# Table of Contents

2  Year-In-Review

6  Patient Care

12  Education

16  Research

26  New Division of International Ophthalmology

27  New Eye Clinic at Deming Way

28  Clinical & Research Faculty & Staff

30  Clinical Trials

33  Awards, Lectures & Publications

36  Donor Honor Roll

37  Revenue Summary

37  Volunteer & Affiliate Faculty Members

38  Grants

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**Cover Photos:**

Left: A fluorescence microscopy image of cells expressing a herpes simplex virus (HSV) protein that controls the life cycle of the virus. The blue staining shows the cells' DNA, and the red staining is the HSV protein. (Courtesy: Curtis Brandt, PhD)

Center: UW ophthalmic facial plastic surgeon Mark Lucarelli, MD.

Right: A three-dimensional spectral domain optical coherence tomography (OCT) image, showing a cross-sectional slice of a hole in a patient’s macula, with extensive vitreous floaters (deep blue “cloud” at top of cube) above a detached vitreous. (Courtesy: Denise Krolik)
As you sat here and thought about your future... did you think about the future of your University?

Along with classes, work, and occasional fun, college years are filled with dreams and plans for the future. Many of those dreams have been achieved. Now, with a planned gift, you can help future Department of Ophthalmology and Visual Sciences’ students and faculty achieve their dreams.

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For our Annual Report this year, we have chosen the theme “Frontline Ophthalmology,” which illustrates the commitment of the UW Department of Ophthalmology and Visual Sciences to be at the forefront of this complex, evolving field. In the following pages, you will learn about the challenges our faculty and staff face as they work on the front lines of ophthalmology to fulfill our mission of delivering first-rate patient care, education and research.

The patient care story describes how a multidisciplinary team of UW subspecialists treated a patient suffering from the vision-threatening and disfiguring effects of Graves’ ophthalmopathy, an autoimmune inflammatory condition also known as “thyroid eye disease.” Through a carefully planned strategy and series of surgeries, neuro-ophthalmologist Leonard Levin, MD, PhD, pediatric and adult strabismus specialist Burton Kushner, MD, and ophthalmic facial plastic surgeon Mark Lucarelli, MD, restored the patient’s vision, her appearance and her life.

The education story takes you to the front lines “on call” in the emergency room, as UW attending ophthalmologists educate our ophthalmology residents in the diagnosis and surgical repair of complicated eye trauma injuries. As explained by Daniel Knoch, MD, Heather Potter, MD, and Wanda Martinez, MD, PhD, our faculty physicians have a passion for teaching and mentoring the professional growth of young physicians, matched only by the residents’ passion for learning.

The research article describes how our faculty researchers, even as they track the elusive mechanisms of eye diseases, must also find alternative sources of funding from industry to support their laboratories. Federal funding continues to shrink, and academic/industry research agreements provide researchers with additional sources of funding. But these interactions with industry also benefit ophthalmology as a whole, by bringing the much-needed expertise of department researchers into the frontline development of new drugs and devices. Academic/industry interactions, says research faculty member Curtis Brandt, PhD, are a service he provides as part of the Wisconsin Idea, to benefit the economic climate of Wisconsin and the health of its citizens.

Also in this Annual Report for 2007, we introduce two new physicians to our faculty—glaucoma specialist Julia Agapov, MD, DO, and comprehensive ophthalmologist Daniel Knoch, MD—along with our new, state-of-the-art UW Health Eye Clinic at Deming Way and our new Division of International Ophthalmology. In addition, we present the research activities; new clinical trials; and numerous national awards, recognitions and published research of our faculty.

I sincerely hope you enjoy this report, sent to you from the front lines of ophthalmology.
New Clinic
In September 2007, the newly constructed UW Health Eye Clinic at Deming Way opened its doors. This spacious, state-of-the-art eye care facility is a consolidation of two UW Health Eye Clinics and optical shops from 1 South Park Street and 7102 Mineral Point Road, with expanded facilities to accommodate more comprehensive eye care providers. A combined team of seven ophthalmologists, five optometrists, technicians, optical staff and administration offer a full array of comprehensive eye care services—including refractive surgery screenings, medical treatment of retinal disease, and care of patients with diabetes, glaucoma and cataracts.

New Physicians
Julia Agapov, MD, DO, has joined the department as a glaucoma specialist, after completing a glaucoma fellowship at Indiana University School of Medicine in Indianapolis. She received her medical degree from Russian State Medical University, Moscow, Russia, and a doctor of osteopathy degree from New York College of Osteopathic Medicine in Old Westbury, N.Y. She completed her internship at Nassau University Medical Center, East Meadow, N.Y., and her residency at Metropolitan Hospital in Grand Rapids, Mich. Dr. Agapov sees patients at University Station Eye Clinic in Madison.

Daniel Knoch, MD, has joined the department as a comprehensive ophthalmologist following completion of his residency at University of Wisconsin Hospital and Clinics in Madison, where he served as chief resident during his third year. He completed his internship at St. Luke’s Medical Center in Milwaukee. Dr. Knoch sees patients at University Station Eye Clinic and East Eye Clinic in Madison.

Accomplishments in Patient Care
Clinician Awards
Eight ophthalmologists from the UW Department of Ophthalmology and Visual Sciences were named to the Best Doctors in America® list for 2007. They are:

Richard E. Appen, MD
Neal P. Barney, MD
Barbara A. Blodi, MD
Yasmin S. Bradfield, MD
Gregg A. Heatley, MD
Paul L. Kaufman, MD
Burton J. Kushner, MD
Leonard A. Levin, MD, PhD

Courses & Conferences
The Seventeenth Biennial University of Wisconsin Orbital Anatomy and Dissection Course was held on March 2, 2007, at the Clinical Sciences Center at University of Wisconsin Hospital and Clinics. With more than 30 medical students, ophthalmology residents, and fellows participating, the course introduced attendees to orbital and facial dissections, in addition to providing didactic lectures and discussions. UW oculoplastics specialists Cat Burkat, MD, and Mark Lucarelli, MD, along with UW ophthalmic facial plastic surgery fellow Alon Kahana, MD, PhD, directed the course.

