lecturer, Maintenance of Certification, American Board of Ophthalmology, 2013-present

GREGG A. HEATLEY, MD, MMM

Associate Professor, Director of Quality Improvement and Peer Review, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Associate Examiner, American Board of Ophthalmology, Mentor Examiner, 2009-present
- Session Moderator, American Academy of Ophthalmology Subspecialty Day Program Committee for Glaucoma, November 2017

PAUL L. KAUFMAN, MD

Professor Emeritus, University of Wisconsin - Madison, Department of Ophthalmology and Visual Sciences; Ernst H. Bárány Professor of Ocular Pharmacology, Department Chair Emeritus

- Member, Board of Directors, The Glaucoma Foundation, New York, NY, 2004-present
- Member, Glaucoma Scientific Advisory Board, Bausch & Lomb, Inc., Rochester, NY and Tampa, FL, 2006-present
- Member, Scientific Advisory Board, AGTC (formerly Applied Genetics Technologies Corp), Alachua, FL, 2012-present

MARILYN C. KAY, MD

Associate Professor, University of Wisconsin – Madison, Department of Ophthalmology and Visual Sciences

- Mentor Examiner, American Board of Ophthalmology, 1990-present
- Member, American Board of Ophthalmology Panel, 2012-present

BARBARA E. K. KLEIN, MD, MPH

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences; Gold Fellow, The Association for Research in Vision and Ophthalmology; Fellow Emeritus, American College of Preventive Medicine; Fellow, American College of Epidemiology; Fellow, American College of Ophthalmology

DANIEL W. KNOCH, MD

Associate Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Member, Medical Student Educators Curriculum Committee, Association for University Professors of Ophthalmology, 2016-present
- Member, Medical Student Educators Program Committee, Association for University Professors of Ophthalmology, 2016-present
- Member, Medical Student Educators Website Committee, American Academy of Ophthalmology, 2017

APARNA LAKKARAJU, PHD

Associate Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Member, International Society for Eye Research Membership/Young Investigator Committee, 2015-2018

YAO LIU, MD

Assistant Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Vice Chair, Ocular Telehealth Special Interest Group, American Telemedicine Association, April 2017-present

MARK J. LUCARELLI, MD, FACS

Richard K. Dortzbach Professor of Oculofacial Surgery, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences; Fellowship Program Director - Ophthalmic Facial Plastic Surgery, Service Chief-Oculoplastics

- Education Committee Member, American Society of Ophthalmic Plastic and Reconstructive Surgery, 1999-present; Program Directors Committee Member, 1999-present; Chair, Oculofacial and Orbital Research Network, 2010-date; Chair, Fellowship Program Directors Committee, 2015-2017
- Member, Practicing Ophthalmologists Curriculum Panel, American Academy of Ophthalmology, 2014-present
- Member, Board of Directors of the International Thyroid Eye Disease Society, 2007-present; Elected Vice-President, 2015-2016

JULIE A. MARES, PHD, MSPH

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Member, Scientific Advisory Board of the Center for Science in the Public Interest, 2000-present
- Fellow, International Carotenoid Society, 2017-present

GILLIAN J. MCLELLAN, BVMS, PHD

Assistant Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences; Assistant Professor, University of Wisconsin–Madison, Veterinary Medicine

- Chair, Code of Conduct Committee, European College of Veterinary Ophthalmologists, appointed 2015-present
- Member, Basic Science Course Committee, American College of Veterinary Ophthalmologists, 2014-present
- Member, Animals in Research Committee, Association for Research in Vision and Ophthalmology, 2016-2019; Chair, Animals in Research publications sub-committee, 2017-2018
- Member, Editorial Board, Veterinary Ophthalmology, 2009-present

SARAH M. NEHLS, MD

Associate Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Director, American Board of Ophthalmology, Anterior Segment and Cornea Division, 2016-2024
- Board Member, Juvenile Diabetes Research Foundation, 2010-present
- Cornea/External Specialist, American Board of Ophthalmology Content Outline Rating Committee, 2012-present
- Examiner, American Board of Ophthalmology Oral Boards Examination, 2013-present
- Director/Member, American Board of Ophthalmology, 2017
- Representative, American Board of Ophthalmology, American Academy of Ophthalmology Council, 2017-present

ROBERT W. NICKELLS, PHD

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Organizing Committee Member for Off-Year Meeting of International Society for Eye Research, 2013, 2017
- Member, Bright Focus Foundation Glaucoma Committee, 2016-present
- Scientific Review Editor, Molecular Vision, 2011-present

T. MICHAEL NORK, MD, MS

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Member, Board of Directors, Lions Eye Bank of Wisconsin, 2000-present
- Director, Comparative Ophthalmic Research Laboratories, Inc., 2014-present
- Managing Member, Ocular Services On Demand, Inc., 2009-present

HEATHER A.D. POTTER, MD

Associate Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences

- Member, American Academy of Ophthalmology Knowledge Base Panel for Ophthalmic Pathology and Ocular Oncology, 2016-present
- Treasurer, Wisconsin Academy of Ophthalmology Executive Committee, 2016-present
- Member, American Association of Ophthalmic Oncologists and Pathologists Executive Committee, 2017-present

MELANIE A. SCHMITT, MD

Assistant Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences; Director, Ophthalmic Genetics Clinical Program; Chair, Patient Centered Care Steering Committee; Director, Pediatric Inherited Retinal Degenerations Clinic

- Member, Professional Education Committee, American Association for Pediatric Ophthalmology and Strabismus, 2015-2018
- Member, Genetic Eye Disease Task Force, American Association for Pediatric Ophthalmology and Strabismus, 2017

ANDREW T. THLIVERIS, MD, PHD

Professor, University of Wisconsin–Madison, Department of Ophthalmology and Visual Sciences; Chief of Ophthalmology and Assistant Chief of Surgery, W.S. Middleton Veterans Administration Medical Center, Madison, WI

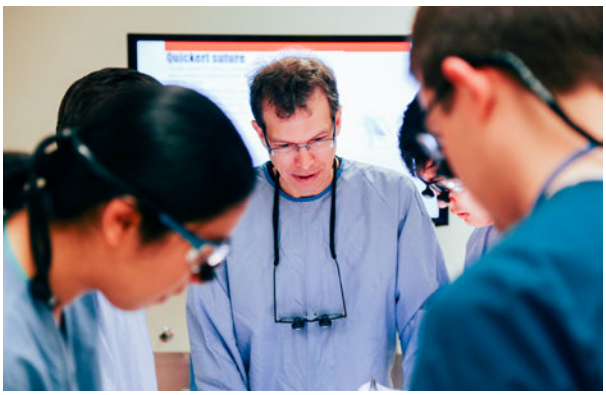
- President of Association of Veterans Affairs Ophthalmologists (AVAO), 2016-present

TERRI L. YOUNG, MD, MBA

Chair, University of Wisconsin-Madison Department of Ophthalmology and Visual Sciences; Peter A. Duehr Endowed Professor, University of Wisconsin – Madison, Department of Ophthalmology and Visual Sciences, Pediatrics, and Medical Genetics

- Chair, Women in Eye and Vision Research (WEAVR) of the Association of Research in Vision and Ophthalmology (ARVO), 2017-present
- Associate Examiner, American Board of Ophthalmology, Mentor Examiner, 2004-present
- Member, Scientific Advisory Board, International Marfan Syndrome Foundation, 2014-present

- Member, National Board of Scientific Counselors, National Eye Institute, National Institutes of Health, 2014-present
- Member, Disease and Pathophysiology of the Visual System Study Section, National Eye Institute, National Institutes of Health, 2013-present
- Member, Editorial Board of Experimental Eye Research Journal, 2008-present, Ophthalmology and Eye Disorders Journal, 2008-present, Journal of Ophthalmology, 2009-present, World Journal of Ophthalmology, 2011-present
- Member, Board of Directors of the Joint Commission on Allied Health Personnel in Ophthalmology as the Association of University Professors of Ophthalmology Representative, 2016-2019



A MASTERFUL BALLET OF EFFICIENCY AND GRACE

Drs. Braden Burckhart and Daniel Fary discuss technique in the wet lab.

NEW CATARACT PROGRAM

"In the hands of a skilled surgeon, phacoemulsification is a masterful ballet of efficiency and grace. It is an art form, and once learned it is a joy to perform." [1]

"Learning to perform cataract surgery requires development of highly specialized intraocular microsurgical skills and application of those skills in high-stakes situations with little tolerance for error," according to Dr. Stephen Sauer, associate professor of comprehensive ophthalmology and cataract surgery curriculum director.

To improve resident acquisition of cataract surgery skills and shift the learning curve into the first year of training, Dr. Sauer and many others developed the new Resident Cataract Surgery Curriculum. Beginning with basic concepts and skills, each program year (PGY) training period builds on progressively more complex didactics, simulation, wet lab and operating room activities.

