



2018 ANNUAL REPORT



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

100

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...3

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NOTHING IN LIFE IS TO BE FEARED, IT IS ONLY TO BE UNDERSTOOD. NOW IS THE TIME TO **UNDERSTAND MORE,** SO THAT WE MAY **FEARLESS.**

- MARIE CURIE

FEARLESS VISION

Department of Ophthalmology and Visual Sciences University of Wisconsin–Madison School of Medicine and Public Health

FROM THE CHAIR



Dr. Terri L. Young speaking at the Women in Eye and Vision Research Luncheon at ARVO

Dear Friends,

I continue to be humbled and honored to serve as the chair of the University of Wisconsin Department of Ophthalmology and Visual Sciences during an era of unprecedented growth, innovation and impact. Fearlessness is at the core of everything we do. This theme reflects our researchers' undeterred efforts to translate discovery into action, so that all can live with functional sight. It highlights the new ways we educate our learners who will care for eyes tomorrow. Our patients personify this theme daily while navigating life with vision challenges with courage, grace and resolve.

In this 2018 annual report, you will read compelling stories from

our patients, researchers, learners, clinicians, administrators, and educators. These examples illustrate a determination to push beyond what is expected to achieve success in multiple forms. Listed below is a partial summary of those triumphs.

- A wife and husband research team who studied diabetic retinopathy in a novel way by engaging with an entire Wisconsin town. Their life's work has inspired and informed ophthalmologic treatment strategies for decades
- A Nordic skier from Sun Prairie, Wisconsin who competed in the PyeongChang, South Korea 2018 Paralympic Winter Games
- Improvements in the medical student curriculum to provide additional opportunities to learn about ophthalmology at the University of Wisconsin School of Medicine and Public Health
- Providers who have established and expanded their clinics to deliver low vision care and inherited retinal degeneration services, including genetic counseling and gene replacement therapy
- Researchers recognized for pushing the limits of discovery with new ideas and technologies
- Patients caring and paving the way for others with vision impairments through improved access and advocacy

In collaboration with you and with each other, we have forged new channels for discovery, patient care, and education at every turn. Should you have thoughts on how we can better serve our community, please feel free to contact me at any time.

It is with your unwavering support and enthusiasm that we are able to fearlessly accomplish the sight-saving work that we do - thank you!

On, Wisconsin!

and gy MU

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

2018, 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.



*Between November 1, 2017 and September 15, 2018





IN TOTAL FUNDING. **FISCAL YEAR 2018**



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AUGUST 24

Gregg Heatley, MD, MMM; Molly Kelley, NP; Daniel Knoch, MD; Richard Patterson, OD; are each recognized with 2017 UW Health Patient and Family Experience Provider Champion Awards, which is determined by patient surveys.



SEPTEMBER 8 First Annual Current Concepts

for Technicians



JULY 31

UW Health Eye Clinic Scheduling Team is recognized with a 2017 UW Health Patient and



JULY 20 McPherson Eye Research Institute Awards Barbara Blodi, MD, the Retina Research Foundation Daniel M. Albert Chair for 2018-2021.



JULY 16

McPherson Eye Research Institute Awards Mrinalini Hoon, PhD, the Retina Research Foundation Rebecca Meyer Brown Professorship for 2018-2021. (page 28)

20_ YEAR IN

JUNE 18 Neal Barney, MD, receives the UW Health Outpatient Surgery SCRUBS Award, the first recognition of a

physician for this honor.





JUNE 21 Frontiers in Vision Research: W. Daniel Stamer, PhD, of Duke University





NOVEMBER 12, 2017 UW Ophthalmology Alumni Association American Academy of Ophthalmology Reception





FEBRUARY 23 Frontiers in Vision Research: Donald J. Zack, MD, PhD, of Johns Hopkins Wilmer Eye Institute



18 REVIEW







APRIL 29 Association for Research in Vision and Ophthalmology Foundation honors Dr. Alice McPherson (page 9)

MAY 7 – Dr. Matthew D. Davis Memorial Celebration (*page 10*)

MAY 14 First Neuromodulation Course for Residents





Excellence in Imaging Research: Amitha Domalpally, MD

Dr. Amitha Domalpally, research director for the Fundus Photograph Reading Center, was recognized with the Association for Research in Vision and Ophthalmology (ARVO) Foundation Pfizer Ophthalmics Carl Camras Award for translational research at the annual meeting in Honolulu, Hawaii on April 30, 2018.

"Dr. Domalpally is a young researcher with a stellar track record of highly productive translational research. As the research director of the University of Wisconsin Fundus Photograph Reading Center, she has significantly furthered the progress of translational research in retinal imaging. Dr. Domalpally is well deserving of this award," stated Dr. Frederick L. Ferris, director of the Division of



Amitha Domalpally, MD, holding her award next to Paul Sternberg, Jr., MD, G.W. Hale Professor and Chair at Vanderbilt Eye Institute, and of the ARVO Foundation.

Epidemiology and Clinical Applications and former clinical director at the National Eye Institute, National Institutes of Health. Dr. Domalpally was nominated for this award by Dr. Ferris, in addition to receiving several letters of support from an international group of retina specialists.

The Pfizer Ophthalmics Carl Camras Translational Research Award is bestowed upon young investigators working in areas of translational research. The award honors Dr. Carl Camras, who is highly respected for his work as a glaucoma specialist and a research scientist. He is most widely recognized for developing prostaglandin analogs for the treatment of elevated IOP in patients with glaucoma. During his distinguished career, he took a personal interest in developing the next generation of eye and vision researchers. Up to three awards of \$12,000 each are presented annually. This award, which was established in 2010, is supported by Pfizer Ophthalmics through the ARVO Foundation.

Kaufman Recognized for Significant Progress In Experimental Eye Research

Paul L. Kaufman, MD, Ernst H. Bárány Professor of Ocular Pharmacology and Chair Emeritus received the Endre A. Balazs Prize from the Council of the International Society for Eye Research (ISER) on



Paul Kaufman, MD presenting at the annual George Kambara, MD, Vision Science Symposium

September 12, 2018, in Belfast, Northern Ireland. ISER awards this international prize to a distinguished scientist whose outstanding contributions provide significant progress in the field of experimental eye research. Dr. Kaufman's pioneering glaucoma research was highlighted in his plenary lecture at the meeting entitled, "Deconstructing Aqueous Humor Outflow – The Last 50 Years".

This award honors its namesake, Endre A. Balazs, for his distinguished work in eye research and his contributions to the founding of ISER. The mission of ISER is to provide a unique international platform for discussion and exchange of ideas on contemporary topics in eye and vision research among its members and the broader eye and vision research community. The Endre A. Balazs Prize is awarded at every biennial meeting.

Dr. Kaufman is a physician-scientist, specializing in glaucoma. His research laboratory studies the mechanisms of aqueous humor (internal eye fluid) formation and its drainage out of the eye, and the agerelated loss of near vision (presbyopia). In open-angle glaucoma, the fluid does not flow freely through the trabecular meshwork (filtering tissue), causing an increase in intraocular pressure, damage to the optic nerve and ultimately leads to vision loss. Glaucoma is the second most common cause of irreversible vision loss in American adults and the most common among African Americans. Presbyopia is an unavoidable ocular affliction of aging.

Among his many accolades, Dr. Kaufman has had continuous research funding from the National Eye Institute for 40 years, has authored over 350 original scientific articles and 75 book chapters, received the 2017 Jonas S. Friedenwald Award from ARVO and was presented with the 2015 Research to Prevent Blindness Stein Innovation Award. Dr. Kaufman served as chair of the UW–Madison Department of Ophthalmology and Visual Sciences from 2004-2014.

Dr. McPherson, Founder of the Retina Research Foundation, Honored at ARVO

Dr. Alice McPherson, the first female ophthalmology resident at UW–Madison, was honored for her leadership as a physician, scholar, philanthropist, and dedication to the study and treatment of retinal diseases. With Dr. McPherson's support, the Retina Research Foundation (RRF) has provided over \$300,000 to support 345 travel grants for trainees to present their research at the ARVO Annual Meetings.

The ARVO Foundation Honorees are recognized for their commitment to ARVO and the ARVO Foundation, including financial support, the exemplary leadership of a foundation initiative or



From left: Drs. Julia Haller (Chair, Wills Eye Hospital), Alice McPherson (RRF) and Cheryl Craft (University of Southern California) at the ARVO Foundation Gala.

dedication to endeavors that represent the mission of the ARVO Foundation. Honorees are nominated and selected by the ARVO Foundation Board of Governors.

BY THE NUMBERS \$11.8 million TOTAL RESEARCH GRANT AND CONTRACT FUNDING.



WE REMEMBER



Drs. Randie and Rob in India

Cassandra "Randie" Lee Schlamp, PhD 1959-2017

Dr. Cassandra Schlamp, PhD, affectionately called Randie, passed away peacefully after a courageous battle with inflammatory breast cancer. Randie was born in Edmonton, Alberta. Upon obtaining her Bachelor of Science degree, she left Winnipeg to attend the University of Western Ontario, where she completed her PhD. From there, she relocated to Indiana University in Bloomington, Indiana for her postdoctoral studies where she met the love of her life, Dr. Rob Nickells. They made a great team, eventually settling in Madison, Wisconsin where they worked together for the past 23 years researching the biology of glaucoma at UW–Madison.

Randie had a true passion for science and also loved animals, travel and curling. The Department of Ophthalmology and Visual Sciences is ever-grateful for the courage, knowledge and joy she brought to the world.

Dr. John William "Jack" Chandler Jr. 1940–2018

Dr. John William "Jack" Chandler, Jr., former Chair of the Department of Ophthalmology and Visual Sciences (1986-1990), died peacefully at home in Madison, Wisconsin. Jack attended UW-Madison, earning his bachelor's degree, followed by his MD in 1965. He completed his ophthalmology and cornea fellowship training at the University of Washington and the University of Florida, respectively. In 1973, Jack received his board certification and went on to have a distinguished career in ophthalmology. Jack's role in developing UW-Madison's nationally prominent, diversified department that we know today, balancing clinical care, and serious clinical, basic and translational research, is hard to overstate. "Jack met challenges head-on, and what emerged Dr. John William Chandler was University Station and the beginning of major clinical outreach programs,



such as Mauston. He also oversaw two major NIH-funded projects that led to 7,500 square feet of new research space, and recruited four new basic science faculty," recalls Dr. Paul Kaufman. "It is fitting that his last days were spent in proximity to the institution he served so well."

Dr. Matthew Dinsdale "Dinny" Davis 1926–2018

Dr. Matthew Dinsdale "Dinny" Davis passed away on March 5, 2018 surrounded by loved ones. He left a legacy of accomplishment as a clinician, educator, leader and tireless researcher at the University of Wisconsin–Madison for more than 60 years. He is recognized worldwide for his work as a pioneering retina specialist who helped establish standards for analyzing diabetic retinopathy and other retinal eye diseases. Dr. Davis earned his bachelor's degree in 1947 and completed an ophthalmology residency in 1955 at UW-Madison. After serving two years in the U.S. Naval Reserve, he then trained at the Massachusetts Eye and Ear Infirmary. Dr. Davis returned to Madison and joined his father, Frederick A. Davis, MD, and Peter Duehr, MD, in private practice, as well as at the Eye, Ear, Nose and Throat Division of the UW Department of Surgery. He elevated the division into the Department of Ophthalmology and Visual Sciences and served as its first chair from 1970 to 1986.

In 1971, the newly established National Eye Institute of the National Institutes of Health asked Dr. Davis to serve as study chair for the groundbreaking Diabetic Retinopathy Study (DRS). Results of this seminal



Dr. Matthew Dinsdale "Dinny" Davis

study established the standard classification scheme and therapy for proliferative diabetic retinopathy, eventually substantially reducing the risk of severe vision loss. At that time, approximately half of all patients diagnosed with diabetic retinopathy became legally blind within five years. Over the next decade that figure dropped to five percent. Dr. Davis formed the Fundus Photograph Reading Center (FPRC) – the first centralized, independent retinal imaging program to facilitate randomized clinical trials of retinal disease treatments. Dr. Davis and his collaborators established the gold standards for the classification of multiple retinal eye diseases.