The Wisconsin EyeMD Spring Symposium was held on May 11-12, 2007 at the American Club in Kohler, Wis. Guest speakers at the symposium included the McPherson lecturer, David Wilson, MD, chair of the ophthalmology department and director of the Casey Eye Institute at Oregon Health and Science University in Portland. Dr. Wilson discussed “Surgery of the Eye: A Clinicopathologic Study of Cataract, Glaucoma, Cornea and Retina.” The Kambara lecturer at the symposium was Alfred Sommer, MD, MHS, professor and dean emeritus of the Johns Hopkins Bloomberg School of Public Health in Baltimore, Md. Dr. Sommer presented “A Primer on Global Health.” This event for Wisconsin ophthalmologists was a collaborative effort by the UW Department of Ophthalmology and Visual Sciences, the Eye Institute of the Medical College of Wisconsin and the Wisconsin Academy of Ophthalmology.

The 11th Biennial University of Wisconsin Clinical Neuro-Ophthalmology Symposium, was held on September 7-8, 2007, at the Edgewater Hotel in Madison, Wis. Featured guest speakers were 3

Accomplishments in Education
Accomplishments in Education continued

Valerie Biousse, MD, Cyrus H. Stoner Professor of Ophthalmology and Associate Professor of Neurology, Emory University, Atlanta, Ga.; and Andrew Lee, MD, Professor of Ophthalmology, Neurology and Neurosurgery, University of Iowa in Iowa City. Dr. Biousse discussed “Optic Neuritis and Its Mimics,” “Amaurosis Fugax in the 21st Century,” and “Head Trauma and Abnormal Vision.” Dr. Lee’s topics were “Working Up the Pale Optic Disk,” “Double Trouble” and “Non-Organic Vision Disorders.”

The Midwest Regional Phacoemulsification Course was hosted at the UW School of Veterinary Medicine on October 12-13, 2007. The course, an annual event, provides experience in modern cataract surgery to residents in both ophthalmology and veterinary science, through lectures and wet laboratory practice using state-of-the-art equipment.

Accomplishments in Research

Researcher Awards
Several of our faculty were recognized by national organizations in 2007 for their contributions to vision research. These include:

- Daniel M. Albert, MD, MS
  Lucien Howe Medal, American Ophthalmological Society

- Michael M. Altaweel, MD
  Honor Award, American Academy of Ophthalmology

- Ronald P. Danis, MD
  Senior Achievement Award, American Academy of Ophthalmology

- Paul L. Kaufman, MD
  Distinguished Service Award, Association for Research in Vision and Ophthalmology

- Barbara E. K. Klein, MD, MPH
  James M. Barr Award for Outstanding Retina Research Achievement, Retina Research Foundation

- Ronald Klein, MD, MPH
  Senior Achievement Award, American Academy of Ophthalmology

National Institutes of Health Funding
In 2007, the National Institutes of Health funded 21 awards to the department, for a total of $8,056,228. Among these awards is a $2 million vision core grant, which allows the department to offer its expertise and unique services to other vision researchers on campus who may not have the resources or skills to individually conduct aspects of a given project.

Notable Non-Federal Grant
One notable non-federal research grant, from the Lincy Foundation, a private charitable foundation in Los Angeles, Calif., has been awarded to fund stem cell research by UW assistant professor and pediatric ophthalmologist David Gamm, MD, PhD. The grant’s research focus, “Human Stem Cell-Based Therapies for Age-Related Macular Degeneration,” targets the “dry” form of age-related macular degeneration, which is the most common cause of vision loss in Americans.
over the age of 65. The total award—a multicenter, collaborative grant in conjunction with researchers at Oregon Health and Science University (OHSU)—is for $4.9 million, with an allocation of $1,371,726 for the UW module. The grant is renewable yearly over a four-year period.

Dr. Gamm is the principal investigator of the UW module; he is working in consultation with Clive Svendsen, PhD, and other fellow researchers in the Stem Cell Research Program at the Waisman Center.

New Laboratory Space
Also in 2007, Dr. Gamm moved into new laboratory space at the Waisman Center. The new space encompasses 1,000 square feet of laboratory facilities and enables the continuation of Dr. Gamm’s basic retina research and translational stem cell research, as well as the new investigations funded by the Lincy Foundation grant. Through his previous stem cell research, Dr. Gamm has developed stem cells that deliver beneficial growth factors to retinal cells in rodents. He is now working with researchers at OHSU to translate the rodent stem cell studies to humans, to determine how to successfully deliver stem cells underneath the retina in humans, in preparation for clinical trials.

A substantial portion of the new funding is being used to create a master cell bank of stem cells approved for clinical use in humans.

Accomplishments in International Ophthalmology
The department launched a new initiative with an international focus in 2007, with the establishment of the Division of International Ophthalmology (DIO), funded by the UW Foundation. UW professor and retina specialist Suresh Chandra, MD, will serve as director of the DIO, which is a unique partnership between academic faculty and staff and the non-profit organization Combat Blindness Foundation. The mission of the new division is to reduce avoidable blindness in developing countries through special projects in the areas of patient care, education and research, which the DIO will support financially and logistically. For the complete story, see page 26.
These days, Kim Neisewander is truly happy—it’s a glow that surrounds her, and it’s apparent the moment she enters a room. A vibrant, attractive woman in her late 40s, she shows just the slightest hint of shyness at meeting new people—a remnant, perhaps, of the lengthy ordeal she’s been through, which affected her vision, her appearance, and ultimately her ability to live her life. “I’ve always been happy with myself, I liked how I looked, and I’ve always been very confident. I was able to walk in anywhere like I owned the place, and I felt I was so blessed,” Neisewander says. “Never in my wildest dreams did I imagine that I would ever have to go through anything like what I’ve gone through. I’ve had five years of my life taken from me by Graves’ disease.”

The successful resolution of her ordeal required the combined medical and surgical expertise of a multidisciplinary team in the UW Department of Ophthalmology and Visual Sciences: neuro-ophthalmologist Leonard Levin, MD, PhD; pediatric and adult strabismus specialist Burton Kushner, MD; and ophthalmic facial plastic surgeon Mark Lucarelli, MD.
surgeon Mark Lucarelli, MD. Through a carefully planned sequence of surgeries, these three UW experts are restoring Neisewander’s vision and appearance, enabling her to enter the world again with confidence, instead of hiding from it.