Multiple faculty provide training and ownership for each faction of the program. It is truly a collaborative effort and many other faculty members also contribute their time and expertise, including senior residents who have an important role for teaching junior residents certain skills and concepts. Dr. Patti Saab, comprehensive ophthalmologist, introduces residents to basic surgical techniques in the wet lab using Kitaro synthetic eye kits and porcine eyes.

1 –Achieving Excellence in Cataract Surgery: A Step by Step Approach (2009), D. Michael Colvard, MD, FACS

Dr. Yao Liu, glaucoma specialist, provides resident training on the EyeSi surgery simulator (funded and housed at the Veterans Hospital), where residents informally compete for the highest psychomotor skill scores. After practicing specific surgical steps, the new residents are carefully introduced into real cases. Beginning with a lower risk part of a cataract surgery, typically the last step in the procedure, these residents progress using a "back-forward" approach, eventually working through all of the required steps to complete full cases. Each component of the curriculum works together to incrementally develop competency in a particular skill for each step of the surgery. The pace from one step to the next will vary based on the individual trainee, but their efficiency, comfort and rate of successful patient outcomes will increase based on these early and sustained exposures to every facet of the surgical procedure. This enhanced curriculum gives residents ample opportunities to learn more, have hands-on experiences earlier and perfect their techniques in a shortened time frame, all of which develop more apt and ready ophthalmologists of the future.

Currently, each resident must demonstrate cataract surgery competency by performing a minimum of 86 full cataract surgeries before graduation, but most end up with 200 or more. Formerly, the process by which an individual resident achieved that goal began in earnest during the second (PGY 3) year. Some students with natural ability, or transferable skills learned elsewhere, found the path to becoming skilled in phacoemulsification smooth, but others who seemed to be moving well through other parts of residency training stumbled when they reached cataract surgery. The collaborative development of this new program addresses that gap head-on and has transformed the University of Wisconsin Department of Ophthalmology and Visual Sciences training into a robust, progressive and effective mastering of this common surgical procedure.

KEY PROGRAM FEATURES:

1. Graded and progressive skill acquisition
2. Faculty instruction, self-directed practice, periodic assessments
3. Didactic knowledge development
4. Simulation (EyeSi) psychomotor progressive skills development
5. Wet lab psychomotor skills development
6. Operating room surgical opportunities, using "back-forward" approach

"The skills learned from this program will provide the foundation for continuous development of one's surgical craft even after completing resident training and entering practice," says Dr. Sauer. "We hope to create an education environment where each resident has access to a similar set of resources, training and surgical opportunities that puts all residents on a smoother path to surgical competence."

RESIDENT MOM

A typical Friday for Jennifer Larson, MD, the current UW- Madison Chief Ophthalmology Resident, begins at 5 AM after having been on emergency call the previous night. She usually does not get much sleep during those nights. Dr. Larson's mornings start with breastfeeding and dressing her six-month-old daughter, Anna. Dr. Larson will then pack the diaper bag, prep bottles, and drop Anna off at her daycare center. As most new mothers can attest, it's more difficult to scoot off to work with a little one in tow. Today, Dr. Larson's schedule includes delivering a 20-minute case review presentation at Ophthalmology Grand Rounds at 7 AM. She heads to the operating room for a Retina surgical case at 8 AM and spends the rest of the morning in the University Station Retina Clinic evaluating and treating patients. After a quick lunch, she and her co-residents attend Basic Sciences Lecture (BSL) series instruction from 1:30- 4:30PM. Dr. Larson uses her lunch time to pump, study and respond to her email messages.

The first two years of ophthalmology residency brought about their own challenges, but this third year is shaping up to be the most transformative for the Larsons. Dr. Larson's husband, Matthew Larson, recently earned his PhD in Cell Biology at UW- Madison in 2016 and is performing a sub-internship as a fourth-year medical student. Generally, he also leaves early to perform patient rounds as part of his academic duties.

Dr. Larson is among a growing number of professional women who are balancing education, work and family life. She and her husband, who will graduate with his medical degree in the spring and is hopeful for securing a radiology residency, made the decision to have a family while Dr. Larson was a resident in training. "There really was no good time for us, and we didn't want to put this aspect of our lives on hold. There were clear advantages to becoming parents now," said Jenny. The Larsons have family nearby to help with daily routines and babysitting, and both wanted to be past the infant stage of their daughter before Matthew entered his first busy year of residency. "We share household duties: He does the outdoor chores, food shopping and the majority of the cooking. He's a much better cook than I am," Jenny quips.

In addition to the support of her family, Dr. Larson credits the Department, especially her fellow residents, for making her work-life balance possible. "They were willing to cover emergency call not only during maternity leave but also when I returned to work. Plus, the faculty are very flexible. They want to help you succeed and don't see that as a burden. It's a real family – a really close group of residents and faculty," she states emphatically.

Another important resource is Dr. Anna Momont, a mentor to Dr. Larson. Dr. Momont, a glaucoma physician and surgeon in the Department, gave birth to her second child a few months before Anna Larson was born. Larson says, "Having someone who is dealing with the same challenges at the same time and place, but with experience doing all of it, has been a tremendous source of support. I can always go to her."

In recognition of her leadership skills, the residency directors asked Dr. Larson to serve as the chief resident for the 2017-18 academic year shortly after she returned from maternity leave. Dr. Larson confesses, "I was a little worried about managing the additional responsibilities, but ultimately this was an opportunity that was too good to pass up." As chief resident, she is responsible for developing and executing the orientation program for new residents, scheduling call duties and planning other resident-focused

activities. She also serves as the main liaison and advocate for the residents on daily operational matters, engaging with the residency directors and staff as partners. This year, Dr. Larson will also work on enhancing the BSL didactic curriculum to incorporate leading edge techniques and newer clinical information. When asked how she is able to manage this additional work, she says she has time after little Anna is asleep.

Dr. Larson admits that she sometimes feels tired at the end of a long day of patient care and being pulled in multiple directions. She relates,

> *"I have learned that perfection is seldom possible. Reach out to people. It isn't a weakness to seek advice or help."*

Dr. Larson will graduate in June 2018. She hopes to take a position as a Comprehensive Ophthalmologist in an academic setting, perform cataract surgery, and teach medical students and residents. Dr. Larson takes her balancing act in stride and knows that she is setting an example for her co-residents, colleagues, and most importantly for her daughter. Dr. Larson is grateful for having a happy and healthy family, a strong support network and fulfilling work to enable good vision for many.

NOW YOU SEE, NOW YOU DON'T

A TRANSFORMATIVE JOURNEY THROUGH VISION LOSS

Renee Reback went to work as the Executive Director of a large non-profit on a Friday, lost 70% of her right eye vision over the weekend and never returned to her post that she held so dear. That was three years ago.

As Renee will tell you, the first few days without sight in one eye and the first visit to a doctor to determine what had happened left her feeling helpless and hopeless. It was only after a referral to UW Health Eye Clinics that she was met with compassion and empathy by Dr. Judy Chen, neuro-ophthalmologist. Dr. Chen was the first to diagnose Renee's life-altering eye disorder and to ask how Renee was coping with her sudden and permanent vision loss.

At their first meeting, Dr. Chen immediately began working to determine what caused Renee's vision loss, referred her to the UW Health Low Vision Clinic for care and resources, and also took on objecting insurance companies due to the provider change. Renee's problem-solving spirit took hold, and she sought ways to make the most of her remaining sight. Just four weeks later, however, she lost all sight in her left eye. Additionally, her UW Health Eye care team recommended removing a cataract to preserve the vision she had in her right eye—a daunting proposition for her only "good eye." Renee struggled with the decision, but ultimately put the fate of this eye in the hands of Dr. Sarah Nehls, anterior segment and cornea specialist, who performed cataract surgery and provided non-stop reassurance. Over time, Renee noted restoration of her color vision, developed greater adaptability in the sunlight and regained sight from the bottom right corner of her right eye.

"Transformational" is a very good word to describe my vision loss journey. It was overwhelming in terms of not just how I saw the world literally, but also how I saw myself," says Renee. "The second year hit me harder than I thought it would, as I began to realize that this was probably forever, so acceptance was essential."

Dr. Chen's research interest in age-related ocular diseases and expertise in neuro-ophthalmology were re-affirming to Renee that she was in the right place for her care. Dr. Chen recalls their first encounter as a positive one, given the difficult prognosis and unknown cause.

"I am grateful that many patients are willing to work with the physician - the feeling that we're all on the same team keeps us moving forward," says Chen. *"I am often the bearer of bad news for patients with neurological conditions who present with vision loss. A positive attitude and acceptance are important for the patient. It keeps me motivated to work towards finding causes and cures through research."*

Renee hopes her story will help others cope with vision loss. She and her husband choose to support causes that have a direct, positive impact on people's lives. They believe that because of their experience with the UW Department of Ophthalmology and Visual Sciences, it is one such place to invest. Renee is no stranger to helping those in need, it had been her life's work in the nonprofit sector.