"The impact that Dr. Davis has had on patients and the field of ophthalmology throughout his entire faculty tenure at UW–Madison is immeasurable. He has had a profound influence on many of us within and outside of our organization. For those of us privileged to know him, his exemplary scholarship, integrity, humility, humor and compassion will be indelibly imprinted."

Terri L. Young
Chair, Department of Ophthalmology and Visual Sciences

Dinny, as he was known to his friends and colleagues, received many honors over the years and was recently named the 2016 Laureate by the American Academy of Ophthalmology — the highest award given by this society — for his contributions.

A LEGACY OF SIGHT

Join The Davis Society and make a difference. Your philanthropic gift allows the Department of Ophthalmology and Visual Sciences to fearlessly fight vision loss through research and teaching. Learn more about The Davis Society or donate online now at eyes.wisc.edu/davis-society.



SIGHT SAVING PARTNERSHIPS



Marjorie, low vision rehabilitation patient, beading

UNDERSTANDING THE ROAD AHEAD

Doctors Sanbrita Mondal and Melanie Schmitt have been busy as codirectors of the Department of Ophthalmology and Visual Sciences (DOVS) partnership with the Lighthouse Guild Vision Rehabilitation Network, a nationally renowned, non-profit vision and healthcare organization based in Manhattan, New York. The Lighthouse Guild launched a new initiative in 2017 to provide financial support and education resources to university ophthalmology departments, and they selected the University of Wisconsin as a partner site. In the year since activating this partnership, many exciting initiatives are underway that support our joint missions: to save sight.

Patient Care

Working through the UW Health Patient-Centered Care Committee, of which Dr. Schmitt is currently the chair, the team assessed the department's central care spaces at University Station Eye Clinic.

They identified and documented many opportunities to improve the facilities for visually impaired and aging patients, such as creating legible signage, and changing carpet and wall colors to increase contrast.

"Dr. Mondal was great to help me with everyday things like reading. I now use a large magnifying light for that. And also tiny things with my hands that I need vision to do. Beading [jewelry] is the main thing, that's my hobby."

- Marjorie, low vision rehabilitation patient

Drs. Mondal and Schmitt have also strengthened relationships with external community partners, including the Wisconsin Council of the Blind & Visually Impaired (WCBVI) and UnityPoint Health-Meriter, a partner of UW Health. With Dr. Mondal and the Low Vision clinic in full swing, patients benefit from long-standing relationships with the programmatic efforts of WCBVI, plus additional social and occupational resources. Dr. Mondal refers many patients to WCBVI after her initial examination. WCBVI is one of the few full-service, local resources that offers adaptive technology resources, in-home assessments, advocacy and a store that specializes in low vision aids. The occupational therapist referrals help people with low vision function at the highest possible level by teaching new skills, modifying tasks, and addressing home and public safety, as well as providing driving assessments.

Another essential community partner is Vision Forward of Milwaukee. Dr. Schmitt refers many pediatric patients to Vision Forward, whose specialty is assisting the visually impaired from birth through adulthood to achieve educational, personal and professional goals.

Education

In addition to rapidly addressing low vision patient care, changes in our resident curriculum and staff training were implemented last fall. As of 2017, residents must complete an online curriculum that emphasizes low vision patient care in a practice and how to refer for the appropriate resources in a timely manner.

"We're transitioning from the model that says, 'Nothing more can be done,' to, 'While this is all I can do for you treatment-wise, here are other resources that can help you and your family'," Dr. Mondal points out.

Low vision Lunch and Learn sessions kicked off in the spring of 2018 for all clinical and administrative staff. Marshall Flax, CLVT, COMS, has been commissioned to educate DOVS attendees on aspects of low

vision life. In the sessions, he reviews the etiquette of working with low vision patients, how to identify and remove barriers of access and ability, and common biases toward this population. The Lunch and Learn series were well-attended and will continue twice per year.

Research

Investigating the psycho-social impact of a low vision circumstance is an objective of DOVS' partnership with the Lighthouse Guild. To further understand patient perceptions, DOVS will begin collecting demographic data, determine how quickly patients are offered help, assess the availability of local resources, and compare the cost of low vision services and aids to other non-local programs.

Dr. Mondal notes that these efforts require a community of people working in concert to shift the approach of how we care for and accommodate low vision individuals. This work is critical as the aging population grows, the number of patients with low vision will increase.

The real impact of the Lighthouse Guild's 5-year pilot program with DOVS is already being felt, and the progress made this year will pave the way for additional resources to preserve quality of life, and to live and work independently and fearlessly.

HOW TO ACCOMMODATE LOW VISION INDIVIDUALS

You can make changes today by considering the following:



On Printed Materials and Websites

- Use fonts that are 16pt or larger
- Choose color schemes with a strong contrast

At Home, Work and Clinics

- Assess the contrast between the wall color and flooring and change if needed
- Softer lighting, colored bulbs and filters can be used to reduce glare
- Choose dishes in an opaque white motif, so fullness can be easily determined (i.e. white cups for coffee)

Be a Resource

- Ask questions and listen
- Dig deeper to determine if a low vision exam or professional assessment is needed
- Familiarize yourself with community resources. If applicable, have referral forms on-hand
- Show empathy, not sympathy

CLINICAL & RESEARCH FACULTY



MICHAEL M. ALTAWEEL, MD

PROFESSOR, CO-DIRECTOR OF THE FUNDUS PHOTOGRAPH READING CENTER

SPECIALTIES

Retina, vitreous, macula, ocular melanoma

LEADERSHIP POSITIONS Member

UW Health Clinic Operating Room Committee

Combat Blindness International Board Member

GRANTS

Department Of Health And Human Services, Public Health Services, National Institutes Of Health

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

MUST Competitive Renewal

Novartis

A Two-Year, Three-Arm, Randomized, Double-Masked, Multicenter, Phase III Study Assessing the Efficacy and Safety of Brolucizumab versus Aflibercept in Adult Patients with Visual Impairment Due to Diabetic Macular Edema (KESTREL)

Turing Pharmaceuticals, LLC

Research Agreement: Turing Pharma and Fundus Photograph Reading Center for Toxoplasmosis Study

CLINICAL TRIALS

Bevacizumab Against Recurrent Retinal Detachment (BEARRD) Study

Investigate if intravitreal bevacizumab injection during primary vitrectomy surgery can reduce recurrent retinal detachment and proliferative vitreoretinopathy.

Principal Investigator: Michael Altaweel

Sponsor: UW Department of Ophthalmology and Visual Sciences Condition: Retinal Detachment

COOG2: Collaborative Ocular Oncology Group Uveal Melanoma Validation Study Number 2

PRAME (Preferentially Expressed Antigen in Melanoma) was recently found to be involved with the spreading of uveal melanoma; this study aims to support these findings in a large group of patients who have uveal melanoma.

Principal Investigator: Michael Altaweel Sponsor: Non-Sponsored Condition: Uveal Melanoma

HAWK Age-Related Macular Degeneration Study

Demonstrate that RTH258 is not inferior to Aflibercept with respect to the change in best-corrected visual acuity from baseline to week 48. *Principal Investigator:* Michael Altaweel *Sponsor:* Alcon

Condition: Wet Age-Related Macular Degeneration

KESTREL

Evaluate the efficacy and safety of brolucizumab in treatment of patients with visual impairment due to diabetic macular edema. The study drug will be compared to aflibercept to demonstrate that the study drug is non-inferior with respect to visual outcomes after the first year of treatment.

Principal Investigator: Michael Altaweel Sponsor: Novartis Condition: Diabetic Macular Edema

SCORE2 Follow Up

SCORE2 was the study of comparative treatments for retinal vein occlusion comparing intravitreal bevacizumab every four weeks with intravitreal affibercept every four weeks. The follow up study will obtain data from previous enrolled SCORE2 participants to assess whether bevacizumab is non-inferior to affibercept for the treatment of macular edema secondary to central retinal vein occlusion. *Principal Investigator:* Michael Altaweel *Sponsor:* National Eye Institute *Condition:* Central Retinal Vein Occlusion



RICHARD E. APPEN, MD PROFESSOR EMERITUS

SPECIALTIY Neuro-ophthalmology



NEAL P. BARNEY, MD

SPECIALTIES Cornea and external disease, cornea and cataract surgery, uveitis, ocular immunology

LEADERSHIP POSITIONS Medical Director University Station Clinic

Member, Board of Directors Lions Eye Bank of Wisconsin

Member, Research Committee American Board of Ophthalmology Examiners Eye Bank Association of America



BARBARA A. BLODI, MD PROFESSOR, MEDICAL DIRECTOR OF THE FUNDUS PHOTOGRAPH READING CENTER

SPECIALTIES Retinal diseases including macular degeneration and diabetic retinopathyuveitis, ocular immunology

GRANTS

Department Of Health And Human Services, Public Health Services, National Institutes Of Health SCORE2 Comparative Trial

Emmes Corporation

Age-Related Eye Disease Study 2 (AREDS2) 10-Year Follow-On Study Evenuk, Inc.

Subcontract: Advanced Image Analysis Tools for Diabetic Retinopathy Telemedicine Application

George Washington University

Diabetes Prevention Program Outcomes Study (DPPOS)

EDIC Color Supplement

Epidemiology of Diabetes Interventions and Complications

TODAY2 Phase 2 (T2P2) : Long-Term Post-Intervention Follow-Up

CLINICAL TRIALS

BIM

This project will investigate whether "BIM," a naturally occurring proapoptotic protein, can act as a biomarker for patients with exudative AMD.

Principal Investigator: Barbara Blodi

Sponsor: UW Department of Ophthalmology and Visual Sciences Condition: Age-Related Macular Degeneration

Carotenoids in Age-Related Eye Disease Study 2 (CAREDS2) Macular Pigment in Aging and Disease

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

Principal Investigator: Julie Mares, Barbara Blodi Sponsor: National Institutes of Health Condition: Healthy Aging

CHROMA Geographic Atrophy (GA) Study

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 in GA patients who are biomarker positive.

Principal Investigator: Barbara Blodi Sponsor: Genentech-Roche

Condition: Geographic Atrophy

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

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, long-term delivery of therapeutic molecules, directly into the vitreous cavity of the eve

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

Omaspect

Open-label extension study to evaluate the long-term safety and tolerability of lampalizumab in patients with GA, secondary to AMD, who have completed a Roche-sponsored study. *Principal Investigator:* Barbara Blodi *Sponsor:* Genentech/Roche *Condition:* Geographic Atrophy



YASMIN S. BRADFIELD, MD

DR. JOHN DOOLITTLE PROFESSOR, OPHTHALMOLOGY AND VISUAL SCIENCES, CO-CHAIR INTERNATIONAL OPHTHALMOLOGY COMMITTEE

SPECIALTIES Pediatric ophthalmology and strabismus, pediatric glaucoma

LEADERSHIP POSITIONS Member, Committee Faculty Development Planning, SMPH Career Paths 101 and 201

Faculty Development Planning, SMPH Career Paths 101 and 201 International Resident Rotation Committee

CLINICAL TRIALS

Anterior Segment Optical Coherence Tomography (ASOCT) Better understand anatomical differences in Schlemm's canal and anterior segment structures in pediatric patients with and without glaucoma using handheld AS OCT. Data obtained can potentially be used to guide the type of surgical intervention in infants and children with glaucoma.

Principal Investigator: Yasmin Bradfield

Sponsor: UW Department of Ophthalmology and Visual Sciences Condition: Glaucoma

ATS20: The Amblyopia Treatment Study

Compare the efficacy of one hour per day of binocular game play (Binocular Dig Rush Game) five days per week, plus spectacle correction versus spectacle correction only for the treatment of amblyopia in children ages 4 to 13 years old.