Five years ago, she began experiencing a bewildering cascade of debilitating symptoms: “I was having heart palpitations; my body was shaking from the inside out. I had high blood pressure. I lost a significant amount of weight; at that point I weighed 98 pounds,” Neisewander recalls. “I was very ‘hyper,’ I couldn’t stop moving, and I wasn’t sleeping well. But when I sat down, I would fall asleep in a second. My eyes were bulging, watering, very sensitive to light. I thought I was going crazy. I felt very energetic but, in reality, it was my thyroid going out of control.”

Neisewander was diagnosed with hyperthyroidism caused by Graves’ disease, an autoimmune condition in which the body’s immune system attacks the thyroid gland, causing it to release too much thyroid hormone into the body. Women are seven times more likely than men to develop Graves’ disease, the symptoms of which range from irregular heartbeat and/or hypertension to anxiety, memory lapses, insomnia, irregular periods and hives, among many others. Graves’ disease can also affect the eyes, as an inflammatory condition called “thyroid eye disease” or “Graves’ ophthalmopathy,” in which the eye muscles become enlarged and inelastic, and the normal fat deposits behind the eye become inflamed and expand. Thyroid eye disease can also distort the eyelids, cause the eyes to bulge forward, throw the eyes out of alignment and even cause permanent vision loss. 3

“This disease is devastating; it can bring you to your knees. But now I’m getting my life back—I’m getting stronger every day, and I love it.”

- Kim Neisewander

As Kim Neisewander watches in the mirror, Dr. Lucarelli explains the next stage of Neisewander’s reconstructive eyelid surgery.
Neisewander first noticed a change in her vision about three years ago. An endocrinologist had treated her overactive thyroid, but now the disease had spread to her eyes: the inflammation of Graves’ ophthalmopathy was affecting her eye muscles, which were pulling her eyes out of alignment. This resulted in a vertical diplopia, or double vision, in which Neisewander saw two of everything, with one of the two images above the other. The disease was also stiffening her eyelid muscles, preventing her eyelids from closing completely and resulting in drying of her corneas. She consulted three ophthalmologists, with no success.

Then an ophthalmologist in Florida, where she and her husband have a vacation home, prescribed the addition of prisms to the lenses of the sunglasses she wore because of her eyes’ sensitivity to light; prisms, which bend incoming light, are used in lenses to help the eyes work together. “My vision was changing so rapidly that by the time my new glasses arrived, I needed new prisms. The prisms helped with the double vision, so I didn’t have the headaches and nausea and the feeling of helplessness,” Neisewander says. “But the swelling and double vision kept getting worse, and I kept needing stronger and stronger prisms, sometimes twice a month.”

In December 2005—acting on a recommendation from her sister-in-law, whose son was successfully treated by UW Health retina specialist Michael Nork, MD—Neisewander saw Dr. Levin in the UW Health neuro-ophthalmology service. “Dr. Levin said, ‘We can fix you, we have a great team here, but you’re going to have to be patient. With this disease, it’s going to take some time, but it will eventually burn itself out,’” Neisewander recalls. “He was very good; he was compassionate and kind.”

Dr. Levin first referred her to Burton Kushner, MD, an internationally recognized strabismus surgeon, to address her double vision, but any alignment surgery needed to wait until her disease stabilized. In the meantime, Neisewander was experiencing even more serious ocular symptoms: a visual field defect (a loss of vision in one sector of her visual field) and loss of color vision, all in her right eye. This indicated compression of the optic nerve—the pressure in both her eyes was increasing, due to the expanding muscles and fat deposits. Neisewander needed orbital decompression surgery to prevent permanent damage to her optic nerve. Dr. Levin referred her to oculoplastic surgeon Mark Lucarelli, MD.

“Kim’s case was a very complicated one, with challenging solutions. She had a serious case of thyroid eye disease that required a thoughtful, stepwise approach, to preserve her vision, to allow her to see straight, and to erase as much of the disfigurement as possible,” Dr. Lucarelli says. Dr Kushner agrees, adding: “We’re very fortunate to have a multidisciplinary team available here—oculoplastics, strabismus, and neuro-ophthalmology.”

“We’re very fortunate to have a multidisciplinary team here—oculoplastics, strabismus, and neuro-ophthalmology.”

- Burton Kushner, MD
In March 2007, Dr. Lucarelli performed Neisewander’s orbital decompression surgery, in which he removed bone from both sides of her right eye socket, enlarging the socket into the neighboring sinus and bone cavities and allowing the swollen muscles and fat to expand into the newly created space. Her right eye moved to a normal position and the compression on the optic nerve was resolved.

In June 2007, with her disease stabilized, Neisewander underwent eye alignment surgery by Dr. Kushner, who corrected her vertical double vision. Neisewander was delighted. “It was a wonderful day, because I no longer needed the prisms. The neatest thing for me was I could see my loved ones—I saw one, instead of two of each of them,” she says.

Dr. Lucarelli next performed reconstructive surgery on Neisewander’s lower eyelids in December 2007, to release the scarred muscles that were pulling her lower lids down. During this surgery, grafts of mucous membrane from her mouth were used to lengthen the scarred eyelid. This surgery had the biggest impact so far in improving her appearance. “When the bandages came off, I cried, and when I got home, my daughter cried. My granddaughter said, ‘Grandma, you look normal again,’” Neisewander says.

Neisewander still has two surgeries to go, Dr. Lucarelli notes, to do some reconstruction of her upper eyelids, which still don’t close completely, and to remove the puffiness around the eyes caused by the disease. “Kim was a complex patient, who required this multidisciplinary approach. Thyroid eye disease is a huge burden for patients—it can be severely disfiguring and very unpredictable, making patients feel frustrated and vulnerable. But at this point Kim is back out in life, doing the things that she likes to do, and that’s wonderful to see,” Dr. Lucarelli says.