Renee feels fortunate to have enough vision to navigate her blurred world and her incredible family support, and is hopeful that technology advances will give her greater independence. Renee continues to build on her improv comedy work at Monkey Business Institute, perfect her ukulele skills, find zen in her yoga practice, and tackle the *New York Times* crossword puzzle with her son every weekend.

A BRIGHT FUTURE

"I waited a full day to tell my parents because I knew what was happening, but I didn't want this to be happening to me, and I was hoping it would just go away."

MEET OLIVIA

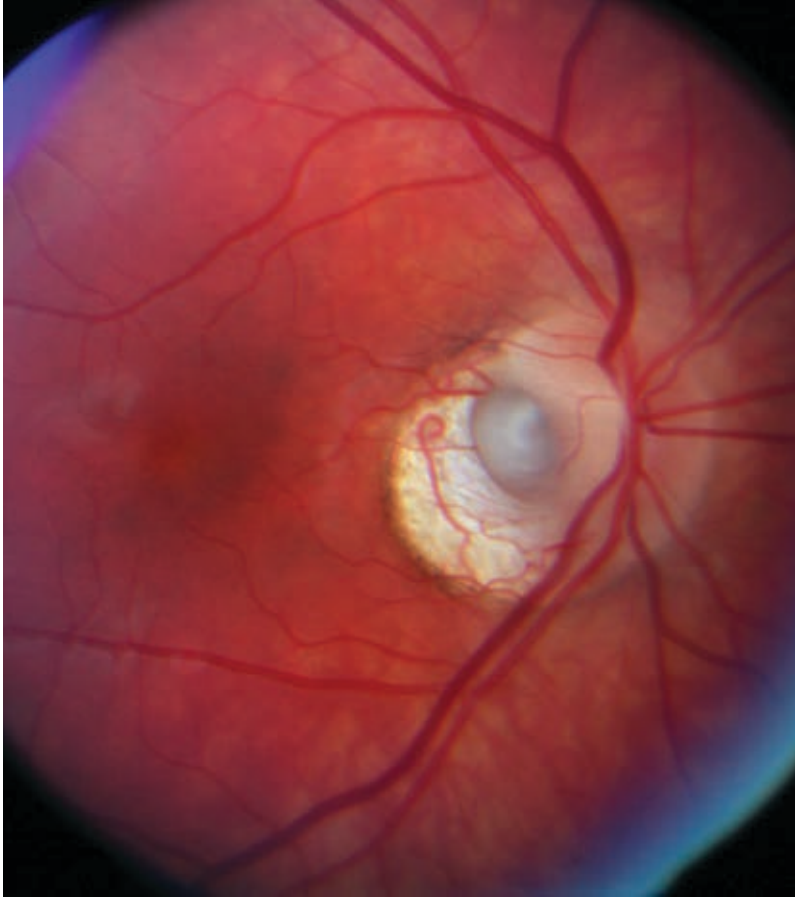
Olivia was a typical, vibrant ten-year-old who, after a routine eye exam, learned she had a right optic nerve pit. The pit is a small defect in the optic nerve that can allow liquid vitreous to enter under the retina, thus potentially causing a retinal detachment and subsequent blindness without proper treatment.

Olivia and her parents, Beth and Andy, started their journey with evaluations from Drs. Thomas France and Yasmin Bradfield, pediatric ophthalmologists in the Department of Ophthalmology and Visual Sciences. They confirmed the condition through diagnostic testing and imaging, then discussed warning signs and possible treatment options if a change in vision was noted. Drs. Bradfield and France also took baseline photos of her optic nerves, should Olivia's condition evolve later in life. To a young girl who loved dolls and playing outside, this was fairly alarming.

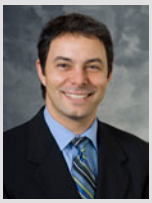
Fast forward to Olivia's freshman year of high school, where while sitting in class the blackboard lines suddenly bulged and became squiggly. "I waited a full day to tell my parents because I knew what was happening, but I didn't want this to be happening to me, and I was hoping it would just go away," says Olivia.

In many cases, patients do not have symptoms for decades. When vision defects do occur, they are caused by an accumulation of fluid within or under the central part of the retina (the macula). No preventative measures can be taken to avoid this fluid accumulation, and treatment can only begin after fluid is present. Even with appropriate treatment, vision may not return to normal.

Because of the information that Olivia and her parents were given six years prior, they could thoughtfully weigh treatment options with Dr. Michael Altaweel, a retinal surgeon. Monitoring was enacted initially for a brief period. Ultimately, the family opted for vitrectomy surgery to stop sub-retinal fluid leakage that had caused a retinal detachment.



Olivia was a novice to surgery, and was pleased with the pain-free outpatient procedure. The recovery, however, was a different story. She had to lay head down for ten days so that the expanding gas bubble injected into her eye would assist in pushing her retina back into place. Her vision was restored to 20/20 - another rarity of this condition and treatment.



"I could not be happier with the results of Olivia's vitrectomy. The complicated surgery and recovery do not guarantee restored vision," says Dr. Altaweel. *"I am proud to be a part of this team of doctors that communicate throughout a patient's vision journey to ensure the very best outcomes."*

Now, at nineteen, Olivia is a second-year student at DePaul University majoring in design and marketing. Her life was transformed at ten years of age and, thanks to her team of UW Health ophthalmologists, she can see clearly again.

SUPERHEROES WEAR GLASSES TOO!

MEET ANTUAN

Age: 6 years old
Grade: Kindergarten
Favorite Color: Orange
Favorite Superhero: Spiderman
Wearing Glasses Since: February 2017
Favorite Thing to See with Glasses: His mom, Rosie

Dr. Nayan Patel, UW Health Optometrist: Like Antuan, many school-age children cannot see the board or reading material, but do not feel comfortable speaking up about their struggles. They often do not know that they could potentially have better sight if poor vision is all that they have ever experienced. It is very important for every child to get routine eye examinations to determine if they need glasses at an early age to help them see, learn and grow. Although wearing glasses may be tough to get accustomed to, Antuan has adjusted well, likes his new accessory and can see his books and future clearly now!

STRENGTH IN NUMBERS

UW HEALTH EYE CLINICS HAS A ROBUST ORTHOPTICS TEAM

Approximately 350 orthoptists are practicing nationally and we are fortunate to have seven at our UW Health Eye Clinics in Madison. An impressive number when you consider that most academic programs only employ one orthoptist, often in a part-time capacity. Orthoptists may have less name recognition than optometrists and ophthalmologists, but their role on a patient's eye health team is vital.

Orthoptist Jacqueline Shimko examining a young boy with his mother.

Orthoptists are trained to detect eye movement abnormalities, amblyopia (lazy eye), and associated neurological issues, specifically those related to binocular vision problems. They do this with eye charts, prisms, sensory tests, and depth perception tests. Orthoptists analyze patient symptoms and orthoptic test results and then discuss these findings and potential treatment plans with the ophthalmologist.

Jacqueline Shimko, certified orthoptist, has practiced at UW Health for 42 of her 43 years in the profession. Nearing retirement, she reflected on the early department leadership that laid the foundation for such a healthy orthoptics team.

In 1971, Dr. Thomas France joined the Department of Ophthalmology and Visual Sciences as a professor and director of the pediatric and adult strabismus clinic. He trained with orthoptists during his fellowship and campaigned to bring them to UW Health. Dr. Burton Kushner joined the department as a professor in 1974 and became the director of the clinic in 1997.

Together, they envisioned working with an orthoptist as a clinical partner who can independently evaluate patients, collaborate in clinical research, and participate in educating residents and fellows. They became strong advocates for orthoptists to also lecture, publish papers and present at professional organizations as ambassadors of the department. Dr. Kushner noted, "My academic career would never have been as successful were it not for the talented orthoptists on my team."

As the reputation of the department grew rapidly, so did the number of patients, and consequently the orthoptist team. Shimko commented, "The reason I stayed is because of my relationship with the doctors. The fabulous care for the patients has continued with every orthoptist they have brought on. It's a nurturing and supportive environment."

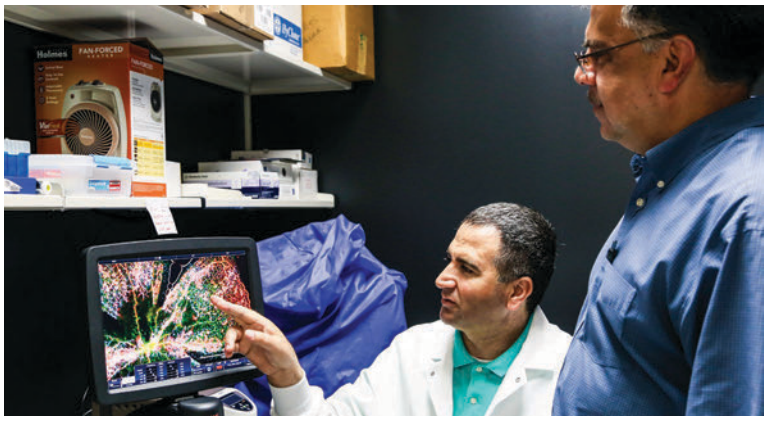
The Department of Ophthalmology and Visual Sciences offers a two-year orthoptist training program. The program was created in 1977 and is one of only twelve in the nation. 17 orthoptists have graduated from the program. All of the graduates successfully passed the board exam administered by the American Orthoptic Council.