Principal Investigator: Yasmin Bradfield Sponsor: National Eye Institute Condition: Amblyopia

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



CURTIS R. BRANDT, PHD, FARVO

UW MEDICAL FOUNDATION PROFESSOR OF OPHTHALMOLOGY AND VISUAL SCIENCES, VICE-CHAIR OF RESEARCH

SPECIALTIES

Virology, cell and molecular biology, genetic mapping and recombinant techniques, gene therapy

LEADERSHIP POSITION Member National Institutes of Health, Drug Discovery and Resistance

Mechanisms Study Section

GRANTS Amebagone

Biological Treatment of Bacterial Keratitis

Department Of Health And Human Services, Public Health Services, National Institutes Of Health Core Grant for Vision Research

Core Grant for Vision Research

Retina Research Foundation Gene Therapy for Retinal Degeneration Diseases

University Of Wisconsin Foundation Microbial Encoded Effectors For Glaucoma Gene Therapy

BY THE NUMBERS



IN NATIONAL EYE INSTITUTE RANKINGS FOR RESEARCH FUNDING.

Clinical and Research Faculty, continued...



CAT N. BURKAT, MD, FACS

FACULTY, CO-CHAIR INTERNATIONAL OPHTHALMOLOGY COMMITTEE

SPECIALTIES

Ophthalmic reconstructive and cosmetic surgery

LEADERSHIP POSITIONS Member

School of Medicine and Public Health Global Health Task Force; Admissions Committee

Harvard College - Admissions Interviewer

University of Wisconsin Medical Fund Transformations Cosmetic Surgery Center Operations

American Board of Ophthalmology - Journal of Clinical and Experimental Ophthalmology, Editorial Board; Oculoplastics Exam Development Committee Panel; ABO Oculoplastics and Orbit Maintenance of Certification Written Exam Panel; Oral Board Examiners

Aesthetic Clinic at Hyderabad Center for Sight, Invited International Experts

American Academy of Cosmetic Surgery Young Surgeons Task Force

American Academy of Ophthalmology Ocuploplastics Committee for EyeWiki

American Society of Ocularists - Medical Advisory Board

American Society of Ophthalmic Plastic and Reconstructive Surgery - Abstract Review Committee; CME Subcommittee; Education Subcommittee

Knowledge Base Expert Reviewers

Program Committee for Spring and Fall Meetings

Asian-Pacific Society of Oculoplastic and Reconstructive Surgery International Fellowship in Ophthalmic Facial Plastic and Reconstructive Surgery

International Resident Rotation Committee

Ophthalmology Epic User Group

University of Rochester Alumni Association



JONATHAN S. CHANG, MD ASSISTANT PROFESSOR

ASSISTANT PROFESS

SPECIALTIES Retina, vitreous, macula

CLINICAL TRIALS SAPPHIRE Demonstrate that suprachoroidal CLS-TA administered in conjunction with intravitreal aflibercept is superior to

aflibercept alone in subjects with retinal vein occlusion. *Principal Investigator:* Jonathan Chang *Sponsor:* Clearside Biomedical *Condition:* Retinal Vein Occlusion



GRANTS Mount Sinai School Of Medicine Surgical IIH Treatment Trial

University Of Wisconsin Foundation The ipRGC, A Link Between the Eye and Brain

CLINICAL TRIALS

SIGHT

Look at reduction or reversal of visual loss in subjects with idiopathic intracranial hypertension and moderate to severe visual loss. Determine whether the efficacy of stereotactic ventriculo-peritoneal CSF shunting with medical therapy is superior to medical therapy alone or optic nerve sheath fenestration with medical therapy. *Principal Investigator:* Yanjun Chen

Sponsor: National Eye Institute

Condition: Idiopathic Intracranial Hypertension



KAREN J. CRUICKSHANKS, PHD

YANJUN (JUDY) A. CHEN, MD, PHD

ASSISTANT PROFESSOR

LEADERSHIP POSITION

Neuro-Ophth Journal Club

SPECIALTY Neuro-ophthalmology

Member

PROFESSOR

SPECIALTIES Epidemiology of age-related ocular disorders, hearing loss, diabetes

LEADERSHIP POSITIONS Member

Duke Medical Center & Durham VA Geriatrics Research, Education and Clinical Center

External Advisory Board, MUSC Clinical Research Center for Experimental and Clinical Studies of Presbyacusis

National Academies of Science, Engineering and Medicine (Institute of Medicine), Committee on Accessible and Affordable Hearing Health Care for Adult SMPH - ICTR-CAP Pilot Awards 2016 Review Committee

National Institute on Deafness and Other Communication Disorders

Program Committee for the Sensory Impairment and Cognitive Decline Conference

School of Medicine and Public Healthy Molecular and Environmental Toxicology Review Committee; MS & PhD program; Research and Scientific Productivity Task Force; Search Committee

UW–Madison - Recruitment and Admissions Committee in Population Health

Director of the WI State Lab of Hygiene

Staff

DSMB for the Therapeutic Effects of Cataract Removal in Alzheimer's Disease

UW–Madison - Executive in Population Health; Graduate Program in Population Health

Chair

Data Monitoring and Oversight Committee, Conservation of Hearing Study

Grant Reviewer Yale Pepper Center Grants Review

Yale Pepper Center Grants I

GRANTS

Department Of Health And Human Services, Public Health Services, National Institutes Of Health

Epidemiology of Age-related Macular Degeneration and Other Retinal Diseases

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



THOMAS D. FRANCE, MD PROFESSOR EMERITUS

Pediatric ophthalmology and strabismus, amblyopia, visual function testing



DAVID M. GAMM, MD, PHD

ASSOCIATE PROFESSOR, DIRECTOR OF MCPHERSON EYE RESEARCH INSTITUTE

SPECIALTIES

Pediatric and adult strabismus management and surgery, comprehensive pediatric ophthalmology, genetic retinal disorders, tear duct surgery, double vision disorders, eyelid abnormalities

LEADERSHIP POSITIONS Member

MERI Related Committees

Retina Research Foundation-Emmett A. Humble Distinguished Director McPherson Eye Research Institute Sandra Lemke Trout Chair in Eye Research



JUSTIN L. GOTTLIEB, MD

SPECIALTIES Retina, vitreous, macula

LEADERSHIP POSITIONS Member American Society of Retina Specialist Fellowship Education Committee;

Fellowship Standards Committee

AUPO Fellowship Compliance Committee

UWH - Operations Council Regional Subgroup

GRANTS

Jaeb Center For Health Research

PROMINENT-Eye Ancillary Study: Diabetic Retinopathy Outcomes in a Randomized Trial of Pemafibrate versus Placebo

CLINICAL TRIALS DRCR AD

An ancillary study to the main PROMINENT trial in which the DRCR.

net and PROMINENT study group will collaborate to evaluate the effect of pemafibrate treatment versus placebo on long-term rates of diabetic retinopathy worsening in patients with type 2 diabetes at risk for cardiovascular events.

Principal Investigator: Justin Gottlieb Sponsor: National Eye Institute Condition: Diabetic Retinopathy

DRCR Network Protocol – V: Treatment for Central-Involved Diabetic Macular Edema (DME) in eyes with Very Good Visual Acuity.

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

DRCR – T- Extension

Compare the long-term efficacy and safety of intravitreal aflibercept, intravitreal bevacizumab and intravitreal ranibizumab when given to treat central involved DME in eyes with a visual acuity of 20/32-20/320. This is the five year follow up of the main trial. *Principal Investigator:* Justin Gottlieb *Sponsor:* National Eye Institute

Condition: Diabetic Macular Edema

DRCR Protocol W

Determine efficacy and safety of IAI versus sham injections (observation) for prevention of prolipherative diabetic retinopathy or CI-DME in eyes at high risk of development of these complications. *Principal Investigator:* Justin Gottlieb *Sponsor:* National Eye Institute *Condition:* Prolipherative Diabetic Retinopathy, Diabetic Macular

Condition: Prolipherative Diabetic Retinopathy, Diabetic Macular Edema



GREGG A. HEATLEY, MD, MMM ASSOCIATE PROFESSOR

SPECIALTIES Glaucoma, anterior segment and cataract surgery

LEADERSHIP POSITIONS Member

ABO Oral Board Examiners

American Glaucoma Society Patient Advocacy Committee

Glaucoma Subspecialty Day Program Committee

Member, University of Wisconsin Medical Foundation

Finance Operations Patient Experience Physician Coaches Quality

Member, University of Wisconsin Hospitals and Clinics

Department of Ophthalmology and Visual Sciences Clinical Operations Executive Committee

Ethics Operations Council Ophthalmology Peer Review Vice Chair for Quality Council

Clinical and Research Faculty, continued...



MRINALINI HOON, PHD ASSISTANT PROFESSOR

SPECIALTIES Retina, vitreous, macula



BARBARA E. K. KLEIN, MD, MPH PROFESSOR

SPECIALTIES

Glaucoma, comprehensive ophthalmology, cataracts, diabetic retinopathy, epidemiology, preventive medicine

GRANTS

Department Of Health And Human Services, Public Health Services, National Institutes Of Health Epidemiology of Age-related Macular Degeneration and Other Retinal Diseases

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

Juvenile Diabetes Research Foundation

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



RONALD E. KALIL, PHD PROFESSOR

PAUL L.

SPECIALTIES

KAUFMAN. MD

Glaucoma, aqueous humor dynamics,

anterior segment physiology and

pharmacology, presbyopia

PROFESSOR EMERITUS

SPECIALTIES Neural cell death and repair after brain damage



Graduate Student Advice

RONALD E. KLEIN, MD, MPH PROFESSOR

SPECIALTIES Vitreoretinal disease, diabetic retinopathy, age-related eye diseases, epidemiology

LEADERSHIP POSITIONS Member

School of Medicine and Public Health

Institute for Clinical and Translational Research Scientific Review Committee

Medical School Applicant Interviewers

Population Health

UW-Madison Biological Sciences Tenure Review Committee

GRANTS

Department Of Health And Human Services, Public Health Services, National Institutes Of Health

Epidemiology of Age-related Macular Degeneration and Other Retinal Diseases

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

Juvenile Diabetes Research Foundation

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



DANIEL W. KNOCH, MD

ASSOCIATE PROFESSOR, DIRECTOR MEDICAL STUDENT EDUCATION

SPECIALTIES Comprehensive ophthalmology, cataract surgery

LEADERSHIP POSITIONS Member

School of Medicine and Public Health Surgical and Procedural Care Block Design Team



MARILYN C. KAY, MD

ASSOCIATE PROFESSOR, VICE-CHAIR OF EDUCATION AND FACULTY DEVELOPMENT

SPECIALTY Neuro-ophthalmology

LEADERSHIP POSITIONS Member

American Board of Ophthalmology

Associate Examiners American Academy of Ophthalmology Panel American Journal of Ophthalmology Reviewers Archives of Ophthalmology Reviewers Journal of Neuro-Ophthalmology Reviewers North American Neuro-Ophthalmology Society Nominating Committee Neuro-Ophth Journal Club University of Wisconsin Medical Foundation Physician Coaches Association of University Professors of Ophthalmology Medical School Education (MSE) Council

Co-Director for the Surgical and Procedural Care Block and Phase 2 Ophthalmology Department Block Leader for the UWSMPH ForWard Curriculum



BURTON J. KUSHNER, MD PROFESSOR EMERITUS

SPECIALTIES

Pediatric ophthalmology and strabismus, amblyopia, surgical techniques

LEADERSHIP POSITION Member

Executive Director of UW Ophthalmology Alumni Association



APARNA LAKKARAJU, PHD ASSOCIATE PROFESSOR

SPECIALTIES

Retinal cell biology, pathogenesis of retinal degenerations, identification of therapeutic targets

LEADERSHIP POSITIONS Member

School of Medicine and Public Health

MERI Research Committee

UW-Madison Commission on Faculty Compensation and Economic Benefits; Faculty Senate

GRANTS

BrightFocus Foundation

Can RPE-Derived Exosomes Contribute to Subretinal Drusenoid Deposits?