Dr. Lucarelli uses a Hertel exophthalmometer to check the protrusion of Kim Neisewander’s eyes after surgery.

“I thank God for everything the doctors at UW Health in Madison have been doing for me, for Dr. Lucarelli’s talent in doing everything that had to be done,” Neisewander says. “This disease is devastating; it can bring you to your knees. But now I’m getting my life back—I’m getting stronger every day, and I love it.”
The oculoplastics service had its inception in 1968, when Peter A. Duehr, MD, the chair of the Eye Service (within the Eye, Ear, Nose, and Throat (EENT) Service at the UW Medical School), added a fellowship-trained oculoplastics specialist, Richard Dortzbach, MD, to the Eye Service. Previously, ophthalmic plastic surgery had been taught to the ophthalmology residents in the 1950s and 1960s by Frederick A. Davis, MD, the first ophthalmology chair, for whom oculoplastics was a special interest. In 1970, the Eye Service officially gained full independent department status through the efforts of Matthew D. Davis, MD, the first full-time department chair.

In 1976, Dr. Dortzbach, director of the ocoplastics service at that time, inaugurated a department fellowship in oculoplastics. Several years later, he was joined by another oculoplastics specialist, Bradley Lemke, MD, who added a great deal to the teaching program. The oculoplastics fellowship has continued to evolve to this day.

The service has gained national and international recognition for outstanding clinical care, training and scholarship. A long tradition of scientific collaboration in basic and translational topics has resulted in numerous national research awards. UW oculoplastics fellows have a history of becoming teachers and leaders at other institutions.

In 1998, Mark Lucarelli, MD, became the chief of the department’s Oculoplastics Surgery service, joined recently on the service by Cat Burkat, MD. “Last year, 2007, was a milestone for Dr. Lucarelli, as he completed his tenth year as chief,” says Dr. Dortzbach, now an emeritus professor with the department. “Dr. Lucarelli and Dr. Burkat both have continued and enhanced the service’s long tradition of excellence.”

In 2007, the oculoplastics service completed its fourth decade of nationally recognized excellence, with a series of accomplishments that attests to the influence of the UW oculoplastics surgeons in the field of oculofacial surgery.

In fall 2007, Dr. Lucarelli served as program chair at the 2007 scientific symposium of the American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS), with more than 600 attendees from 26 countries.
In spring 2007, Dr. Lucarelli was selected to serve on the eight-member steering committee of the International Thyroid Eye Disease Study Group (ITEDS), which is laying the groundwork for clinical trials to advance the understanding and treatment of thyroid orbitopathy.

In June 2007, Cat Burkat, MD, who joined the UW oculoplastics service in 2005, was honored as “Outstanding Surgical Instructor” by the department’s resident physicians. Dr. Burkat is currently expanding the department’s international ophthalmology efforts by laying the groundwork for educational collaborations in oculoplastics in India and in Vietnam.

At the 2007 meeting of the American Academy of Ophthalmology (AAO), the course, “Oculoplastic Surgery: Anatomic Foundations, Surgical Techniques, and Enhanced Results,” drew over 40 participants—the 15 instructors all were either former UW oculoplastics fellows who trained with UW emeritus professor Richard Dortzbach, MD, or were trained by one of Dr. Dortzbach’s fellows. The course remains one of the best-attended and longest-running skills transfer courses at the AAO, according to Dr. Lucarelli.

“Dr. Lucarelli and Dr. Burkat both have continued and enhanced the service’s long tradition of excellence.”

- Richard Dortzbach, MD

Currently, five ASOPRS oculoplastics fellowships (of approximately 40 nationwide) are headed by former Dortzbach fellows at major institutions, which include: University of Wisconsin; University of California, San Diego; University of Pennsylvania; and Mayo Clinic.

In 2007, four of the nine members of the ASOPRS Executive Committee were former Dortzbach fellows.

In 2007, a recent international UW oculoplastics fellow, Noel Palmero, MD, became head of oculoplastic surgery at the University of St. Thomas in the Philippines.

In Korea, Heebae Ahn, MD, (international UW oculoplastics fellow in 2007) was recognized by the Korean Ophthalmology Association for publishing the best manuscript of the year.

In December 2007, Archives of Ophthalmology published a special issue featuring orbital and ophthalmic plastic surgery. Two of the peer-reviewed articles were written by UW oculoplastics faculty. One of the articles highlights the collaborative work between the UW oculoplastics service and the neuroradiology section within the UW Department of Radiology, describing the refinement and application of a new magnetic resonance imaging (MRI) technology to improve the care of patients with orbital tumors.

In July 2007, Alon Kahana, MD, PhD, completed his fellowship in ophthalmic facial plastic surgery and joined the University of Michigan in a full-time academic appointment as one of the rare clinician-scientists in this field.

Former UW ophthalmic facial plastics fellow John Rose, MD, (2001-2003) who in 2007 completed his fourth year in private practice at Davis Duehr Dean eye clinics in Madison, continues to serve as an associate preceptor for the UW oculoplastics fellowship program. Dr. Rose helps supervise and mentor UW oculoplastics fellows in their training rotation at Davis Duehr Dean eye clinics in Madison.

In summer 2007, former UW oculoplastics fellow John McGetrick, MD, (1982-1983) enhanced ongoing efforts to fund the Dortzbach Professorship in Ophthalmic Facial Plastic Surgery with a generous commitment of $50,000. “I felt privileged to learn from ‘Dortz.’ He is a compassionate person, a great mentor, a superb clinician, and an excellent researcher,” Dr. McGetrick says. “My year as a plastics fellow at the UW was the best experience of my medical education.”
It starts with a call from the UW emergency room (ER): “It’s the ER trauma service, saying ‘We have a patient here, his eye looks shriveled and destroyed, he was just in a car accident, can you please come and evaluate him,’” says Wanda Martinez, MD, PhD, chief resident with the UW Department of Ophthalmology and Visual Sciences. “Anytime between 4:30 p.m. and 8 a.m. the next morning, the resident ‘on call’ can get called in for an eye trauma.”