In a world where disorders of binocular vision are common in both adults and children, UW Health Eye Clinics are fortunate to have a robust team of expert, highly experienced orthoptists that is passionately serving patients and families, assisting with research, and educating future eye care specialists.

"I rely on the orthoptists to initiate the patient experience in our pediatric and adult strabismus clinic. They are expertly trained to identify motility and eye movement disorders in our patients," said Dr. Yasmin Bradfield, pediatric ophthalmologist at UW Health. *"Their accurate exams and expertise assist me, and that collaboration helps to create a comprehensive treatment plan for each of my patients."*

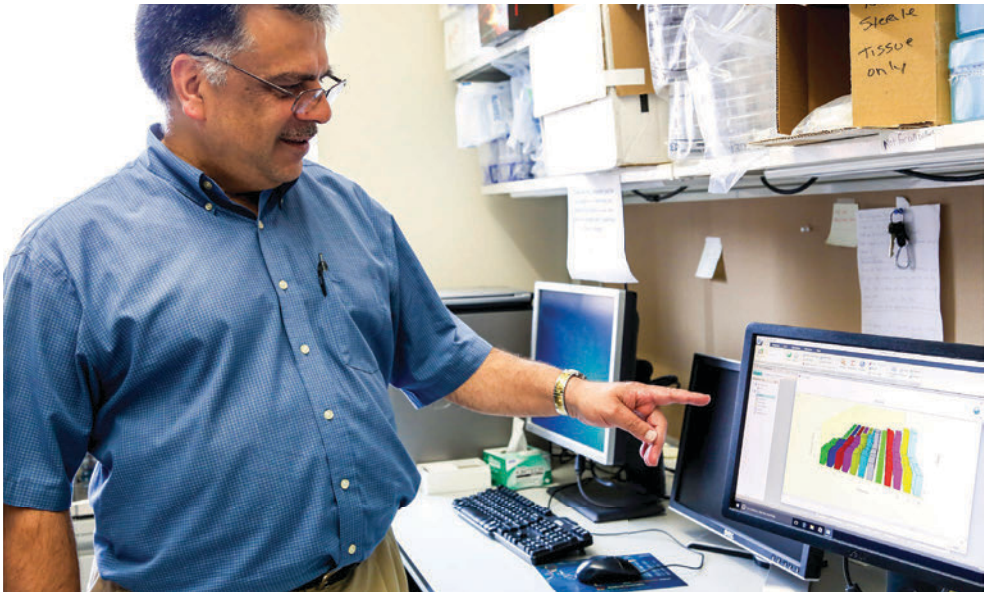
STEIN INNOVATION LEGACY CONTINUES

NADER SHEIBANI RECEIVES RESEARCH TO PREVENT BLINDNESS, INC. STEIN INNOVATION AWARD



The Research to Prevent Blindness, Inc. (RPB) Stein Innovation Award of $300,000 over three years provides flexible funding to scientists actively engaged in research with the goal of understanding the visual system and the diseases that compromise its function. New technologies and cutting edge research that apply to blindness are supported through this award. Dr. Sheibani is one of eighteen researchers at thirteen institutions who have received the award since its inception in 2014. Three out of eighteen RPB Stein Innovation Awards have been awarded to members of our Department of Ophthalmology and Visual Sciences at the University of Wisconsin-Madison–a nod to our long-standing national reputation for exemplary vision research.

“Diabetic retinopathy affects so many people in our community and around the world. My lab team and I are honored to be recognized for the impact our work is having in its treatment and prevention,” says Sheibani. Dr. Sheibani's study is entitled, "Targeting Metabolic Stress in Retinal Pericytes for Treatment of Diabetic Retinopathy."



Nader Sheibani (above) and his Research Laboratory in action.

Diabetic retinopathy is a major complication of diabetes that can cause vision loss in the working age population. Many studies have implicated increased glucose levels as the primary insult leading to loss of retinal vascular integrity. Tight regulation of glucose levels has been proposed as a beneficial strategy to diminish complications of diabetes.

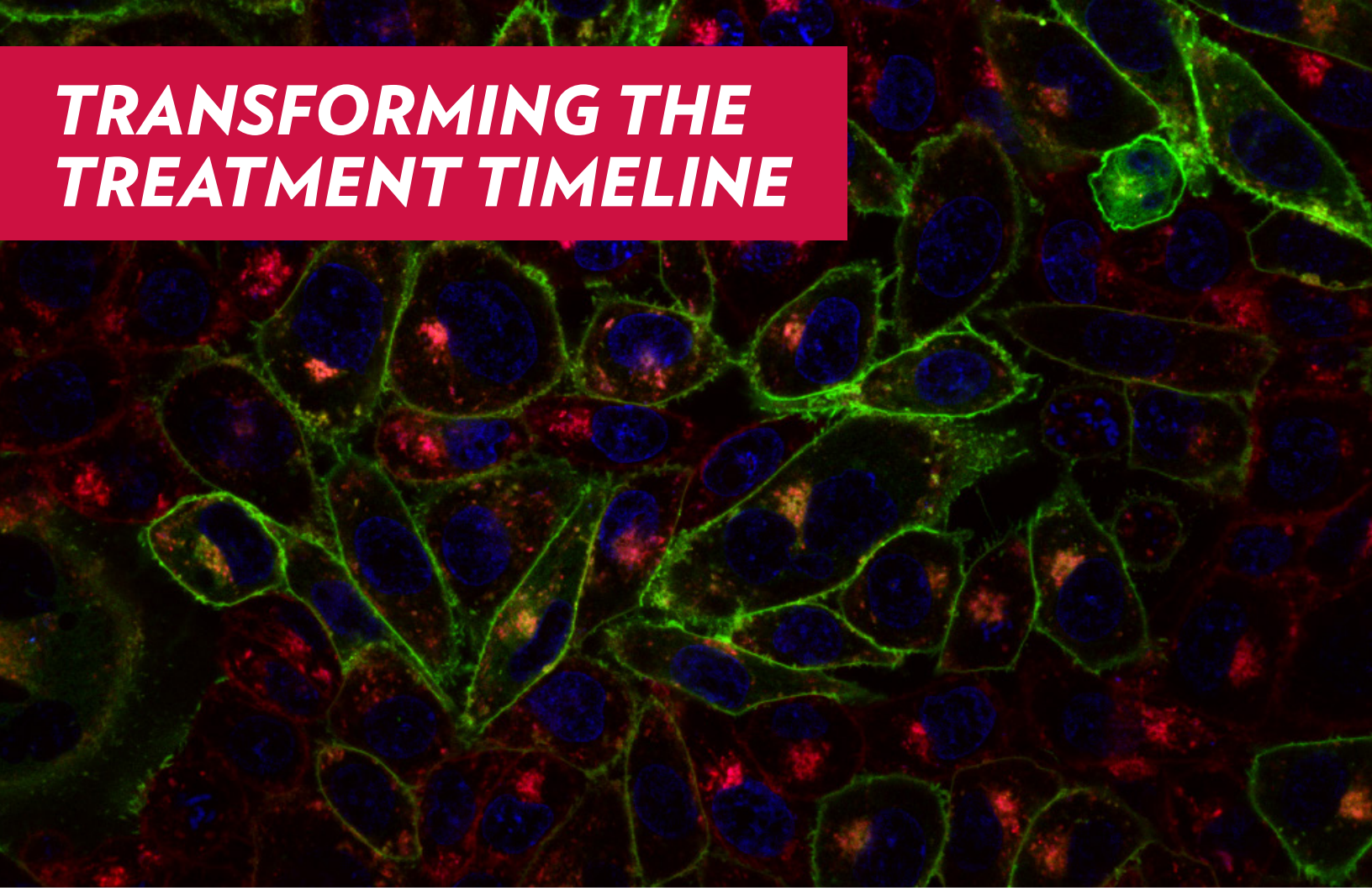
Dr. Sheibani proposes that identifying cell-specific retinal vascular changes impacted by high glucose is vital to determining underlying mechanisms of diabetes. Dr. Sheibani believes that pericyte loss is an early event in retinopathy development, perhaps due to their selective sensitivity to high glucose. Dr. Sheibani's research laboratory's recent efforts are focused on determining the reason for the selective sensitivity of pericytes, but not endothelial cells or astrocytes, to high glucose. The studies proposed by Dr. Sheibani and his team will investigate how high glucose conditions in retinal pericytes enhance glucose utilization, oxidative stress, and loss of pericytes. Identification of specific metabolic pathways engaged by retinal vascular cells for glucose utilization, and determining whether

there are suitable targets for preservation of retinal vascular cells, will provide essential knowledge in developing treatments for curing and preventing diabetic retinopathy.