Department Of Health And Human Services, Public Health Services, National Institutes Of Health

Mechanisms of Cellular Clearance in the Retinal Pigment Epithelium Macular Society

Modulating Mitochondrial Dynamics in the Retinal Pigment Epithelium as a Therapeutic Strategy for Macular Dystrophies



JENNIFER C. LARSON. MD ASSISTANT PROFESSOR

SPECIALTIES Comprehensive ophthalmology, cataract surgerv

LEADERSHIP POSITION Member

Neuro-Ophth Journal Club



YAO LIU, MD ASSISTANT PROFESSOR

SPECIALTIES

Adult and pediatric glaucoma, cataract surgery, anterior segment surgery

GRANTS

American Glaucoma Society Macular Pigment and Glaucoma Incidence in the Carotenoids in Age-Related Eye Disease Study 2

UW Health Clinics - Affiliation Agreement

Macular Pigment as a Modifiable Glaucoma Risk Factor in Older Women

University Of Wisconsin Foundation, Wisconsin Partnership, MERC

Advancing Tele-Ophthalmology for Diabetic Retinopathy in Rural Wisconsin Health Settings



MARK J. LUCARELLI, MD, FACS

RICHARD K. DORTZBACH PROFESSOR OF OPHTHALMIC FACIAL PLASTIC SURGERY

SPECIALTIES

Oculoplastic, cosmetic facial and orbital surgery

LEADERSHIP POSITIONS Member

University of Wisconsin Medical Fund Council of Chairs; Transformations Cosmetic Surgery Center Operations

American Society of Ophthalmic Plastic and Reconstructive Surgery -Education Subcommittee

Fellowship Program Directors Committee

International Thyroid Eye Disease Study Group Steering Committee



JULIE A. MARES, PHD, MSPH PROFESSOR

SPECIAL TIES Epidemiology of eye disease, nutritional epidemiology

LEADERSHIP POSITIONS Member

International Carotenoid Society Awards and Program Planning Committees

School of Medicine and Public Health ICTR Scientific Review Committee: Tenure Promotions

UW-Madison Faculty Senate; Graduate Program in Nutritional Sciences Dissertations; Graduate Program in Population Health

CLINICAL TRIALS

Carotenoids in Age-Related Eye Disease Study 2 (CAREDS2) Macular Pigment in Aging and Disease

Determine whether macular pigment optical density (MPOD) at baseline is directly related to lower risk for the incidence/progression of AMD over 13 years. Determine relationships between MPOD at baseline to structural and functional aging of the neurosensory retina at follow-up.

Clinical and Research Faculty, continued...

Determine whether MPOD declines with age and evaluate modifiable factors lowering age-related declines. *Principal Investigator:* Julie Mares *Sponsor:* National Institutes of Health *Condition:* Healthy Aging



GILLIAN J. MCLELLAN, BVMS, PHD

ASSOCIATE PROFESSOR

SPECIALTIES

Glaucoma pathogenesis and identification of new therapeutic targets

LEADERSHIP POSITION Member

ARVO, Animals in Research Committee

GRANTS Wisconsin Alumni Research Foundation 2017-18 Fall Competition Award



MIHAI MITITELU, MD, MPH

ASSISTANT PROFESSOR, MEDICAL DIRECTOR OF CLINICAL EYE RESEARCH UNIT

SPECIALTIES Retinal vascular diseases, agerelated macular degeneration, retinal dystrophies

LEADERSHIP POSITION

Member

International Resident Rotation Committee

CLINICAL TRIALS OHR-1601 Study

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 AMD. *Principal Investigator:* Mihai Mititelu *Sponsor:* OHR Pharmaceuticals

Condition: Wet Age-Related Macular Degeneration

Regeneron R910-3-DME-1518

Compare the efficacy of intravitreal-administered REGN910-3 compared to intravitreal aflibercept injection (IAI) in improving best-corrected visual acuity (BCVA) in patients with diabetic macular edema. *Principal Investigator:* Mihai Mititelu *Sponsor:* Regeneron Pharmaceuticals *Condition:* Diabetic Macular Edema



ANNA C. MOMONT, MD

ASSOCIATE RESIDENCY DIRECTOR, CLINICAL ASSISTANT PROFESSOR

SPECIALTIES Glaucoma, anterior segment surgery, optic nerve imaging

LEADERSHIP POSITION Member

International Resident Rotation Committee



SARAH M. NEHLS, MD ASSOCIATE PROFESSOR

SPECIALTIES

Refractive surgery, cornea and external disease, cornea and cataract surgery, uveitis

LEADERSHIP POSITIONS Member

Clinics Medical Board; Surgery Advisory Committee

Juvenile Diabetes Research Foundation Board

Midwest Regional Phaco Course

American Board of Ophthalmology Board Members; Content Outline Rating Committee; Oral Board Examiners

Archives of Ophthalmology Reviewers; Eye Journal Reviewers

CLINICAL TRIALS

SHIRE 301 Evaluate the efficacy of the study drug compared with PVP-Iodine and placebo in the treatment of subjects with Adenoviral conjunctivitis. *Principal Investigator:* Sarah Nehls *Sponsor:* Shire Pharmaceuticals *Condition:* Adenoviral Conjunctivitis

multion. Additional Co

SHIRE 303

Evaluate the efficacy of the study drug compared with a placebo in the treatment of subjects with bacterial conjunctivitis. *Principal Investigator:* Sarah Nehls

Sponsor: Shire Pharmaceuticals Condition: Bacterial Conjunctivitis

Zoster Eye Disease Study

Evaluate whether or not prolonged suppressive oral antiviral treatment with valacyclovir reduces complications of HZO including new or worsening dendriform epithelial keratitis, stromal keratitis, endothelial keratitis, and/or iritis and/or postherpetic neuralgia compared to placebo.

Principal Investigator: Sarah Nehls Sponsor: National Eye Institute Condition: Zoster Eye Disease



ROBERT W. NICKELLS, PHD

FREDERICK A. DAVIS CHAIR OF OPHTHALMOLOGY AND VISUAL SCIENCES PROFESSOR

SPECIALTIES Molecular biology of cell death in glaucoma and retinoblastoma LEADERSHIP POSITIONS Member

UW-Madison Faculty Senate

Bright Focus Foundation Scientific Advisory Board Glaucoma Foundation Scientific Advisory Board UW Principal Investigator – NIH/NEI Vision Research T32 Grant

GRANTS

Department Of Health And Human Services, Public Health Services, National Institutes Of Health Molecular Mechanisms of Retinal Ganglion Cell Death

University Of Pittsburgh

A Comprehensive Approach to Whole Eye Transplantation: Building a Scientific Foundation for New Therapies in Vision Restoration

University Of Wisconsin Foundation Microbial Encoded Effectors For Glaucoma Gene Therapy



T. MICHAEL NORK, MD, MS, FARVO

LEADERSHIP POSITIONS

PROFESSOR

SPECIALTIES Diseases and surgery of the retina and vitreous

Member School of Medicine and Public Health Human Proteomics Program Advisory Board; McPherson Eye Research Institute Grant Reviewers UW–Hospital Clinical Policy Committee

UW–Madison Comparative Ophthalmic Research Labs Lions Eye Bank of Wisconsin Board of Directors

Mantic, LLC

Ocular Services on Demand (OSOD), LLC



HEATHER A. D. POTTER, MD ASSOCIATE PROFESSOR

SPECIALTIES Comprehensive ophthalmology, ophthalmic pathology, cataract surgery, refractive surgery

LEADERSHIP POSITIONS Member American Academy of Ophthalmology

Knowledge Base Panel for Ophthalmic Pathology and Ocular Oncology American Board of Ophthalmology Content Outline Rating Committee; Oral Board Examiners

American Association of Ophthalmic Oncologists and Pathologists, Executive Committee

School of Medicine and Public Health Admissions Committee; Medical Board

The Eyes and Ears Clinic (Michele Tracy Memorial Clinic) Wisconsin Academy of Ophthalmology Executive Committee



SHILPA G. REDDY, MD ASSISTANT PROFESSOR

SPECIALTY Comprehensive ophthalmology

LEADERSHIP POSITION Member International Resident Rotation Committee



PATRICIA C. SABB, MD ASSISTANT PROFESSOR

SPECIALTIES Comprehensive ophthalmology, cataract surgery, refractive surgery



STEPHEN K. SAUER, MD

ASSOCIATE PROFESSOR

SPECIALTIES Comprehensive ophthalmology, cataract surgery

LEADERSHIP POSITIONS Member School of Medicine and Public Health Tenure Promotions

University of Wisconsin Medical Foundation Committee; Council of Faculty

American Academy of Ophthalmology Practicing Ophthalmologist Curriculum Panel

International Resident Rotation Committee



MELANIE A. SCHMITT, MD

ASSISTANT PROFESSOR, DIRECTOR OF THE PEDIATRIC INHERITED RETINAL DEGENERATION CLINIC, CO-DIRECTOR OCULAR GENETICS PROGRAM

SPECIALTIES Pediatric ophthalmology and strabismus, ophthalmic genetics

LEADERSHIP POSITION Member UW Health Patient-Centered Care Committee Chair



NADER SHEIBANI, PHD PROFESSOR

SPECIALTIES

Diabetic retinopathy, retinopathy of prematurity, animal models and retinal vascular cell biology and signal transduction

LEADERSHIP POSITIONS Member School of Medicine and Public Health IACUC Committee; MERI Research Committee

UW-Madison Faculty Senate

Other Department Graduate Student and Faculty Mentoring Committees

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Clinical and Research Faculty, continued...

GRANTS

DHHS, PHS, NIH Novel Antiangiogenic Peptides for Treatment of Exudative Age-Related Macular Degeneration

University of Wisconsin Foundation Investigating Oxygen Metabolism in Diabetic Retinopathy

Northwestern University CYP1B1 and Primary Congenital Glaucoma



KIMBERLY E. STEPIEN, MD

ASSOCIATE PROFESSOR; DIRECTOR OF THE ADULT INHERITED RETINAL DEGENERATION CLINIC; CO-VICE CHAIR OF CLINICAL AFFAIRS; CO-DIRECTOR OF OCULAR GENETICS PROGRAM

SPECIALTIES

Retina, macula, inherited retinal degenerations

GRANTS NIGHTSTARX, LTD

A randomised, open label, outcomes-assessor-masked, prospective, parallel controlled group, phase 3 clinical trial of retinal gene therapy for choroideremia using an Adeno-Associated Viral Vector (Aav2) encoding rab escort protein 1 (Rep1)

CLINICAL TRIALS NIGHT

Natural history of the progression of choroideremia study 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

STAR

Evaluate the efficacy and safety of a single subretinal injection of AAV2-REP1 in subjects with choroideremia. Patients already enrolled in the NIGHT study will be screened to qualify for the gene therapy surgical trial.

Principal Investigator: Kimberly Stepien Sponsor: NightStaRx Condition: Choroideremia

XOLARIS

Gain a better understanding of disease progression over time in subjects with X-linked retinitis pigmentosa. *Principal Investigator:* Kimberly Stepien

Sponsor: NightStaRx Condition: X linked retinitis pigmentosa

condition. A linked retinitis pignentosa

Inherited Ocular Disease Recruitment Registry

Create an on-site repository of potential study participants with inherited ocular diseases (which includes inherited retinal degenerations) available to researchers affiliated with the Department of Ophthalmology and Visual Sciences within the School of Medicine and Public Health at the University of Wisconsin–Madison. For those who consent to take part in the recruitment registry, they can be contacted about future research trials that they may be eligible for, based on their clinical phenotype/genotype information as documented in the clinical data repository.