With a trauma case, “the patient could be unconscious, strapped to the table, and there is blood; the surgery team is sewing over here and over here, and then we come in. If the family is at the ER, you introduce yourself—you are the eye doctor and you have been called in to look at the eye,” Dr. Martinez explains. “During our residency training, we gain experience so that we’re comfortable dealing with trauma—identifying what needs to be done, how fast it needs to be done, and who else needs to be involved. That is learned only on call.”

After the call from the ER comes, the first-year ophthalmology resident on call goes in and evaluates the eye, doing an examination and often getting a computed tomography (CT) scan to assess the...
extent of the trauma and look for foreign material in the eye. If the trauma is a simple corneal abrasion or a swollen lid, the resident can treat it and have the patient see an ophthalmologist the next day. If the trauma is more serious and the resident suspects that the globe, the eyeball, has been ruptured, he calls the senior resident on call, a second- or third-year resident, who also comes in and evaluates the eye.

If the senior resident confirms that it looks like an “open” globe, she contacts the attending ophthalmologist on call. Every night, both an attending ophthalmologist and a retina specialist are on call. “For anything that is sight-threatening, for anything the residents don’t understand, the attending physician is responsible and gets paged at whatever time of the night,” Dr. Martinez says.

Each trauma is unique, unlike a planned procedure such as cataract surgery. “You just have to see what you have—no one gets an arrow in his eye in the same place,” says Daniel Knoch, MD, a UW Health comprehensive ophthalmologist and assistant professor. “Although you can draw on some common techniques, like deciding which sutures and antibiotics to use, treating eye trauma is done on a case-by-case basis.”

If the attending ophthalmologist decides an eye trauma needs surgery that night, the senior resident first confirms the patient can undergo an operation under general anesthesia, contacts the anesthesia team and ensures that space is available in the operating room. Then the attending ophthalmologist and the senior resident will operate to repair the eye that night. “We always repair the eye even if the injury is widespread. An eye with extensive damage might eventually recover good vision. In addition, when the patient wakes up, she might not even remember she was in a car accident, and you don’t want the patient’s first realization to be that she doesn’t have an eye,” Dr. Martinez says. “Most of the time the damage is not that devastating, but when it is, we still repair it and then make decisions with the patient about what needs to be done next.”

Residents on call learn quickly how to talk with a trauma patient and family members. “When the attending ophthalmologist talks to the patient with respect, as he would to his own family, the residents see that and learn,” Dr. Knoch says. “The eye is a vital sensory organ, and its loss is life-altering. The patient wants to connect with the physician—you need to impart confidence and empathy in that five-minute time span before you plan what needs to be done and get the patient to the operating room.”

A resident’s learning process is very much like being an apprentice, Dr. Knoch says. “The more cases you do, the more you add to your knowledge base, your experience and your skills. The attending ophthalmologist is responsible for finding the balance in which the resident has a good learning experience and the patient receives the best possible care.”

“This computed tomography (CT) image shows a severe orbital fracture in a trauma patient.”

“When the attending ophthalmologist talks to the patient with respect, as he would to his own family, the residents see that and learn.”

- Daniel Knoch, MD
Today we’re going to talk about red eyes,” says Heather Potter, MD, a UW Health comprehensive ophthalmologist and an assistant professor with the Department of Ophthalmology and Visual Sciences. She is lecturing to 40 internal medicine residents, introducing them to ophthalmology in an interactive, “case scenario” format as part of their resident core curriculum. “Let’s first talk about how to examine an eye, what examination points to look at—and, based on those examination points in a red eye, what your differential diagnosis will be.”

The “red eye” is a great, basic starting point, Dr. Potter says, because a red eye can be a symptom of many eye diseases, ranging from mild (viral conjunctivitis) to dangerous (angle-closure glaucoma), which can result in blindness if not treated quickly. “It can be intimidating at first, because the eye is a major sensory organ and one’s vision is so important, but when the residents discover that they will be able to discern the different symptoms when they examine the eye, they gain confidence,” she says. With angle-closure glaucoma, the pupil is fixed and dilated, so when the residents learn how to examine the pupils, they can distinguish between a glaucoma red eye and a conjunctivitis red eye.

“The more we can educate doctors on other services, the more it will pay off in what they will apply to their practices,” Dr. Potter says. “The eye is fascinating and can be difficult to examine, and we understand the need to teach about it.”

Learning about eye trauma is a stepwise process: First-year residents learn how to recognize eye trauma, how to determine whether the globe is open, and what should and should not be done in an eye trauma examination. For example, if the globe is open, eye pressure should not be checked.

Second-year residents go into the operating room with the attending ophthalmologist and observe the process of putting an open globe back together. Dr. Martinez explains: “‘How do we start with this damaged eye? Can we identify the cornea? The iris? How are we going to piece the eye together?’ Repairing the cornea requires a specific suture; the sclera has a different suture. You have to know anatomy well—know which parts of the eye will hold and which won’t. At the end of your second year of training, you might be able to put in 10 sutures during a trauma procedure.”

Third-year residents, with the trauma experience gained in their second year, have the opportunity as senior residents on call to polish their skills, Dr. Martinez says. “You’re more skilled in the
surgical technique, you’re able to maneuver the eye better during surgery, and you can draw on the knowledge you gained from the eight or nine other open globes you saw as a second-year resident.”

Because each attending ophthalmologist is on call for only a few weeks each year, the resident on call might approach each trauma with a different attending ophthalmologist. “Each time you will learn something different, not only because of the eye itself and the extent of the trauma, but because each surgeon you operate with has a different skill set and approaches trauma a little differently,” Dr. Martinez says. “You’re like an apprentice with many different masters; you’re learning something more from each one, enriching your body of knowledge, perfecting your skills.

“After you complete your residency, if you stay in an academic institution such as this, you will continue to see eye traumas as an attending ophthalmologist on call,” Dr. Martinez says. “You will have the opportunity to teach what you know to future residents, to give back what you’ve learned.”

A lot of ophthalmology is done outside ophthalmologists’ offices, by front-line doctors like the general practitioners,” says Daniel Knoch, MD, a UW Health comprehensive ophthalmologist and assistant professor with the UW Department of Ophthalmology and Visual Sciences. “It is very important that medical students get a good educational foundation in ophthalmology—when they go into primary care, internal medicine or emergency medicine, they need to be knowledgeable about examining the eye.”