ABOUT RPB (RESEARCH TO PREVENT BLINDNESS, INC)

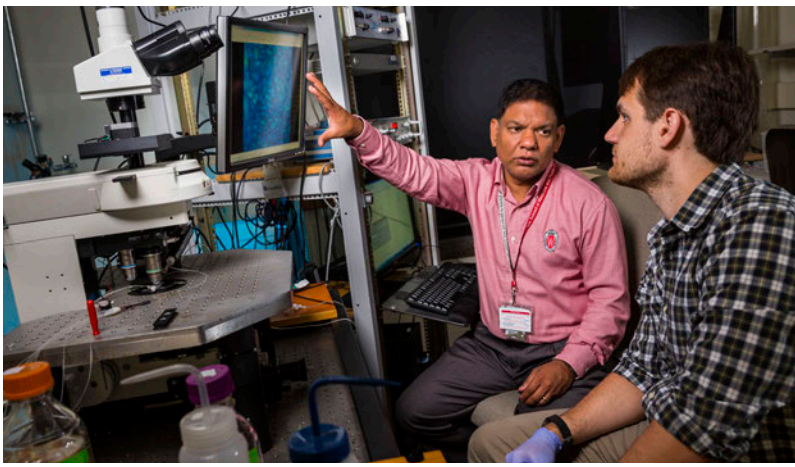
Since its founding in 1960, RPB has channeled more than $349 million into vision research. As a result, RPB has been identified with nearly every major breakthrough in vision research in that time period. For information on RPB's grants program, listings of RPB institutional and individual grantees, and findings generated by these awards, go to www.rpbusa.org.

TRANSFORMING THE TREATMENT TIMELINE



Reducing the timeline for treatment of blinding diseases from decades to years is now a reality at the University of Wisconsin-Madison.

Transforming the timeline from discovery to treatment of blinding diseases from decades to years is now a reality at the University of Wisconsin-Madison. Bikash Pattnaik, PhD is an assistant professor in the Department of Pediatrics, and the Retina Research Foundation M.D. Matthews Research Professor in the Department of Ophthalmology and Visual Sciences. His lab's research is centered on Leber congenital amaurosis (LCA), a blinding childhood disease with multiple genetic causes. Dr. Pattnaik was inspired by the functional difficulties of a blind childhood friend, and pursued work focused on helping those with pediatric eye diseases.



More than 20 types of LCA gene mutations are known to date, and all result in blindness within months of birth, affecting approximately one in every 80,000 babies born in the United States. Dr. Pattnaik believes that treatment strategies may be developed through the study of molecular mechanisms of potassium channels that are essential for effective retinal cell operations. In 2011, his lab discovered a gene mutation that causes LCA16, a variation characterized by potassium channel malfunction in the retinal pigment epithelium (RPE).

Dr. Bikash Pattnaik in a meeting with lab team members.

RPE is a cellular layer that nourishes adjacent retinal photoreceptors. It is essential in maintaining retinal health by transporting molecules, removing dead cells, secreting hormones, and modulating immune factors.

The family of a young boy with the LCA16 variation catalyzed Dr. Pattnaik's current studies by donating genetic materials for the creation of retinal stem cell lines, and also providing a one million dollar gift to kick start research efforts. "We are all working together to save sight and end blinding diseases," says Dr. Pattnaik, "Having the opportunity to study therapies with live stem cells, in addition to the generous gift support from this family, is truly remarkable and promising for everyone involved."

The National Eye Institute of the National Institutes of Health has awarded Dr. Pattnaik with a four-year, $1.5 million Audacious Goals Initiative grant to continue his promising research. He has developed RPE cells derived from induced pluripotent stem cells (iPSC RPEs) that have been reprogrammed into an embryonic-like pluripotent state. This method enables the development of an unlimited source of any type of human cell needed for therapeutic purposes. These cells, along with use of the new Clustered Regularly Interspaced Short Palindromic Repeats gene editing technique (CRISPR), create models of different LCA16 mutations in a dish. The cause of LCA16 variation is due to mutations in the KCNJ13 gene. The hope is to skip or correct the section of the mutated gene in cells before scaling it up to human therapy. Dr. Pattnaik and his team are also investigating viral vectors that ultimately deliver a corrected KCNJ13 gene into RPE stem cells, which could repair the potassium channel defect and therefore treat the disease.

Dr. Pattnaik recently expanded into additional lab space. With the increased capacity, Dr. Pattnaik and his team can explore other therapies, such as "read through" drugs that rely on small molecules to overcome the potassium channel defect and result in a natural protein that mitigates adverse reactions. Similar drugs are used in treatments for cystic fibrosis and muscular dystrophy. Using FDA pre-approved drugs allows for a quicker turn around for clinical trial clearance than the traditional drug approval process.

"We are fortunate to study this disease from a novel vantage point," says Dr. Pattnaik, "This robust approach to characterizing this form of LCA has accelerated the approval process timeline through innovative precision medicine technologies. We can provide vision-saving treatments to our pediatric patients sooner."

GRANTS

ALTAWEEL, MICHAEL M.

ALCON

A two year randomized, double-masked, multicenter, three arm study comparing the efficacy and safety of RTH258 versus Aflibercept in subjects with neovascular age related macular degeneration

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Macular Edema Treatment Trials Associated with MUST (META-MUST)

PENNSYLVANIA STATE UNIVERSITY

Study of COmparative Treatments for REtinal Vein Occlusion 2 [SCORE2]

BARNEY, NEAL P.

EYEGATE PHARMACEUTICALS INC

Phase 3 clinical trial designed to evaluate the safety and efficacy of Iontophoretic Dexamethasone Phosphate ophthalmic solution compared to prednisolone acetate ophthalmic suspension (1%) in patients with non-infectious anterior segment uveitis.

BLODI, BARBARA A.

ACUCELA

A Phase 2b/3 multicenter, randomized, double-masked, dose-ranging study comparing the efficacy and safety of emixustat hydrochloride (ACU-4429) with placebo for the treatment of geographic atrophy associated with dry age-related macular degeneration

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

SCORE2 Comparative Trial (SCT)*EYENUK INC*

Subcontract: Advanced Image Analysis Tools for Diabetic Retinopathy Telemedicine Application.

Intravitreally to patients with geographic atrophy secondary to age related macular degeneration

GEORGE WASHINGTON UNIVERSITY

TODAY2 Phase 2 (T2P2) : Long-Term Post Intervention Follow-Up Epidemiology of Diabetes Interventions and Complications Data Coordinating Center

ICONIC THERAPEUTICS INC

A Phase 2 randomized, double-masked, multicenter, active-controlled study evaluating administration of repeated intravitreal doses of hI-con1 in patients with choroidal neovascularization secondary to age-related macular degeneration

LOWY MEDICAL RESEARCH INSTITUTE

A natural history study of Macular Telangiesctasia: The Mactel Study. A Phase 2 Multicenter Randomized Clinical Trial of Ciliary Neurotrophic Factor (CNTF) for Macular Telangiectasia Type 2 (MacTel)

OPHTHOTECH CORPORATION

A Phase 3 randomized, double-masked, controlled trial to establish the safety and efficacy of intraviteous administration of fovista (anti PEGF-B pegylated aptamer) administered in combination with Lucentis compared to lucentis monotherapy in subjects WI

BRADFIELD, YASMIN S.

JAEB CENTER FOR HEALTH RESEARCH

Pediatric eye disease investigator group: ATS5: a randomized trial to evaluate 2 hours of daily patching for amblyopia in children 3 to 7 years old

BRANDT, CURTIS R.

RETINA RESEARCH FOUNDATION

Gene Therapy for Retinal Degeneration Diseases

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Core Grant for Vision Research

CHANDRA, SURESH R.

UNIVERSITY OF PENNSYLVANIA

Coordinating Center for the Comparison of AMD Treatment Trials

CHEN, YANJUN A. (JUDY)

MIDWEST LIGHTING INSTITUTE

The effect of modified lighting on unit-wide medical error rates in the UWHC Trauma and Life Support Center

CRUICKSHANKS, KAREN J.

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Familial and birth cohort effects on the aging senses

Epidemiology of Age-related Hearing Loss Merit Submission

GAMM, DAVID M.

RESEARCH TO PREVENT BLINDNESS

Augmenting Rod Genesis in Human Pluripotent Stem Cells/Nelson Trust Award

GOTTLIEB, JUSTIN L.

JAEB CENTER FOR HEALTH RESEARCH

DRCR agreement for new protocol W Intravitreous Anti-VEGF treatment for prevention of vision threatening diabetic retinopathy in eyes at high risk.

Treatment for Central -Involved Diabetic Macular Edema in Eyes with Very Good Visual Acuity

KAUFMAN, PAUL L.

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Extralenticular Aspects of Accommodation and Presbyopia

RESEARCH TO PREVENT BLINDNESS

Trabecular Meshwork, Schlemm's Canal Drug, Gene Delivery via Minimally Invasive Glaucoma Surgery Devices

KLEIN, RONALD E.