Principal Investigator: Kimberly Stepien

Sponsor: UW Dept of Ophthalmology and Visual Sciences Condition: Inherited Retinal Diseases



LEADERSHIP POSITIONS Member

surgery, glaucoma

GARY W.

SPECIALTIES

STERKEN, MD

Comprehensive ophthalmology, cataract

ASSISTANT PROFESSOR

Mauston Physician Leader

School of Medicine and Public Health Clinical Financial Analysis; Community Based Faculty Council

University of Wisconsin Medical Foundation Community Based Faculty Council



THOMAS S. STEVENS, MD PROFESSOR EMERITUS

SPECIALTIES

Vitreoretinal disease, macular disease, diabetic retinopathy, proliferative vitreoretinopathy



MICHAEL C. STRUCK, MD PROFESSOR

SPECIALTIES

Pediatric ophthalmology and strabismus, retinopathy of prematurity, pediatric cataract surgery and intraocular lens implantation, pediatric glaucoma

LEADERSHIP POSITIONS Member

American Family Children's Hospital Intensive Care Unit; Steering Surgeon's Advisory; Tumor Board; Vascular Anomalies; Neonatal Intensive Care Unit

University of Wisconsin Health Clinic Pediatric Surgeons Working Group

School of Medicine and Public Health Tenure Promotions

American Association for Pediatric Ophthalmology and Strabismus International Council of Ophthalmology

UW Faculty Host for Pediatric Ophthlamology Visiting Observing Physicians

CLINICAL TRIALS

Albinism Trial/Vision Response to Dopamine Replacement 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



JOHN E. TEMPRANO, MD ASSOCIATE PROFESSOR

SPECIALTIES Comprehensive ophthalmology, cataract surgery

LEADERSHIP POSITIONS

Member Admissions Committee UWHC - Operations Committee for Madison Surgery Center



ANDREW T. THLIVERIS, MD, PHD

PROFESSOR, VICE CHAIR OF RESIDENT EDUCATION, RESIDENCY DIRECTOR

SPECIALTIES

Comprehensive ophthalmology, cataracts, ocular genetics

LEADERSHIP POSITIONS Member

University of Wisconsin Health Clinic GME Strategic Planning Committee

Chief of Ophthalmology William S. Middleton Memorial Veterans Hospital



EVAN J. WARNER, MD

ASSISTANT PROFESSOR

SPECIALTIES

Cataract surgery, laser-assisted cataract surgery, astigmatism-correcting and multifocal lens implants, bladeless custom LASIK and PRK laser vision correction, cornea and external disease



TERRI L. YOUNG, MD, MBA, FARVO

PETER A. DUEHR PROFESSOR OF OPHTHALMOLOGY, PEDIATRICS AND MEDICAL GENETICS; CHAIR, DEPARTMENT OF OPHTHALMOLOGY AND VISUAL SCIENCES

SPECIALTIES

Pediatric ophthalmology, pediatric and adult strabismus, ophthalmic genetics

LEADERSHIP POSITIONS

University of Wisconsin School of Medicine and Public Health Centennial Scholars Admissions Committee and Scientific Advisory Board

Child Health Research and Career Development Award Committee Genomics/Precision Medicine Task Force and Director Search Committee

LCME Accreditation Task Force

WIMR West Wedge Programming Workshop Committee Co-Chair, Search Committee for the Department of Cell and Regenerative Biology **University of Wisconsin Medical Foundation** Board of Directors

University of Wisconsin Health System

Clinical Capital Advisory Council Funds Flow Subcommittee Clinical Operations Council Strategic Facilities Planning Committee Finance, Audit, and Investment Committee

National Memberships

Marfan Syndrome Foundation, Scientific Advisory Board NIH/NEI - Board of Scientific Counselors NIH, Disease and Pathophysiology of the Visual System Study Section Permanent Member American Board of Ophthalmology Associate Examiner Association of University Professors in Ophthalmology Representative, Joint Commission on Allied Health Personnel in Ophthalmology

International Memberships

Association of Research in Vision and Ophthalmology – Awards Review Committee

Association of Research in Vision and Ophthalmology Foundation – Women in Eye and Vision Research Committee Chair Consortium of Refractive Error and Myopia Genetics International Glaucoma Genetics Consortium

Scientific Journal Editorial Boards

Investigative Ophthalmology and Visual Sciences Experimental Eye Research

CLINICAL TRIALS

Analysis of Genetic Eye Disorders

Identify the gene(s) responsible for developmental causes of blindness in the world. By identifying a gene and that gene's role in this process, new methods of treatment directed at the specific etiology of this disease will become possible. *Principal Investigator:* Terri Young

Sponsor: Unfunded Condition: Hereditary Ophthalmologic Disorders

Molecular Genetics of Myopia

Identify genes 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:* Mvopia

For emeritus faculty, please see page 54



OPTOMETRY FACULTY



Karina A. Conlin, OD Clinical Optometrist



Eugene D. Cropp, OD Clinical Optometrist



Janet X. Cushing, OD Clinical Optometrist



Celeste K. Jend, OD Clinical Optometrist



Tracy A. Klein, OD Clinical Optometrist



Michele M. Martin, OD Optometry Service Chief, Clinical Optometrist



Sanbrita Mondal, OD Clinical Optometrist, Director-Low Vision Clinic, Clinical Adjunct Associate Professor



Nayan R. Patel, OD Clinical Optometrist, Pediatric Optometrist



Richard W. Patterson, OD Clinical Optometrist



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

BREAKING THE MOLD

UW HEALTH OPTOMETRY

The UW Health optometry service has long been heralded by patients and referring doctors for its exceptional level of care. Integral in screening and providing crucial insights, evaluation, and testing, the UW optometrists are often the first line of defense for our ophthalmology subspecialists.

"Patients and referring doctors expect unique solutions here at UW Health, and our patients can benefit from us being a part of the UW Department of Ophthalmology and Visual Sciences," notes Dr. Michele Martin, clinical optometrist and optometry service chief.

One such example is that of Dr. Amy Walker, clinical optometrist and co-vice chair of clinical affairs, and Dr. Karina Conlin, clinical optometrist, are now certified in providing EyePrintPRO molded scleral contact lens – only one of two locations in Wisconsin. The customization process only takes two minutes of set-up on the eye, using a material similar to dental moldings. These specialized lenses provide hope for patients with severe corneal disease by matching the exact contour of any eye, even in the most difficult conditions where other options have failed.

"It's an exciting time to be in optometry at UW," says Dr. Walker, "We've got a great team that works very hard to provide patients with the highest level of care."

T32 GRANT ENABLES VISION RESEARCH TRAINING

Training graduate and postdoctoral students lies at the core of research programs at the University of Wisconsin–Madison.

For decades, scientists in the Department of Ophthalmology and Visual Sciences (DOVS) have mentored and supported such students, teaching them the craft of research and starting them on their path to independent, productive careers in the study of basic and clinical science of blinding eye diseases. Until recently, DOVS has never had an integrated training program dedicated to the visual sciences.

Due to a concerted effort to submit a comprehensive grant application initiated by Drs. Robert Nickells (then departmental vice chair of research) and Terri Young (DOVS chair), a multi-investigator plan was put into place. Professor emeritus Dr. Arthur Polans orchestrated construction of the application, with contributions from Drs. Curtis Brandt and David Gamm (director of the McPherson Eye Research Institute), plus a team of professors and staff throughout the UW campus to create the University of Wisconsin Vision Research Training Program. The efforts have paid off in a big way, with the first-ever award of a T32 Training Grant from the National Eye Institute, National Institutes of Health for the department.

This competitive grant kicked off in September 2018, and will support the training of two graduate students and one postdoctoral student every one to two years. The selected students will engage in a robust program focused on the understanding and exploration of the visual system and its diseases. They will participate in discussions and lectures ranging from the molecular and cell biology of the photo-transduction pathway (the process that converts light into a neurological signal), to the networks of neuronal connections in the retina and the brain, to the clinical management of major ophthalmic diseases. As part of this new program, students will complete a comprehensive course titled, "Introduction to the Visual System", which should be active by the fall of 2019.



Dr. Robert Nickells presenting at the annual Kambara Vision Science Symposium

"We are looking forward to students conducting their own projects in the tradition of 'benchto-bedside' that has been a mainstay of the outstanding research training that makes the University of Wisconsin–Madison famous," says Dr. Nickells, professor and principal investigator for the T32 grant.

AMAZING ALUMNI

Distinguished Alumni Award, 2017 DEVIN HARRISON, MD, COLUMBIA RIVER EYE CENTER, RICHLAND, WA



Dr. Devin Harrison (Residency 1993) took his first job as an ophthalmologist with the King Khaled Eye Specialist Hospital (KKESH) in Riyadh, Saudi Arabia. At KKESH, he gained experience with challenging

eye diseases and was a member of the teaching faculty. After three years, the growing Harrison family moved back to Seattle, Washington where Dr. Harrison became an assistant professor at the University of Washington Department of Ophthalmology. He served as the residency program director for two years.

In 2003, Dr. Harrison and his family moved to Nigeria to fulfill a goal of serving, working, and teaching in a developing country. He taught surgery to resident trainees from West Africa and helped establish a clinic in Jos, Nigeria. Dr. Harrison continues to be involved with international ophthalmology, and most recently traveled to Ethiopia to work with the Himalayan Cataract Project. He currently practices at Columbia River Eye Center in Richland, Washington, and enjoys living in the Tri-Cities, close to other family members.



Distinguished Educator Award, 2017

DANIEL FARY, MD, CLINICAL ASSISTANT PROFESSOR, UNIVERSITY OF WISCONSIN DEPARTMENT OF OPHTHALMOLOGY AND VISUAL SCIENCES



Daniel Fary, MD, has assisted medical and veterinary ophthalmology residents learn cataract surgery in the wet lab since July 1994. He has been a clinical assistant professor since 1985. He continued as a lecturer and instructor for

the UW Department of Ophthalmology and Visual Sciences annual phacoemulsification course for many years, prepping countless learners for their senior-year cataract surgery rotation.

Dr. Fary earned his medical degree from Indiana University and completed his ophthalmology residency at Indiana University Medical Center. He practiced general ophthalmology with an emphasis in cataract surgery, first in Beaver Dam, Wisconsin, and later in Fort Atkinson, Wisconsin until his retirement in 2009.

Alumnus Mentor for India Rotation JEREMY VAN BUREN, MD, PHD, PHOENIX OPHTHALMOLOGISTS, PHOENIX, AZ

Jeremy Van Buren, MD, PhD (Residency 2009) joined PGY-4 residents on the international rotation to Dr. Shroff's Charity Eye Hospital in New Dehli, India, where he mentored residents as they learned extracapsular cataract extraction surgery. One of the highlights for the residents was learning of Dr. Van Buren's insights on career and practice development.

Dr. Van Buren has performed eye surgery in the Philippines, and has presented pharmacology and medical education lectures for the World Health Organization in India.

OUR MISSION COMES TO LIFE

The Department of Ophthalmology and Visual Sciences' (DOVS) International Ophthalmology Initiatives (IOI) program, cochaired by Doctors Yasmin Bradfield and Cat Burkat, is flourishing.

IOI continues its strong relationships with Shroff's Charity Eye Hospital in Delhi, India and the University of São Paolo (USP), Brazil. IOI recently fostered new partnerships with three clinical sites in the Philippines – a nod to Dr. Guillermo "Gil" DeVenecia, retired faculty, and his lifelong commitment to saving sight in the country.