In their third or fourth year, as a requirement of their six-week neurosciences rotation, all medical students spend one week in ophthalmology with Dr. Knoch, who is also the director of the ophthalmology portion of the combined neurosciences clerkship, a required course for third- and fourth-year medical students. In the clinic and in small-group meetings of four students each, Dr. Knoch teaches them about ophthalmology as a whole, about eye disease and about trauma. This includes how to examine the eye, using both the direct ophthalmoscope and the slitlamp ophthalmoscope; how to handle common ocular problems, such as a minor corneal abrasion; and what problems they should not handle, such as a significant ocular trauma.

“Examining the eye can be intimidating; some doctors aren’t comfortable examining it, especially if there is trauma,” Dr. Knoch says. “But there are many things that medical students can learn now, to become comfortable in examining and treating the eye, that will help them become outstanding general practitioners.”

An Introduction to Ophthalmology

Daniel Knoch, MD, (center) reviews the symptoms, causes, and treatments of various eye diseases with medical students (clockwise from bottom left) Sukit Ringwala, Luke Peterson, Sherrie Bencik and Lisa Veglahn.
A large biotechnology company needs a laboratory to test 40 to 50 versions of its promising new molecule, which it hopes to develop into a new class of antiviral drugs. A major U.S. pharmaceutical company, entering nationwide clinical trials with a drug to treat retinal disease, needs a central laboratory to evaluate the massive amounts of photographic data coming from the study sites. Another major pharmaceutical company, with almost $500 million invested in a promising new drug, needs the expertise of a team of world-class researchers to determine why the drug has developed an unexpected ocular toxicity.

All of these companies come to the UW Department of Ophthalmology and Visual Sciences for help, forging academic/industry relationships that have become an accepted practice in academic research. “Without industry interactions with academic researchers, there are no new ophthalmic drugs or devices—the key is how to manage these interactions for everybody’s benefit, including the public’s,” says Paul Kaufman, MD, Peter A. Duehr Professor and chair of the department.

“Without industry interactions with academic researchers, there are no new ophthalmic drugs or devices—the key is how to manage these interactions for everybody’s benefit, including the public’s.”

– Paul Kaufman, MD
“Research is a vital component of the mission of this department, but the reality is that faculty researchers have to find funding for their own research, and the research funding budgets of the National Institutes of Health continue to shrink,” Dr. Kaufman explains. Industry research projects generate extra funds for department laboratories, enabling faculty to diversify their funding sources and lessen their dependence on government money. In addition, corporate research projects can provide “bridge” funding so faculty don’t need to lay off laboratory staff if they have a break in government funding. Government grants are still the department’s major source of funding, but approximately 20 percent of total funding now comes from industry.

“Few responsible research laboratories today would not include corporate funding as part of their portfolio,” Dr. Kaufman says. “If its funding structure is really unbalanced, a laboratory will be in trouble when a grant ends. It’s not a question of ‘should you or shouldn’t you’—corporate funding is crucial.”

Academic/industry interactions can take several forms, all of them based on the academic laboratory’s expertise in applying advanced techniques to relatively small-scale projects. The most common type of interaction, and the one most consistent with the university mission of creating and disseminating new knowledge, is “sponsored research”—this involves discovery, with an intellectual contribution from the faculty researcher. For example, 3

“It’s not a question of ‘should you or shouldn’t you’—corporate funding is crucial.”
- Paul Kaufman, MD

“If the company comes to us to figure out how the drug works, at a level that involves discovery on our part, that is sponsored research in our laboratories.”
- Paul Kaufman, MD
a company’s development of its new glaucoma drug may be at a standstill because it doesn’t know how the drug works. “If the company comes to us to figure out how the drug works, at a level that involves discovery on our part, that is sponsored research in our laboratories,” Dr. Kaufman says. This type of contractual research is on a cost-reimbursement basis and includes an itemized budget, submitted by the faculty researcher, plus the standard indirect costs to reimburse the university for its administrative services and the facilities needed to carry out the research.

Less common is the “unrestricted gift,” which a faculty member can solicit from a corporation as a funding mechanism for his or her research. The gift can be handled either through the UW Foundation or directly with the department, the only stipulation being that the funds must be used for research; there are no outcomes or reporting requirements attached.

Another type of project, called a “fee-for-service” project, may be undertaken: 1) when the faculty researcher has unique laboratory expertise that is not readily available outside the university; 2) when the activity is routine or standardized in nature for that laboratory and requires little intellectual input; 3) when the research project promotes the academic mission of the university in some way (for example, by allowing the faculty member to maintain a capability that is important in achieving his or her academic research goals); and 4) when the project can be accomplished without compromising the education of students, residents, and fellows. For these projects, the university will provide specialized testing of a company’s products, typically within a set fee structure.

In addition to furthering the research component within the mission of the university and the department, “these academic/industry interactions also contribute to the education component of our mission,” Dr. Kaufman explains. “In these projects, we’re teaching undergraduate and graduate students, medical students, residents, fellows and even high school students in some instances—training them in laboratory methods and helping them understand how drugs and devices are developed in the real world.”

Outside the academic setting, university expertise is also leveraged by companies when they retain faculty members as consultants. In this case, a faculty member will advise a company on research areas of interest to that company and does so without the use of university resources.

All academic/industry interactions must conform to University of Wisconsin research policies and are subject to conflict-of-interest...
oversight that protects researchers, the university, patients who are subjects in clinical research, and the public from situations in which bias may affect research conduct and results, Dr. Kaufman explains. Various university administrative offices handle contracts, depending upon the nature of the research and the contract issues that may arise; the university has developed a Standard Research Agreement as a “boilerplate” contract, to facilitate the start of research projects. If it is accepted without changes by the company, the agreement eliminates the need for lengthy negotiations with university administration. “These checks and balances are designed to safeguard the university’s independence, to protect any resulting intellectual property and to ensure that faculty researchers’ ability to publish the results of their research is not restricted,” Dr. Kaufman states.