JUVENILE DIABETES RESEARCH FOUNDATION

Retinal Vessel Biomarkers for Risk Assessment of Incident Diabetic Complications in the Wisconsin Epidemiologic Study of Diabetic Retinopathy

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Retinal Vessel Biomarkers for Risk Assessment of Incident Diabetic Complications in the WESDR

Epidemiology of Retinopathy and other Complications in Long Term Type 1 Diabetes

Epidemiology of Age-related Macular Degeneration and Other Retinal Diseases

NATIONAL OPINION RESEARCH CENTER

Establish a Vision and Eye Health Surveillance System for the Nation

LAKKARAJU, APARNA

BRIGHTFOCUS FOUNDATION

Can RPE-derived exosomes contribute to subretinal drusenoid deposits?

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Mechanisms of cellular clearance in the retinal pigment epithelium

LEVIN, LEONARD A.

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Development of redox-active therapies for ischemic optic neuropathy

LIU, YAO

AERIE PHARMACEUTICALS INC

A prospective12-month study assessing the safety and ocular hypotensive efficacy of PG324 Ophthalmic Solution compared to AR-13324 Ophthalmic Solution, 0.02% and Latanoprost Ophthalmic Solution, 0.005% in subjects with elevated intraocular pressure

ALCON

24-hr Intraocular Pressure Control with Brinzolamide 1% / Brimonidine 0.2%

Ophthalmic Suspension vs Vehicle

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Advancing Integration of Tele-ophthalmology in Rural, Multi-payer Health Systems

MARES, JULIE A.

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Macular Pigment in Aging and Disease

MCLELLAN, GILLIAN J.

BRIGHTFOCUS FOUNDATION

TGF-beta and glaucoma progression in a spontaneous model

NIH/NEI

Therapeutic inhibition of optic nerve head gliosis and fibrosis in glaucoma. The overall goal of this proposal is to establish a novel treatment paradigm for glaucoma by determining the efficacy of AT1 blocking treatment in limiting TGF-Beta driven progression of glaucomatous optic neuropathy

DHHS/NIH/NEI WASHINGTON STATE UNIVERSITY

Rapalogue Therapy in Heritable and Vigabatrin-Induced GABA Metabolic Disorders. This subaward is for oversight of studies involving optical coherence tomography and electroretinography at UW Madison in a mouse model of GABA metabolic disorders.

KEY

Federal Funding

DHHS — Department of Health and Human Services

PHS — Public Health Service

NIH/NEI — National Institute of Health: National Eye Institute

AMERICAN COLLEGE OF VETERINARY OPHTHALMOLOGISTS

Development and validation of new methods to visualize conventional aqueous outflow pathways in canine glaucoma

THE MARFAN FOUNDATION

Delineating Glaucoma Pathobiology in animals with LTBP2 mutation. Major Goals are to delineate glaucoma pathology associated with LTBP2 mutation characterizing trabecular meshwork ultrastructure and pathology in the eyes of cats homozygous for recessively inherited feline congenital glaucoma and knock-out mice.

WISCONSIN ALUMNI RESEARCH FOUNDATION

Fall Graduate Competition Funds. Therapeutic Inhibition of Optic Nerve Head Gliosis and Fibrosis in Glaucoma. These funds support graduate student participation in ongoing research aims within the laboratory.

NOVEL METHODS PILOT AWARDS PROGRAM

University of Wisconsin Institute for Clinical & Translational Research. Optical scattering as a novel biomarker for glaucoma susceptibility. The goal of this grant is to build a light scattering instrument suitable for preclinical use and refine and validate scleral tissue optical back-scattering properties in a feline glaucoma model, as a novel biomarker of glaucoma susceptibility.

MITITELU, MIHAI

REGENERON PHARMACEUTICALS, INC

A Randomized, Double-Masked, Active Controlled Phase 2 Study of the Efficacy, Safety, and Tolerability of Repeated Doses of Intravitreal REGN910-3 in Patients with Neovascular Age Related Macular Degeneration

REGENERON PHARMACEUTICALS, INC

A Randomized, Double-Masked, Active controlled Phase 2 Study of the Efficacy, Safety, and Tolerability of Repeated Doses of Intravietreal REGN910-3 in Patients with Diabetic MAcular Edema

OHR PHARMACEUTICAL INC

OHR-1601: A Phase III Study of the Efficacy and Safety of Squalamine Lactate Ophthalmic Solution, 0.2% Twice Daily in Subjects with Neovascular Age-Related Macular Degeneration

NEHLS, SARAH M.

VISIONCARE OPHTHALMIC TECHNOLOGIES, INC

A prospective, multicenter Post-Approval Study (PAS) of visioncare's implantable miniature telescope in patients with bilateral severe to profound central vision impairment associanted with end-state age-related macular degeneration

NICKELLS, ROBERT W.

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Molecular Mechanisms of retinal ganglion cell death

A Comprehensive Approach to Whole Eye

UNIVERSITY OF PITTSBURGH

Transplantation: Building a Scientific Foundation for New Therapies in Vision Restoration

SHEIBANI KARKHANEH, NADER

NORTHWESTERN UNIVERSITY

Investigating Oxygen Metabolism in Diabetic Retinopathy

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Novel Antiangiogenic Peptides for Treatment of Exudative AMD (R24 with Northwestern and Nebraska Medical Center)

STRUCK, MICHAEL C.

OMEROS

A phenylephrine controlled study of the effect of OMS302 added to irrigation solution on intraoperative pupil diameter and postoperative pain in children ages birth through 3 years undergoing unilateral cataract extraction w/ without lens replacement

YOUNG, TERRI L.

DHHS, PHS, NATIONAL INSTITUTES OF HEALTH

Molecular Genetics of High Myopia

CLINICAL TRIALS

The Ophthalmology Clinical Trials Unit (CTU) at the University of Wisconsin has been conducting research with human subjects for well over 25 years. These trials are designed to evaluate the safety and efficacy of new laser treatments, oral medications, IV medications, intravitreal injections, surgeries, vitamins, minerals and devices in the treatment of ophthalmic diseases. Clinical trials are a valuable means of providing potential alternative treatments for our patients at UW, while in many cases participation in an investigational trial is the only option remaining for patients who have exhausted approved treatment options. Indisputably, our most important role is to guide patients through the treatment of this very difficult condition, offering them not only the most current medical techniques and treatments, but also compassionate and knowledgeable care committed to protecting their safety.

CLINICAL TRIALS RESEARCH UNIT STAFF

Jennie Perry-Raymond
Clinical Trials Administrator

Angie Wealti
Study Coordinator/ Regulatory Specialist

Kristine Dietzman, Christopher Smith, Nickie Stangel
Study Coordinators

CLINICAL TRIALS

OPH-1002 FOVISTA STUDY

A phase 3 randomized, double-masked, controlled trial to establish the safety and efficacy of intravitreous administration of fovistatm (anti PDGF-B pegylated aptamer) administerezd in combination with lucentis® Compared to lucentis® monotherapy in subjects with Subfoveal neovascular age-related macular degeneration (AMD).

Principle Investigator: **Barbara Blodi**
Sponsor: **Ophthotech Corporation Pharmaceutical**
Condition: **Neovascular Age-Related Macular Degeneration**

CHROMA GEOGRAPHIC ATROPHY STUDY

A phase III, multicenter, randomized, double-masked, sham-controlled study of efficacy and safety of 10 mg lampalizumab intravitreal injections administered every 30 or 45 days to patients with geographic atrophy secondary to age-related macular degeneration.

The objective of this study is to evaluate the efficacy of 10 mg intravitreal injections of lampalizumab administered every 30 or every 45 days compared with sham control, as measured by change from baseline in the Geographic Atrophy area at Day 360 (12 months) as assessed by fundus autofluorescence (FAF) in GA patients who are biomarker positive.

Principal Investigator: **Barbara Blodi**
Sponsor: **Genentech-Roche**
Condition: **Geographic Atrophy**

EMERGE IT-002 STUDY

A Phase 2 Randomized double masked Multicenter Active controlled study evaluating administration of repeated intravitreal doses of hI-con1 in patients with choroidal neovascularization secondary to Age related macular degeneration.

The primary aim of this study is to evaluate the safety of repeated intravitreal injections of 0.3 mg hI-con1 (study drug) administered alone or in combination with ranibizumab (a standard of care drug) compared to ranibizumab alone in patients with choroidal neovascularization secondary to wet AMD.

Principal Investigator: **Barbara Blodi**
Sponsor: **Iconic Therapeutics Inc**
Condition: **Wet Age-Related Macular Degeneration**

HAWK AGE-RELATED MACULAR DEGENERATION STUDY

A Two-Year, Randomized, Double-Masked, Multicenter, Three-Arm Study Comparing the Efficacy and Safety of RTH258 versus Aflibercept in Subjects with Neovascular Age-Related Macular Degeneration. The objective of this trial is to demonstrate that RTH258 (study drug) is not inferior to Aflibercept with respect to the change in best-corrected visual acuity (BCVA) from Baseline to Week 48.