Building on the positive experience with the first clinical research resident from USP, Aline Martin, MD, the department welcomed another resident from USP, Thaisa Barbosa, MD, in the fall of 2018. Dr. Martin contributed to a research study on anti-VEGF therapy and the disorganization of retinal inner layers with Dr. Mihai Mititelu. She particularly enjoyed the diverse nature of her experiences here, the focus of her DOVS research topics, and the rigorous structure and high-caliber educational emphasis of our residency program. Dr. Barbosa is working with Dr. Bradfield on a research study titled, "Fat Adherence and Outcomes after Strabismus Surgery". Financial support for these USP residents' visits was provided by a three-year grant from Combat Blindness International, founded by Professor Emeritus, Dr. Suresh Chandra.

From left: Drs. Jeremy Van Buren, Paul Selid, Umang Mathur, Jennifer Larson, Roman Krivochenitser at Schroff's Drs. Bradfield, Burkat and Terri Young were invited to speak at the 2018 Brazilian Congress as part of the USP exchange, and planning is underway for a post-fellowship visitor in 2020 to research ocular genetics at DOVS.

DOVS senior residents traveled to Shroff's in February 2018, accompanied by Judy Chen, MD, assistant professor of neuro-ophthalmology, and Jeremy Van Buren, MD, a former department resident who practices in Phoenix, Arizona. This is the first time a non-faculty member has traveled with our residents to Shroff's as an attendee.

"One of the goals for our international program is to engage alumni in our mission," according to Dr. Bradfield. "We hope Dr. Van Buren's participation will encourage other alumni to join us as global leaders in saving sight."

The IOI signed a unique three-way memorandum of understanding with Cardinal Santos Medical Center; Tzu Chi Eye Center; and the Pontifical and Royal University of Santo Tomas, in Manila, Philippines. In the fall of 2017, the clinics are organized to provide visiting residents a varied, meaningful clinical experience.

Dr. Braden Burckhard, PGY-3 resident, was the first DOVS resident to participate in this unique experience. He worked clinically at all three venues and traveled to Tacloban City, Philippines to provide much-needed eye care in this underserved location.

...continue reading on page 51







JENNIFER C. LARSON, MD

Jennifer Larson, MD, joined the clinical faculty of the Department of Ophthalmology and Visual Sciences on the comprehensive service in August. She earned an Honors Bachelor of Science–Biomedical Sciences degree from Marquette University in Milwaukee, WI, and then spent the rest of her education as a Badger. She earned her Doctor of Medicine degree from the University of Wisconsin–Madison School of Medicine and Public Health. After spending her intern leap year in the Department of General Surgery, she completed her residency in the Department of Ophthalmology and Visual Sciences where she served as chief resident during her PGY-4 year.

Dr. Larson practices at Deming Way, Madison Eye Associates and UW Health East Eye Clinic.





EVAN J. WARNER, MD

Evan Warner, MD, joined the clinical faculty of Department of Ophthalmology and Visual Sciences in February on the cornea service. He earned a Bachelor of Sciences in Genetics with honors and highest distinction from the University of Kansas in Lawrence, Kansas, and his Doctor of Medicine degree from the University of Wisconsin–Madison School of Medicine and Public Health. After serving a transitional year internship at Aurora–Saint Luke's Hospital in Milwaukee, Wisconsin, he returned to UW–Madison where he completed an ophthalmology residency and subsequent Cornea, External Disease, and Refractive Surgery fellowship in the department.

Before joining our faculty, Dr. Warner was a cornea, anterior segment and refractive surgeon at Moyes Eye Center, Kansas City, Missouri. He practices at Deming Way, University Station and UW Health East Eye Clinic.

MRINALINI HOON, PHD

Mrinalini Hoon, PhD, joined the research faculty of the Department of Ophthalmology and Visual Sciences as a retina cell biologist. She holds a Bachelor of Science degree in Human Physiology from the Calcutta University, Presidency College, Kolkata, India. She then attended the MSc/ PhD Neuroscience program of the International Max Planck Research School at the University of Gottingen, Germany, where she graduated with a Doctor of Philosophy degree. Dr. Hoon joined the Department of Biological Structure, University of Washington as a Senior Fellow. She later became an Acting Instructor at the Department of Biological Structure, University of Washington until she joined the Department this April.

The Hoon Lab studies mammalian retinal development, maturation, disease

VISITING PROFESSORS



Keynote speaker Abbot Clark, PhD, FARVO, at the 2018 Kambara Vision Science Symposium

Mirko Babic, MD, PhD

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

Carol Shields, MD

Professor of Ophthalmology, Thomas Jefferson University Director, Ocular Oncology Service at Wills Eye Hospital *Grand Rounds: "Intraocular Tumors: A Rare Flock of Birds"* December 1, 2017

Dennis P. Han, MD

Medical College of Wisconsin Grand Rounds: "Lean in Ophthalmic Practice" January 19, 2018

Donald Zack, MD, PhD

Wilmer Eye Institute, Johns Hopkins Medical Center Grand Rounds: "Towards a Neuroprotective Strategy for the Treatment of Glaucoma and the Retinal Degenerations" February 23, 2018

Abbot Clark, PhD, FARVO

North Texas Eye Research Institute Keynote Speaker, Kambara Vision Science Symposium: "Discovery of New Glaucoma Molecular Pathogenic Pathways and Novel Therapeutic Approaches" March 16, 2018

Ross F. Collery, PhD

Medical College of Wisconsin Eye Institute Kambara Vision Science Symposium: "Assessing the Roles of Interphotoreceptor Retinoid-Binding Protein (IRBP) and IRBP-like Proteins in the Zebrafish Eye" March 16, 2018

Daniel Lipinski, MSc, DPhil

Medical College of Wisconsin Eye Institute Kambara Vision Science Symposium: "Development of an Inducible Anti-VEGF Gene Therapy for Age-Related Macular Degeneration" March 16, 2018

Markus Kuehn, PhD

University of Iowa, Center for the Prevention and Treatment of Visual Loss, Iowa City Veterans Affairs Medical Center Kambara Vision Science Symposium: "Cellular Strategies for Functional Regeneration of the Trabecular Meshwork" March 16, 2018 Denise Jess, CEO/Executive Director-WI Council of the Blind & Visually Impaired; Jaclyn Borchardt, MS, Program Director-Vision Forward Association; Amy Wurf, MSEd, CLVT-WI Council of the Blind & Visually Impaired; Terri Davis, MS, BSW, Executive Director-Vision Forward Association After the Eye Exam: Vision Rehabilitation Services April 13, 2018

W. Daniel Stamer, PhD

Duke University

Frontiers In Vision Research: "Restoring Conventional Outflow Function: The Next Generation of Glaucoma Therapeutics" June 21, 2018

Eric Pierce, MD, PhD

Harvard Medical School, Massachusetts Eye and Ear Infirmary Grand Rounds: "Gene and Genetic Therapies for Inherited Retinal Degenerations" July 27, 2018

RESIDENTS, FELLOWS, POSTDOCTORAL & GRADUATE STUDENTS

CLASS OF 2019

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

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, PA. 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 her Ocular Pathology Fellowship at UW–Madison.

Alana Trotter, MD

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

CLASS OF 2021

Elaine Downie, MD Dr. Elaine Downie earned her BA in Chemistry at Carleton College in Northfield, MN. Dr. Downie received her MD from the University of Minnesota Medical School in Minneapolis, MN.

Jacob Evans, MD

Dr. Jacob Evans earned his BS in Neuroscience at Brigham Young University, Provo, UT. He received his MD from the University of Iowa Carver College of Medicine in Iowa City, IA.

Maxwell Wingelaar, MD

Dr. Maxwell Wingelaar earned his BS in Biomedical Science from Grand Valley State University in Allendale, MI. He received his MD from Michigan State University College of Human Medicine in East Lansing, MI.

CLINICAL FELLOWS

Nathan Carpenter, MD

Dr. Nathan Carpenter earned his BA in Business Administration and MD from the University of North Dakota, Grand Forks, ND. Dr. Carpenter completed his residency at Case Western Reserve University Hospitals Cleveland Medical Center in Cleveland, OH. Study Area: Pediatrics

Lisa Nguyen, DO

Dr. Lisa Nguyen earned her BS in Biochemistry from the University of Texas, Austin, TX. Dr. Nguyen earned her MD and completed her ophthalmology residency training at St. John Providence Macomb–Oakland Hospital in Madison Heights, MI. Study Area: Glaucoma

Zackery Oakey, MD

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. *Study Area: Retina*

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CLINICAL FELLOWS

Kathleen Regan, MD

Dr. Kathleen Regan earned her BS in Psychology from Pennsylvania State University, State College, PA. She received her MD from Jefferson Medical College in Philadelphia, PA and completed her ophthalmology residency training at the University of Florida in Gainesville, FL. Study Area: Retina

Paul Selid, MD

Dr. Paul Selid earned his BS in Chemistry and MD from the University of North Dakota, Grand Forks, ND. He completed his ophthalmology residency training at UW– Madison. Study Area: Cornea

Suzanne Van Landingham, MD

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. *Study Area: Oculoplastics*

PRE-RESIDENCY PATHOLOGY FELLOWS

Dr. Meghana Agni completed medical school at Drexel University College of Medicine in Philadelphia, PA. She has joined us for a pre-residency ocular pathology fellowship.

Chandana Papudesu, MD

Dr. Chandana Papudesu completed medical school at the Medical College of Georgia at Augusta University in Augusta, GA. She joins us for a pre-residency ocular pathology fellowship.

POSTDOCTORAL STUDENTS

Ian Holmen, MD Research Fellow Fundus Photograph Reading Center Study Area: Retinal Imaging

Nasim Jamili Postdoctoral Research Associate Nader Sheibani Research Lab Study Area: Retinal Angiogenesis, Vitamin D, Retinopathy of Prematurity

Eric Nguyen Postdoctoral Research Associate Nader Sheibani Research Lab Study Area: Vascular Toxicology

Divya Sinha, PhD Research Associate David Gamm Research Lab, Waisman Center Study Area: Stem Cell Research Program

GRADUATE STUDENTS

Ryan Donahue Graduate Student/Research Assistant Robert Nickells Research Lab Study Area: Molecular Pathology of Neurodegenerative Disease

Juliana M. Falero-Perez Graduate Student/Research Assistant Nader Sheibani Research Lab Study Area: Molecular & Environmental Toxicology

Yong-Seok Song Graduate Student/Research Assistant Nader Sheibani Research Lab Study Area: Molecular & Environmental Toxicology

MEDICAL STUDENT EDUCATION

MOVES FORWARD

One hundred years ago, the Wisconsin Legislature granted the University of Wisconsin Graduate School's two-year College of Medicine permission to begin planning a four-year course in medicine.

In the 92 years since the first clinical students arrived on campus, the Medical School has stood at the vanguard of medical education innovation and clinical discovery. From an alphabet soup of vitamin discoveries to Medical School Dean William Middleton's novel "preceptorships" program wherein senior medical students are assigned to work with community practitioners throughout Wisconsin, the school has a long tradition as pioneers in medical education. However, the core structure of medical student education – four years of study (two of basic science followed by two of clinical experiences) had been the norm for almost a century.

In 2016, instead of a four year study model, the UW School of Medicine and Public Health (SMPH) shifted this paradigm with the introduction of the ForWard Curriculum. The ForWard Curriculum features three phases, each with unique blocks that fully integrate basic, public health and clinical sciences.

Patient speaking with ophthalmol

"We medical student educators recognized and have been discussing for years, that today's healthcare requires a different type of physician," states Daniel M. Knoch, MD, associate professor and director of medical student education, "In many ways the students are actually driving the new curriculum. Armed with a library of medical information in their pockets and a thirst for relevance, they are resetting the baseline of what and how they learn."

The new ForWard curriculum focuses on teambased learning in small groups, with hands-on applications of new knowledge in clinical and community settings, in order to motivate this new type of learner.

"When you can relate what you learn in the didactic sessions to something that happens in the clinic or operating room within a few days, the integrated knowledge stays with you."