If a company has a research need but can’t do it in house, “they start scouring the countryside looking for either another corporate entity, a contract research organization (CRO), or an academic laboratory with the expertise to do what they need,” says Curtis Brandt, PhD, a professor with a joint appointment in the UW Departments of Ophthalmology and Visual Sciences and Medical Microbiology and Immunology. His laboratory has completed a number of projects for companies, based on the expertise gained from his basic research, which has been funded through grants from the National Institutes of Health. “In our basic science research, we’re interested in mechanisms of viral pathogenesis—specifically, how 3

“Having companies come to this university, because our expertise is so strong, is a feather in our cap.”

- Curtis Brandt, PhD

Curtis Brandt, PhD, in his research laboratory, next to a computer screen showing a fluorescent image of actin filaments inside cells: the filaments are stained green, and the blue stains show the DNA in the cells’ nuclei. Actin filaments are a potential target for treatment of glaucoma; this is part of a collaborative project with Paul Kaufman, MD, chair of the UW Department of Ophthalmology and Visual Sciences, and Donna Peters, PhD, UW Department of Pathology and Laboratory Medicine.
herpes simplex virus causes disease—and we’ve identified several genes in the virus that seem to be involved in the process.”

Dr. Brandt has also successfully used viruses to deliver genes into the retina that stop photoreceptor cell death due to retinal disease. In a third area, he is researching the antiviral activity of peptide molecules, from which he has identified several novel antiviral substances that appear to block steps in the viral infection process.

In his latest project, a company approached Dr. Brandt for help retesting its new drug, which induces a temporary viral immunity in people who develop an adverse reaction when vaccinated with a “live virus” vaccine for smallpox. The drug was approved by the U.S. Food and Drug Administration, with an exception: the company had to retest it against adverse vaccine reactions in the eye. “The FDA apparently sent them to us, based on our expertise with animal models of viral ocular infection,” Dr. Brandt says.

“Having companies come to this university, because our expertise is so strong, is a feather in our cap. We’re providing a unique service for these groups that they pay the university for, just as the university is providing a service for the students and their parents when I teach them in class,” Dr. Brandt says. “That’s part of our job—it’s the Wisconsin Idea: to enhance the climate in Wisconsin for economic development and to improve the lives of the citizens of the state.”
When pharmaceutical companies need the expertise of academic vision scientists, how do they find the right experts? They might simply “ask around” or see who’s publishing in their field. They might attend scientific conferences. Or they can contact the Comparative Ophthalmic Research Laboratories (CORL). Based at the University of Wisconsin-Madison, CORL is a consulting consortium of experts in vision science specifically formed to interface with industry. “CORL serves as a portal through which industry can access the expertise of the university,” says Christopher Murphy, DVM, PhD, the director of CORL. “CORL provides a world-class service to improve the process involved in the preclinical identification and development of lead therapeutic compounds for ocular diseases. It is also involved in the evaluation of ocular toxicities encountered in the development of nonocular drugs.”

CORL was founded 14 years ago by three UW professors: Daniel Albert, MD, MS, F.A. Davis Professor, Lorenz E. Zimmerman Professor, and chair (now chair emeritus) of the UW Department of Ophthalmology and Visual Sciences; Richard Dubielzig, DVM, professor of pathology with the UW School of Veterinary Medicine; and Dr. Murphy, professor of comparative ophthalmology with joint appointments in the UW School of Veterinary Medicine, in the Department of Ophthalmology and Visual Sciences and in the Department of Biomedical Engineering within the UW College of Engineering. They founded CORL to create opportunities for UW vision scientists: to balance their research funding portfolios, providing a buffer to the fluctuations in federal funding; to diversify research at the 3
university; and to foster mutually beneficial relationships with corporate research scientists. “Our initial vision was to create a seamless service to attract industry projects in which the eye was the target organ. We had all worked with industry; we understood its timeline-driven culture and the demands placed on it by the Food and Drug Administration (FDA) and other regulatory agencies, all of which are very different from the academic setting,” Dr. Murphy explains.

Today the three founders, along with UW retina specialist T. Michael Nork, MS, MD, serve as the managing members of CORL, with Dr. Murphy as director and CORL executive administrator Gary Leatherberry handling the administrative duties. “It’s the Wisconsin Idea: we’re providing services that allow the private sector in the state of Wisconsin and beyond to benefit from the expertise found in the laboratories of the University of Wisconsin. ...”

- Christopher Murphy, DVM, PhD

CORL is unique in that it provides access to vision scientists within both the UW School of Medicine and Public Health and the UW School of Veterinary Medicine, along with member scientists from other UW departments and other universities nationwide. “As we needed an expertise for a particular project, we expanded our group. We have grown from three to 45 members, and we’ve done work for most of the major biopharmaceutical companies in the United States, as well as many in Europe and Japan,” Dr. Murphy says. From 2004 to 2008, the number of CORL projects has grown by 30 percent every year. In the past 18 months, “over $2 million has come to the University of Wisconsin in fee-for-service and sponsored research projects because of the CORL portal,” he adds, “and I can point to several million dollars in NIH-funded grants to UW laboratories for projects that were initially started by funding provided through CORL activities.”

When a company comes to CORL with a project, “we determine which CORL member should be on the next phone call. It could be a retina specialist, a pathologist, a molecular biologist, a chemical engineer—whatever expertise is needed to go forward,” Dr. Murphy explains. Several times a year, companies will come to CORL with a major problem, often affecting millions of dollars of investment and requiring a wide spectrum of expertise to find a solution. “We’ll convene a panel of maybe seven, eight or 10 CORL members in the room, representing everything from molecular biology to retinal imaging—these are top-quality vision scientists and clinicians, and the problem-solving process itself is a great learning experience,” he says. “CORL provides financial benefits, but the main reason our members participate is the intellectual benefit we gain as faculty members.”

He notes that whether a project comes to a CORL member through CORL or directly from a company, “CORL provides its members with comprehensive support, both administratively and scientifically, in their industry interactions.” This includes all of the required paperwork: “The UW Research and
Sponsored Programs office has worked with us to develop uniform boilerplate agreements, because we get so many agreements that we create a burden on the system. I tell companies, ‘Sign this now and we’re good to go tomorrow; change two words and it’ll take eight weeks,’” Dr. Murphy says. “We’ve provided full disclosure to the university every step of the way, and it’s challenged the university administratively at some points, but the university has been great to work with and very supportive of CORL over the years.”