Principal Investigator: **Michael Altaweel**
Sponsor: **Alcon**
Condition: **Wet Age-Related Macular Degeneration**

DRCR NETWORK PROTOCOL – V

Treatment for Central-Involved Diabetic Macular. Edema in eyes with Very Good Visual Acuity.

The aim of this trial is to compare the safety and efficacy of prompt focal/grid photocoagulation (laser) + deferred intravitreal anti-VEGF injection, observation + deferred intravitreal anti-VEGF injection, and prompt intravitreal anti-VEGF in eyes with central-involved DME and good visual acuity defined as a Snellen equivalent of 20/25 or better (electronic-ETDRS letter score of 79 or better).

Principal Investigator: **Justin Gottlieb**
Sponsor: **National Eye Institute**
Condition: **Diabetic Macular Edema**

IXT1 PEDIATRIC TRIAL

A Randomized Trial of Bilateral lateral rectus recession Versus Unilateral lateral rectus Recession with Medial Rectus Resection for Intermittent Exotropia IXT1.

The objective of this trial is to evaluate the effectiveness of bilateral rectus muscle recession versus unilateral lateral rectus recession with medial rectus resection procedures for the treatment of basic type and pseudo divergence excess type intermittent exotropia.

Principal Investigator: **Yasmin Bradfield**
Sponsor: **National Eye Institute**
Condition: **Intermittent Exotropia**

ELECTRORETINOGRAPHY FOR GLAUCOMA

Pilot Study to Assess the Results of Multifocal Electroretinography (mfERG) and Multifocal Visual Evoked Potentials (mfVEP) in Patients with Glaucoma moderate, and advanced).

Principal Investigator: **Yao Liu**
Sponsor: **Investigator-Initiated Trial**
Condition: **Glaucoma**

IMT FOR AGE-RELATED MACULAR DEGENERATION

A Prospective, Multicenter Post-Approval Study (Pas) Of Visioncare's Implantable Miniature Telescope (By Dr. Isaac Lipshitz) In Patients With Bilateral Severe To Profound Central Vision Impairment Associated With End-Stage Age-Related Macular Degeneration.

The objective of the study is to assess the safety of the intraocular telescope as measured by the cumulative incidence of patients who within 5 years after implantation experience persistent vision-impairing corneal edema (corneal edema

leading to persistent loss of best corrected distance visual acuity >2 lines from pre-surgery baseline level).

Principal Investigator: **Sarah Nehls**
Sponsor: **Visioncare Ophthalmic Technologies**
Condition: **Severe vision loss associated with Macular Segeneration**

MOLECULAR GENETICS OF MYOPIA

The purpose of the study is to identify the genes that are involved in eye growth specifically in individuals and families with nearsightedness. This effort may lead to effective therapies for the severe forms of this potentially blinding eye disease.

Principal Investigator: **Terri Young**
Sponsor: **National Eye Institute**
Condition: **Myopia**

OMS302 PEDIATRIC CATARACT TRIAL

A randomized, double-masked parallel group, phenylephrine controlled study of the effect of OMS302 added to standard irrigation solution on intraoperative pupil diameter and acute postoperative pain in children ages birth through three years undergoing unilateral cataract extraction with or without lens replacement. The primary objective is to evaluate the effect of OMS302 (study drug) compared to phenylephrinewhen administered in irrigation solution during cataract extraction with or without lens replacement on intraoperative pupil diameter, acute postoperative pain and safety as measured by adverse events.

Principal Investigator: **Michael Struck**
Sponsor: **Omeros Corporation**
Condition: **Pediatric Cataracts**

MERCURY - 1

A prospective, double-masked, randomized, multi-center, active-controlled, parallel-group 12-month study assessing the safety and ocular hypotensive efficacy of PG324 Ophthalmic Solution compared to AR-13324 Ophthalmic Solution, 0.02% and Latanoprost Ophthalmic Solution, 0.005% in subjects with elevated intraocular pressure.

The aim of this trial is to evaluate hourly the ocular hypotensive efficacy of PG324 Ophthalmic Solution (study drug) relative to each of its active components, AR 13324, 0.02% and Latanoprost, 0.005% at hours 08:00, 10:00, and 16:00 hours at Week 2, Week 6, and Month 3.

Principal Investigator: **Yao Liu**
Sponsor: **Aerie Pharmaceuticals**
Condition: **Glaucoma**

BEARRD STUDY

Bevacizumab Against Recurrent Retinal Detachment. The aim of this trial is to investigate if intravitreal bevacizumab injection during primary vitrectomy surgery can reduce recurrent Retinal Detachment and Proliferative Vitreoretinopathy.

Principal Investigator: **Michael Altaweel**
Sponsor: **Investigator Initiated**
Condition: **Retinal Detachment**

ALBINISM TRIAL/VISION RESPONSE TO DOPAMINE REPLACEMENT

The objective of this trial is to determine if improvement in vision is in response to replacement of deficiency of dopamine.

Principal Investigator: **Michael Struck**
Sponsor: **Vision of Children Foundation and Private Donor**
Condition: **Albinism**

RELATIVE AFFERENT PUPILLARY DEFECT STUDY

Compare pupil reactivity to light stimulus in patients with optic nerve dysfuncion to normal control subjects using computerized binocular infrared pupillography.

Principal Investigator: **Judy Chen**
Sponsor: **Investigator Initiated**
Condition: **Optic neuritis**

NEUROTROPHIC MACULAR TELANGIECTASIA STUDY

A Phase 2 Multicenter Randomized Clinical Trial of Ciliary Neurotrophic Factor (CNTF) for Macular Telangiectasia Type 2 (MacTel).

The aim of this trial is to investigate the effect of CNTF on visual acuity change from baseline and SD/OCT imaging in eyes with evidence of MacTel Type 2 at 24 months. This new technology enables the controlled, continuous, longterm delivery of therapeutic molecules, directly into the vitreous cavity of the eye.

Principal Investigator: **Barbara Blodi**
Sponsor: **Lowy Medical Research Institute**
Condition: **Macular Telangiectasia Type 2**

CAREDS2

Carotenoids in Age-Related Eye Disease Study 2 (CAREDS2) Macular Pigment in Aging and Disease. There are several aims for this trial:

1. Determine whether MPOD at baseline is directly related to lower risk for the incidence/progression of AMD over 13 years
2. Determine relationships between MPOD at baseline to structural and functional aging of the neurosensory retina at follow-up
3. Determine whether MPOD declines with age and evaluate modifiable factors lowering age-related declines.

Principal Investigator: **Julie Mares, Barbara Blodi**
Sponsor: **NIH**
Condition: **Healthy volunteers previously part of the WHI (Women's Health Initiative)**

EYEGATE UVEITIS STUDY

A prospective, multi-center, randomized, double-masked, positive-controlled phase 3 clinical trial designed to evaluate the safety and efficacy of iontophoretic dexamethasone phosphate ophthalmic solution compared to prednisolone acetate ophthalmic suspension (1%) in patients with non-infectious anterior segment uveitis.

The objective of this study is to evaluate the safety and efficacy of ocular iontophoresis with dexamethasone phosphate ophthalmic solution EGP-437 using the EyeGate® II Drug Delivery System (EGDS) compared to prednisolone acetate ophthalmic suspension (1%) in patients with non-infectious anterior segment uveitis.

Principal Investigator: **Neal Barney**
Sponsor: **Eyegate Pharmaceuticals**
Condition: **Non-infectious Anterior Segment Uveitis**

OHR-1601 STUDY

OHR-1601: A Phase 3 Study of the Efficacy and Safety of Squalamine Lactate Ophthalmic Solution, 0.2% Twice Daily in Subjects with Neovascular Age-Related Macular Degeneration.