— Timothy Choi

Dr. Knoch was highly motivated to engage with the new curriculum design for the ophthalmology rotation based on several new challenges. In 2013, SMPH canceled the rotation which Dr. Knoch directed since joining the department in 2007 – a required week of a four-week neuroscience clerkship. He made the strong case that every practicing physician needs to know basic ophthalmic clinical care. "I frequently get notes from former students who are now emergency room physicians or in primary care practices, letting me know that a piece of something they learned during their rotation with us years ago was key in a diagnosis or trauma situation."

Dr. Knoch frequently met with the medical curriculum design team, and, bolstered by the Association of University Professors of Ophthalmology Medical School Education Council and American Academy of Ophthalmology's white paper outlining the curriculum that every medical student should master prior to graduation, ophthalmology instruction found a home in the Phase 2 Block of the ForWard curriculum in Surgical and Procedural Care.

Dr. Knoch (left) and Timothy Choi (center) examining patient.

The ophthalmology education team is currently designing a four-week rotation in the Phase 3 Block, Career Focused Basic Science that should be active in 2019.

Timothy Choi (pictured above with Dr. Knoch and a patient), a medical student who participated in the first Phase 2 ophthalmology selective, is enthusiastic about the new curriculum and his enhanced learning experience.

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FORWARD CURRICULUM KEY FEATURES

Medical students will be now be required to show competency in the following areas, mirroring competencies already required for graduation from accredited residencies:

- Patient care
- · Practice-based learning and improvement
- Systems-based practice
- Professionalism
- Interpersonal and communication skills
- Knowledge for practice

A RAPIDLY CHANGING HORIZON

The Inherited Retinal Degeneration Team from left: Nickie Stangel, Dr. Melanie Schmitt, Dr. Kimberly Stepien, Elizabeth Kulom, and Rachel Marcella Sullivan

A BOLD FUTURE FOR UW'S INHERITED RETINAL DEGENERATION CLINIC

Upon arriving at UW–Madison and UW Health Eye Clinics in 2016, Dr. Kimberly Stepien knew exactly what she envisioned for her patients with inherited retinal degenerations: a patient-focused clinic specifically dedicated to providing inclusive care to individuals with genetic mutations that can result in vision loss or blindness. Expanding an already strong ocular genetics program at UW–Madison, Dr. Stepien, director of the adult Inherited Retinal Degeneration (IRD) clinic and co-vice chair of clinical affairs, teamed up with Dr. Melanie Schmitt, director of the pediatric IRD clinic, to take their patient care experiences to the next level. The result is a focused team of subspecialists, genetic counselors, study coordinators, photographers, technicians and schedulers, all of whom work to provide patients with highly-individualized care for their inherited retinal degenerations.

"We aim to give our patients the best available information about their inherited disease(s)," says Stepien, "Often, individuals have been misdiagnosed or the technology or knowledge at the time of their initial diagnosis simply didn't exist to give them the information and answers we can today. Many times, we can provide information that potentially impacts multiple generations in their families positively, giving them more control of their eye health in ways that just were not possible before."

Patients and their families often begin their IRD experience with a two to three hour consultative appointment where a comprehensive ophthalmic exam is performed, ocular imaging is acquired, past medical and ocular history are discussed, and a family pedigree is documented. Patients also have the opportunity to meet with on-site genetic counselors, Elizabeth Kulom and Rachel Sullivan, to discuss genetic testing. If applicable, samples for genetic testing can be acquired during the same appointment. "We know how hard it is for visually impaired patients to travel to appointments so we strive to bring as many resources to their clinical experience as we can." states Dr. Stepien.

"We also take the time to understand how vision changes affect our patient's lives. Often, I will make referrals to low vision services (*See Sight Saving Partnerships*, page 12) and help them understand "Many times, we can provide information that potentially impacts multiple generations of their families positively"

- Dr. Kimberly Stepien

how lifestyle changes like eating healthy, avoiding extreme sunlight, and not smoking are especially important for them." says Dr. Stepien. "Lastly, I like to update patients on the current research for their disease, and provide resources. It is truly an exciting time for IRDs, as we saw this past year the first FDA-approved treatment for an IRD. Hope goes a long way."

"The pediatric patients and their families I work with benefit directly from having access to more information about their diagnosis. This personalized information provides additional support and learning resources to continue their own growth and development," says Dr. Schmitt. "We're having in-depth conversations and providing a prognosis that impacts how these kids move throughout their lives."

The IRD clinic at UW–Madison provides opportunities for UW Health patients and referring clinicians to interact with one another, using specialized tools and technology to present relevant and actionable plans for patients. Since the clinic's launch, a second genetic counselor was added to keep up with the demand for this service. Clinical trials to treat IRDs have increased largely in part to the efforts of both Drs. Stepien and Schmitt, along with a committed team of study coordinators in the clinical trials unit, particularly Nickie Stangel. Several clinical trials dedicated to better understanding and treating IRDs are currently underway, including the first ocular gene therapy trial at UW–Madison aimed at treating choroideremia.

Future plans include expanding imaging capabilities – both clinically and in the operating room – in order to improve knowledge and treatment of IRDs. The IRD clinic is working with UW Hospital to purchase an intra-operative OCT imaging device that would afford clinicians the capability to perform gene replacement procedures and stem cell therapies directly into the eye with image-guided sub-retinal injections.

"The more we listen to our patients and their families, the better their care experience becomes – from basic information to the evolving research and treatments available, and to improving the facilities we provide care in," says Dr. Stepien. "This is precisely why establishing this clinic was imperative for us. My patients inspire me, overcoming seemingly overwhelming obstacles every day due to their vision challenges. It drives me to create the best care experiences for them and we are all very proud to see it taking shape."

WHAT IS AN INHERITED RETINAL DEGENERATION?

Inherited retinal degenerations (also called diseases or dystrophies) are rare eye disorders that can result in vision loss or blindness and are caused by inherited genetic mutations. In most cases, patients experience progressive vision loss that can result in legal blindness. Common IRDs and retinal disorders include retinitis pigmentosa (RP), Stargardt disease and choroideremia (CHM). Being born with or experiencing vision loss in infancy or early childhood are common with several gene mutations associated with Leber congenital amaurosis (LCA).

IRD PATIENTS GIVE US NEW PERSPECTIVES

"I'm far from fearless, I just refuse to live in fear. I've learned living in fear is really easy, but does not make for a productive and enjoyable life" — Joe Tiner Receiving the diagnosis that you will lose your sight, or that you or your child will never have sight, is devastating. Yet patients leave our clinics to navigate the world without critical next steps or resources. We've heard this time and again and the creation of the IRD and Low Vision Clinics (*See A Rapidly Changing Horizon, page 34*)

are two examples of how The Department of Ophthalmology and Visual Sciences is working toward filling the gaps in the patient experience at every UW Health Eye Clinic. Meet IRD patients who implore us to mind our gaps.

Annika Conrad, PhD, has dedicated her research to the experience of going blind. She has focused on the term, "Access Fatigue" that explores the many ways the blind and visually impaired have to justify their disability and make others comfortable with it. As someone who has studied this process extensively, and also as a patient of the IRD Clinic, she is working to ensure that others in our care receive the resources they need at the point of diagnosis, instead of navigating the news of blindness without a clear next step or appropriate support.

Wendi Dwyer is a non-profit development professional. As the Executive Director of Literacy at the Well, she co-founded the program to provide reading instruction at wells in South Sudan where women and girls wait for hours every day to get drinkable water for their families. Wendi has spoken at the UN, UNESCO, The Library of Congress Literacy Awards and Lion Clubs International Conventions across the world to advance this critical program.

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Annika Conrad, PhD, Wendi Dwyer and Mukwa

MIA'S PARALYMPIC DREAM

From Eye Diagnosis to The Paralympics

Mia Zutter had a very happy, active childhood growing up in Sun Prairie. Her favorite sport was figure skating. But in late elementary school and early middle school she noticed problems with her vision.

"I went in for a normal eye exam and I did really badly. Everyone was worried and sent me to a specialist," Mia said.

The Zutters met Dr. Dave Gamm, UW Health pediatric ophthalmologist in Madison, the summer before Mia started seventh grade. He diagnosed her as having a genetic eye disorder called Stargardt retinal dystrophy. Mia's condition progressed and she eventually lost her central vision.

"The work we are doing at the McPherson Eye Research Institute is aimed at one day improving the vision of people like Mia,"

– Dr. David Gamm

Mia describes her vision as a cloudy, foggy, blurred central image. She states that nothing is black and she can see out of the side, but not straight ahead. She cannot drive and it takes her longer to read something, but she has adapted.

Just three and a half years ago, Mia tried her hand at skiing based on a family friend's recommendation. It turned out to be a good decision. She uses a guide for competitive crosscountry skiing (Nordic skiing). Races have taken her all over the United States. She found success and a passion.

Mia received news in February that she qualified for the 2018 Paralympics in South Korea based on her World Cup performance in Canmore, Alberta Canada in December.

"It is amazing. I worked so hard and it was such an honor to represent my country," said Zutter.

Zutter had to qualify in races but there was also a lengthy process that took place at UW Health behind the scenes.

"There was an incredible amount of testing and paperwork that needed to be completed to prove she has a blinding disorder," said Gamm. "The Olympic committees take it very seriously, as they should, so we had to prove Mia had Stargardt disease and she fit into a category to qualify as a Paralympic athlete."

Leading the way was Darla Coullard, an ophthalmology technician, who works with Dr. Gamm at UW Health. She handled all the organization of records and getting the right documents to the right people at the Paralympics.

Learn more about Mia online at: *eyes.wisc.edu/mia-zutter*

IN OUR SIGHTS

Dr. Melanie Schmitt examines a pediatric patient

PATIENT CENTERED CARE

In 2013, UW Health Eye Clinics faculty and staff recognized a need to improve clinic processes, so an internal dedicated team was developed. That nascent idea evolved into establishing the Quality Improvement Steering Committee (QISC) comprised of faculty and clinical leadership that interfaced with UW Hospital QI leadership. The QISC supports clinical staff individually and in teams with engagements in testing, piloting and implementing redesigned clinical work efforts, with the goal of ensuring the sustainability of process improvements.

"Our providers have consistently received positive patient feedback for their attentiveness and care, but when we dug into patient survey data, we recognized an opportunity to streamline and better the way patients experience the clinic as a whole," said Dr. Gregg Heatley, associate professor of ophthalmology and one of the leaders of the QI team.

In 2017, Dr. Terri Young, department chair and professor of ophthalmology, continued to build on the work by the QI team by employing and adding a lean-modeling consultant and his team to the department. "Our QISC has been an influential force in improving standardization of internal clinical functions to ultimately enhance the patient experience," Dr. Young explained. "Since our providers and supporting clinical staff knew the clinic inside and out, they contributed thoughtful and meaningful ways to create change on a micro-level. My vision for bringing in a lean-modeling consultant was to advance those efforts by identifying cultural and institutional challenges to make substantive change on the macro-level."

Aneesh Suneja, consultant and president of FlowOne, Inc., spent the first few months of the partnership analyzing the clinic and macro processes that needed a different approach. Next, with staff input and education, changes were implemented. Examples of the advancements completed in the past year include adding real-time patient wait time tracking screens, installing a refrigerator and other necessary consumables centrally in the retina service pod to reduce the turnaround time for ocular injections, optimizing scheduling templates, promoting technician and photographer cross-training,

redesigning patient flow to reduce the number of footsteps for both the providers and patients, reorganizing examination rooms by embracing lean 5S principles, and increasing teamwork among providers and staff. The front-line staff and administrative leadership have achieved a cultural transformation with these measures,

"...we recognized an opportunity to streamline and better the way patients experience the clinic as a whole."

- Dr. Gregg Heatley

and the efforts are paying off. In July of 2018, the UW Health University Station Eye Clinic Surgery Scheduling Team, which consists of nurse practitioners, registered nurses and surgery schedulers, was recognized with a 2017 UW Health Patient and Family Experience Clinic Team Award.