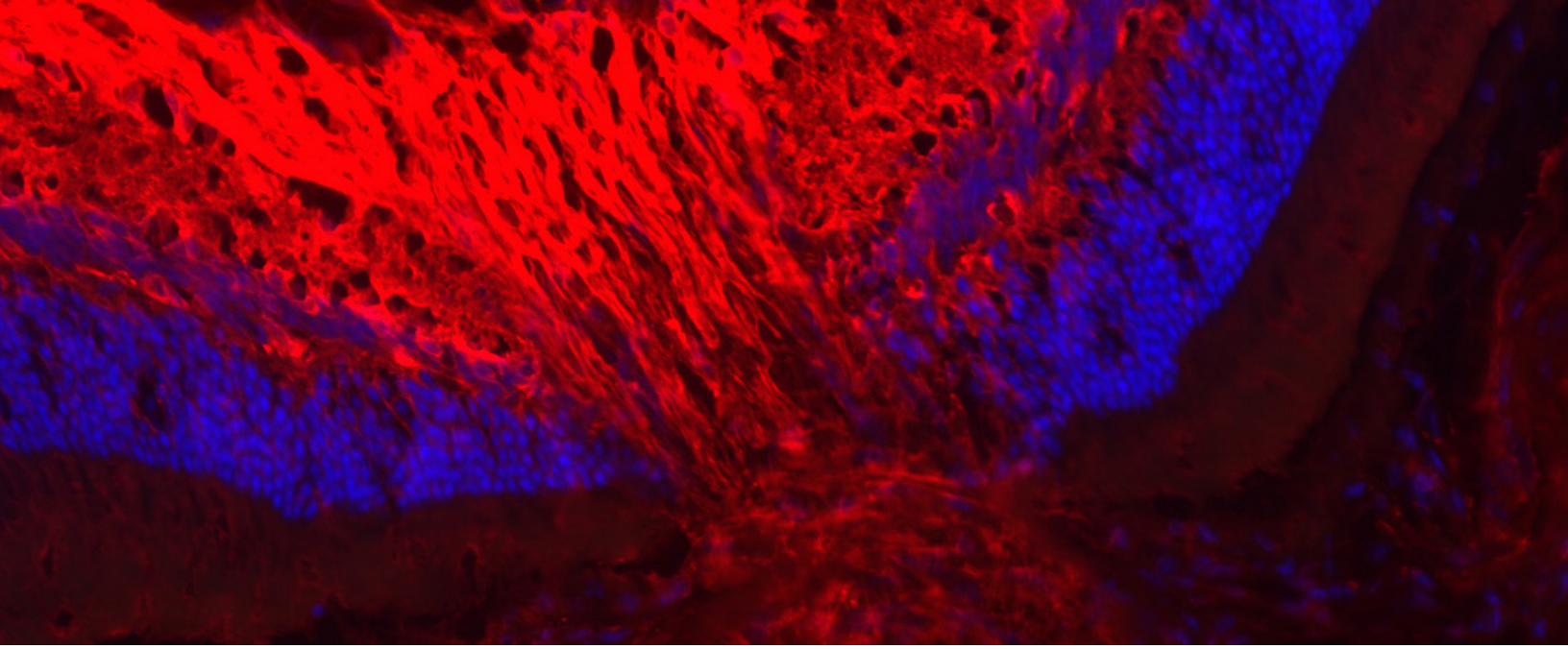
The objective of this study is to evaluate the efficacy and safety of Squalamine lactate ophthalmic solution, 0.2% eye drops used twice a day in combination with intravitreal (IVT) injections of ranibizumab in treatment-naïve subjects with neovascular age-related macular degeneration (AMD).
Principal Investigator: **Mihai Mititelu**
Sponsor: **OHR Pharmaceuticals**
Condition: **New Wet Age-Related Macular Degeneration**

REGENERON R910-3-DME-1518

A randomized, double-masked, active-controlled, phase 2 study of the efficacy, safety, and tolerability of repeated doses of intravitreal regn910-3 in patients with diabetic macular edema.

The primary objective of the study is to compare the efficacy of intravitreal-administered REGN910-3 compared to intravitreal aflibercept injection in improving best corrected visual acuity (BCVA) in patients with diabetic macular edema (DME).

Principal Investigator: **Mihai Mititelu**
Sponsor: **Regeneron Pharmaceuticals**
Condition: **Diabetic Macular Edema**



DRCR PROTOCOL W

Intravitreous Anti VEGF Treatment for Prevention of Vision Threatening Diabetic Retinopathy in Eyes at High Risk.
The objective of this study is to determine the efficacy and safety of intravitreous aflibercept injections versus sham injections (observation) for prevention of Proliferative diabetic retinopathy or CI-DME in eyes at high risk of development of these complications.

Principal Investigator: **Justin Gottlieb**
Sponsor: **NEI**
Condition: **Prolipherative Diabetic Retinopathy or Diabetic Macular Edema**

OMASPECT

The objective of this open-label extension study is to evaluate the long term safety and tolerability of Lampalizumab in patients with retinal geographic atrophy secondary to age-related macular degeneration who have completed a Roche sponsored study.

Principal Investigator: **Barbara Blodi**
Sponsor: **Genentech/Roche**
Condition: **Geographic Atrophy**

SAPPHIRE

A randomized, masked controlled trial to study the safety and efficacy of suprachoroidal CLS-TA in conjunction with intravitreal aflibercept in submects with retinal vein occlusion.

The objective of this study is to demonstrate that suprachoroidal CLS-TA administered in conjunction with intravitreal aflibercept is superior to aflibercept alone.

Principal Investigator: **Jonathan Chang**
Sponsor: **Clearside Biomedical**
Condition: **Retinal Vein Occlusion**

NIGHT

Natural history of the progression of Choroideremia study.

The objective of this study is to gain a better understanding of the progression of choroideremia and add to the knowledge base for this rare disease.

Principal Investigator: **Kimberly Stepien**
Sponsor: **NightStaRx**
Condition: **Choroideremia**

SCORE2 FOLLOW UP

SCORE2 was the study of comparative treatments for retinal vein occlusion comparing intravitreal bevacizumab every 4 weeks with intravitreal aflibercept every 4 weeks. The follow up study will be to obtain data from previous enrolled SCORE2 participants to assess whether bevacizumab is non inferior to aflibercept for the treatment of macular edema secondary to Central Retinal Vein Occlusion.

Principal Investigator: **Michael Altaweel**
Sponsor: **NIH**
Condition: **Central Retinal Vein Occlusion**

PUBLICATIONS

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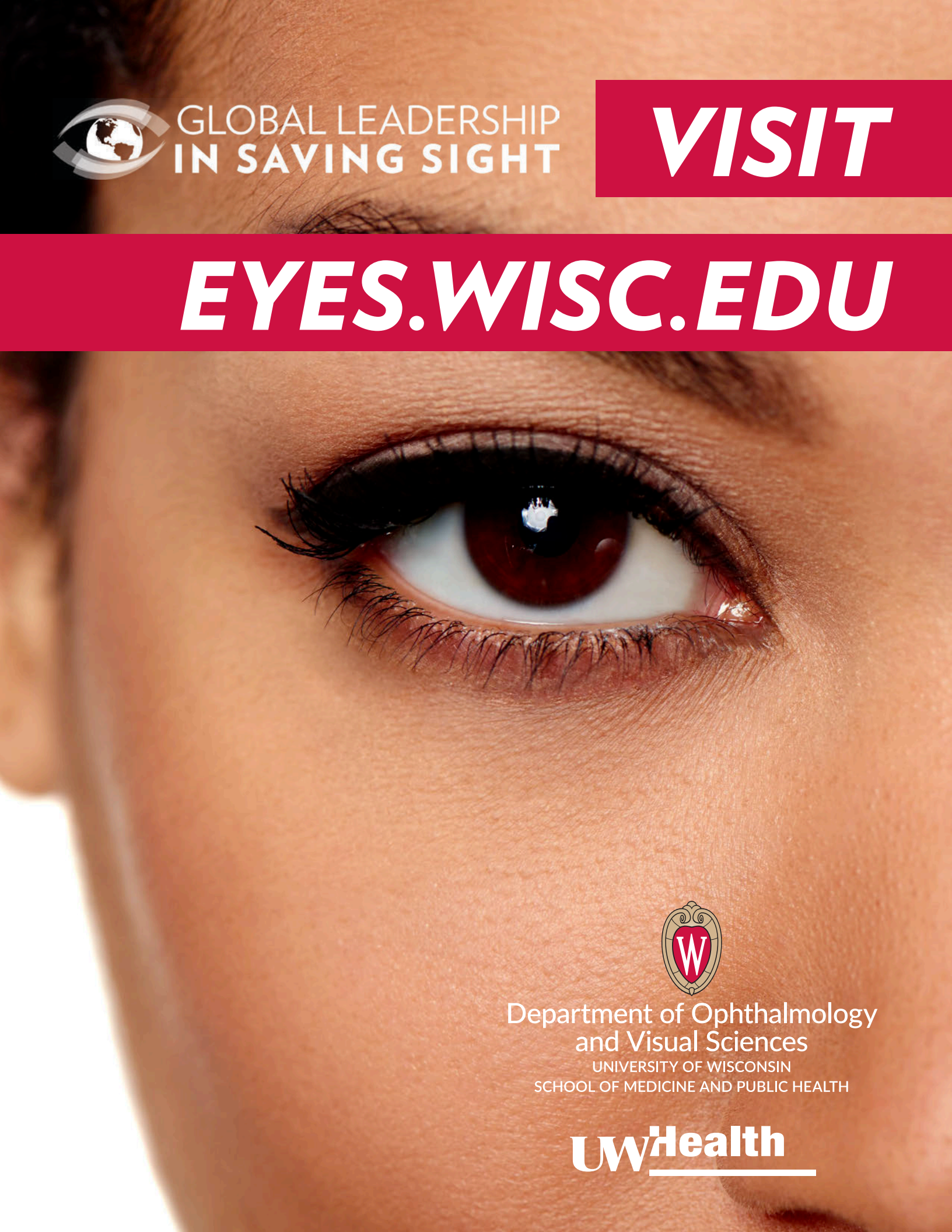
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