Dr. T. Michael Nork examining an adult patient

Clinician taking retinal photos of a patient

The team received this award based on patient survey feedback, and it underscores the value of the work initiated by the QISC and enhanced by FlowOne. Currently, new clinical staff teams are forming to address upcoming waves of process improvements in areas such as triage and ancillary testing.

The knowledge, experience and data documented as a result of this endeavor highlights the need not only for continued process improvement, but also for updated and consolidated UW Health Eye Clinic facilities to provide efficient and consistent care focused on the overall patient experience. A central, flagship eye care facility with modern, state-of the art, patient-oriented features is in the planning stages to provide diagnostic, interventional, research and physical accommodations that live up to the exemplary level of care we already provide. A central location to provide patients with all the clinicians, diagnostic resources, research and physical accommodations that live up to the level of care we already provide. This is an audacious goal, but it is one that is possible because of these persistent and impactful efforts.

BY THE NUMBERS 113,860+ PATIENT VISITS IN 2018.

TRANSLATION INNOVATION

MEET CHRISTINA THOMAS-VIRNIG, PHD

Dr. Thomas-Virnig (pictured at left) is the translational research facilitator — a new role within the department — helping UW– Madison remain one of the premier clinical research institutions in the country. Her work includes advancing ongoing studies and trials currently in development, in addition to partnering with clinicians to pursue research efforts to identify new therapies for treating eye diseases and studies of the basic mechanisms behind eye diseases. Below, we talk to her about her goals for her role in the department.

What are your hopes for this role at UW?

I want to take the innovative research discoveries and ideas from the bench into the clinic. I have a robust understanding of the stages of therapeutic development, from inception to clinical

testing and hope to provide guidance, and facilitate collaboration amongst faculty, staff and learners.

What will your initial focus areas include?

The stages of testing and development encompass a complex array of steps. At each stage, funding must be secured to facilitate entry into the next stage of development. Working in concert with other disciplines is critical for creating change and moving ideas forward, so I hope to promote these interactions and act as a resource for those pursuing this pathway. A starting point is an appreciation of the active research being done in the department and how these ideas may eventually help in patient care. The importance of cross-campus collaboration is being recognized by UW–Madison through investment in several recent programs that foster these interdisciplinary relationships and I anticipate that the department will also benefit from them.

How do you envision patients benefitting from this new role?

The ultimate goal of my work is to assist in the enhancement of human health and quality of life. The decision making process should always have patients at the forefront of the idea. In the short term, I think we have innovative ideas that will impact clinical trials in the near future. In the long term, I hope these ideas will take hold and become standards in the field to aid in patient outcomes.

CLINICAL EYE RESEARCH UNIT

The Clinical Eye Research Unit Team: Nickie Stangel, Angie Adler, Jennie Perry-Raymond, Kristine Dietzman, and Christopher Smith

FEARLESS INNOVATION

The Clinical Eye Research Unit at the University of Wisconsin–Madison has conducted research with human subjects for over 30 years. These trials are designed to evaluate the safety and efficacy of new, promising procedures aimed at combating ophthalmic diseases. Our department has developed new laser treatments, oral medications, intravenous medications, intravitreal injections, surgeries, vitamins, minerals and devices.

Clinical trials are a valuable means of providing potential alternative treatments for our patients, and 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 EYE RESEARCH UNIT TEAM

Jennie Perry-Raymond Clinical Trials Administrator

Angie Adler Study Coordinator and Regulatory Specialist

Kristine Dietzman Study Coordinator

Christopher Smith Study Coordinator

Nickie Stangel Study Coordinator

IN BOLD PURSUIT OF A VISION

Kleins sailing around Vancouver, circa 1992

THE KLEIN LEGACY AFTER 40 YEARS

Doctors Ronald and Barbara Klein joined the University of Wisconsin School of Medicine and Public Health in the 1970s to pursue their interest in vision and ocular research. In particular, they were interested in diabetic retinopathy and common age-related eye diseases. Their research approach was informed by their training in epidemiology and public health. Thus, they enrolled defined population-based samples of participants who were followed over many years in the studies that have come to be known as the Ocular Epidemiology Research Group (OERG).

The first of these studies was the Wisconsin Epidemiologic Study of Diabetic Retinopathy (WESDR). The original National Institutes of Health-National Eye Institute funding was for five years. Further questions arose from this phase of the study and the group was successful in obtaining subsequent funding to continue and expand on the findings from this study. Ultimately, the group successfully competed for

funding for nearly 40 years, with supplemental funding from the Retina Research Foundation. The thrust of the diabetes studies was to determine the frequency and severity of complications from type 1 and type 2 diabetes – including retinopathy, kidney diseases, vascular diseases, amputations and functional correlates of these conditions, as well as potential risk factors, such as glycemic control, blood pressure, reproductive factors and more. In addition, relationship of changes in health care practices to complications has been obtained. Data from the WESDR was important

"The Kleins' work... provides the basis for much of the world's efforts to alleviate blindness"

 John Kempen, MD, MPH, PhD, MHS International Expert in Vision Science and Ophthalmic Epidemiology

in the development of educational programs for patients, like the National Eye Health Education Program guidelines.

While the WESDR was actively accumulating information about diabetes, the Kleins began a different study focused on common age-related eye diseases in an American community – Beaver Dam, Wisconsin. Starting in 1988, the Beaver Dam Eve Study (BDES) examined approximately 5,000 persons from that community, and came back into the community for additional examinations every 5 years afterwards for the next 25 years. This study collected information on the prevalence and incidence of age-related cataract, age-related macular degeneration and diabetic retinopathy all common eye diseases in an aging population. The study also examined other aging issues, such as overall health and frailty, quality of life and related environmental and medical exposures. Data from the BDES indicate that people 75 years of age or older, the cumulative incidence of visual impairment after accounting for the competing risk of death is 25%, of which 4% is severe. This finding reveals a public health problem of considerable magnitude, as the US population in this age group is expected to increase by 55% from 18 million in the year 2005, to 28 million by the year 2025.

"The Kleins' work directly measuring the prevalence and incidence of eye disease in the general population — both in Beaver Dam and other population-based studies — is foundational

for understanding the burden of eye disease in the United States, and increasingly the global burden of eye disease. This information provides the basis for much of the world's efforts to alleviate blindness" said John Kempen, MD, MPH, PhD, MHS, an international expert in vision science and ophthalmic epidemiology at Massachusetts Eye and Ear.

Although the Kleins' legacy continues to contribute to the body of vision science, and ultimately to the future of vision health, their last NIH grant will end in 2019. The Ocular Epidemiology Research Group's remaining members are moving on, however, the methods employed in the Kleins' studies will endure as epidemiological and medical researchers worldwide have adapted them.

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PUBLICATIONS

The Department of Ophthalmology and Visual Sciences is proud to be a leader among our peer institutions in publication output year after year. Our success is the result of collaborations with one another, across campus and all over the world on everything from age-related macular degeneration to gene therapies. The list below represents all peer-reviewed publications from November 1, 2017 through September 15, 2018.

AGE-RELATED MACULAR DEGENERATION

Klein R, Lee KE, Maynard JD, Meuer SM, Gangnon RE, Klein BE. Skin Intrinsic Fluorescence and Age-Related Macular Degeneration: The Beaver Dam Eye Study. Invest Ophthalmol Vis Sci. 2017 Dec 1;58(14):6328-6333.

Cruickshanks KJ, Nondahl DM, Johnson LJ, Dalton DS, **Fisher ME**, Huang GH, **Klein BE**, **Klein R**, **Schubert CR**. Generational Differences in the 5-Year Incidence of Age-Related Macular Degeneration. JAMA Ophthalmol. 2017 Dec 1;135(12):1417-1423.

Qiu C, Ding J, Sigurdsson S, Fisher DE, Zhang Q, Eiriksdottir G, **Klein R**, van Buchem MA, Gudnason V, Cotch MF, Launer LJ. Differential Associations Between Retinal Signs and CMBs by Location: The AGES-Reykjavik Study. Neurology. 2018 Jan 9; 90(2):e142-e148.

Jabs DA, Van Natta ML, **Pak JW**, **Danis RP**, Hunt PW. Association of Retinal Vascular Caliber and Age-Related Macular Degeneration in Patients with the Acquired Immunodeficiency Syndrome. Invest Ophthalmol Vis Sci. 2018 Feb 1;59(2):904-908.

Farnoodian M, Sorenson CM, **Sheibani N**. PEDF Expression Affects the Oxidative and Inflammatory State of Choroidal Endothelial Cells. Am J Physiol Cell Physiol. 2018 Apr 1;314(4):C456-C472.

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BY THE NUMBERS

#1

IN PUBLICATION PRODUCTIVITY IN US ACADEMIC OPHTHALMOLOGY PROGRAMS PER FACULTY MEMBER.*

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

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MEDICAL STUDENT EDUCATION MOVES FORWARD

...continued from page 33

Timothy Choi (left) and Dr. Knoch (right) preparing for an appointment

Dr. Knoch continues to improve the ForWard curriculum and medical student education as a whole. His passion for teaching medical students resulted in Dr. Knoch's selection as a co-director of the Surgical and Procedural Care Curriculum in partnership with Ann P. O'Rourke, MD, MPH, FACS, associate professor in acute care surgery, burn and surgical critical care. Dr. Knoch believes he and Dr. O'Rourke make a good team and have a mutual goal to learn from this first year of the Phase 2 curriculum, and adjust and make enhancements as needed.

Nationally, Dr. Knoch drives his educational approach and passion forward through his posts as a member of the AUPO MSE Curriculum Committee, Program Committee and Council, as well as chairing the MSE AAO Website Committee. For his efforts at the national and local level on behalf of medical student education, he received AUPO's 2018 Excellence in Medical Student Education Award.

SMPH is among the few innovators currently involved in the implementation of this integrated, hands-on curriculum. "It is an extremely exciting time to be an ophthalmology medical student educator, and I look forward to the challenges ahead," says Knoch.

MIND THE GAP

...continued from page 36

She recently returned to her hometown of Madison and is the new Development Director at the Literacy Network of Dane County. She recently completed the Leader Dogs for the Blind program with her new dog, Mukwa (meaning "bear" in Ojibwe). Wendi is committed to public education efforts to break down stigmas, create awareness, and to help blind and visually impaired individuals secure employment.

Joe Tiner, MEd, is an office assistant at Colorado State University for the Student Disability Center and the Assistive Technology Resource Centers. He traveled from Colorado to UW–Madison with his longtime friend and low vision academic teacher, Sheryl Herlevich, to visit the IRD Clinic for a second opinion on his childhood diagnosis.

He works tirelessly to help provide resources, better access, and technology to people with disabilities. Joe desires to build a more inclusive community for visually impaired students on his campus.

Dr. Kimberly Stepien with an IRD patient

IN BOLD PURSUIT OF A VISION

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The Kleins in 2006

James Onofrey, long-time administrator for the Kleins' grants, reflects on their audacious pursuit of a vision. "They had the confidence to seek NEI-NIH funding for this type of study and the moxie to convince entire communities to continue their participation across the years. They maintained a long-standing research team to recruit, examine and re-examine these populations for more than three decades. This type of work can only be taken on by the most unflappable and determined researchers," says Onofrey. "Patients in ophthalmology, diabetes, cardiovascular and geriatrics care have benefited without knowing the contributions made by these two researchers and their team. Both patients and researchers in places as far flung as the Netherlands, Australia and Singapore have benefitted from, and been inspired by, the research conducted by the Kleins. The ophthalmology world and the University of Wisconsin in particular owe them a debt of gratitude."

OUR MISSION COMES TO LIFE

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"We have accomplished a lot and are poised to move forward, improve our current programs and take on exciting new opportunities," says Dr. Burkat. "Everyone has put in a lot of work and we owe a special thanks to Hannah Lloyd, who joined the department as our IOI and fellowship coordinator this spring. Her insight and experience have been invaluable in taking the program to the next level."

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