CORL has formed a strategic alliance with Covance Inc., an international contract research organization with facilities in Madison. This allows industry to benefit from the vision science expertise of CORL and the extensive experience in regulatory studies provided by Covance. “We have many examples of early drug development that originated in a CORL member’s laboratory, then went to Covance for preclinical drug development, and then has come back to the University of Wisconsin for human clinical trials—in large part the complete life cycle of drug development,” Dr. Murphy notes. “Again, it’s an embodiment of the Wisconsin Idea—we’re taking expertise in the academic corridor and we’re applying it to benefit the business life and health of the state of Wisconsin.”

“CORL provides financial benefits, but the main reason our members participate is the intellectual benefit we gain as faculty members.”

- Christopher Murphy, DVM, PhD
Another “laboratory” within the UW Department of Ophthalmology and Visual Sciences—currently employing 100 people and occupying 20,000 square feet of research space—provides a highly specialized service to both industry and federal government sponsors. Developed in the late 1960s by UW professor and retina specialist Matthew Davis, MD, the UW Fundus Photograph Reading Center (FPRC) today serves as a central laboratory for the analysis of retinal photographs gathered in clinical trials nationwide and from around the world.

“We have grants or contracts with some of the largest pharmaceutical companies in the world, and also with some small biotechnology startups, in addition to the federally funded trials we work with,” says Ronald Danis, MD, UW professor, retina specialist and director of the FPRC. He notes that approximately two-thirds of the Center’s funding comes from

A screen capture showing three different retinal images, providing an “optical biopsy” of a macular hole in a patient’s retina. Left top: A three-dimensional spectral domain optical coherence tomography (OCT) image, showing a cross-sectional slice of the macular hole. Right, top: A fundus photograph of the entire retina; the green horizontal line, within the green square overlay in the photograph, indicates the location of the cross-sectional slice depicted in the OCT image on the left. Right, bottom: A B-scan ultrasonograph, which gives a two-dimensional, cross-sectional view of the macular hole.
industry, with one-third coming from federal sponsors. “We’re providing imaging analysis services to Phase I trials with just a few dozen patients and to very large trials with thousands of patients—including some of the most influential trials within the retina subspecialty today.”

Forty years ago Dr. Davis, the founder of the department in its present form and its first full-time chair—and now director emeritus of the FPRC—recognized the need for an impartial, independent organization, able to analyze the retinal image data from clinical trials in a standardized, reproducible way. To meet this need, the FPRC developed grading procedures and disease classifications for each project according to the project’s protocols, and also established procedures for certifying and monitoring the quality of the data from each study site.

The work of the FPRC also benefits the academic mission of the department and the university, through a variety of collaborative research efforts. UW retina specialists and FPRC co-directors Barbara Blodi, MD, Michael Altaweel, MD, and Michael Ip, MD, serve as principal investigators on a number of the clinical trials and contracts that come to the Reading Center. “Our sponsors value the intellectual input of the FPRC principal investigators. They call upon us to assist with study design, and again for data analysis, scientific presentations, and manuscripts,” Dr. Danis notes. “We work alongside the scientists in industry as well as with scientists at the National Institutes of Health.” In addition, the FPRC serves as a federal repository of the image data collected over the past 30 years from its federally sponsored clinical trials. The FPRC makes that data available for research purposes to vision scientists and epidemiologists nationwide. This involvement in cutting-edge research and the knowledge gained from it benefits department clinicians, as well as the patients they diagnose and treat and the residents and fellows they teach in the clinic setting.

Dr. Danis emphasizes that any organization that uses the FPRC signs a contract with the University of Wisconsin, agreeing to all the terms and conditions that the university requires. “We’re developing a relatively unique, hybrid organization of industry and academic partnerships, as an academic center within a university environment—which is a level of confidence we give to our sponsors,” Dr. Danis says. “The bottom line for both industry and federal projects is data quality, and that’s why we’re successful.”

“The bottom line for both industry and federal projects is data quality, and that’s why we’re successful.”

- Ronald Danis, MD
THE NEW DIVISION OF INTERNATIONAL OPHTHALMOLOGY

Vision Health for a Global Society

In a new department initiative that extends to the front lines of global vision health, the UW Department of Ophthalmology and Visual Sciences (DOVS) has established the “Division of International Ophthalmology” (DIO), funded by private support through the UW Foundation under the direction of UW professor and retina specialist Suresh Chandra, MD.

The Division of International Ophthalmology is a unique partnership between academic faculty and staff and the non-profit organization Combat Blindness Foundation (CBF), which has been working to eliminate avoidable blindness in developing countries such as India, Kenya and the Philippines, and is expanding the effort into China, Gambia, Vietnam, Haiti and other countries.

“The mission of the Division of International Ophthalmology is to help reduce avoidable blindness in developing countries by empowering people through knowledge and by supporting sustainable vision health improvement projects through patient care, education and research,” says Dr. Chandra. Specifically, the DIO’s efforts will focus on the following strategies:

1. **The DIO will support ophthalmics services and missions to developing countries by DOVS faculty and staff, alumni, and other eye care providers from Wisconsin.**

2. **The major focus of the DIO will be education through lectures and educational seminars, as well as tele-education and international exchange programs involving DOVS faculty, residents, fellows, and staff; DOVS alumni; and other eye care physicians in Wisconsin. The DIO will also provide opportunities for faculty and staff from institutions in developing countries to visit DOVS and other institutions in the United States to exchange educational experiences.**

3. **Finally, the DIO will support collaborative research between DOVS and scientists in developing countries such as India to improve understanding and treatment of eye diseases.**

The DIO will provide financial and logistical support for all of these programs, Dr. Chandra emphasizes. “In a global society,” he states, “we want to be at the forefront of advancing international understanding and improving the human condition.”
It is a newly constructed facility in Madison, spacious and filled with light, that offers world-class eye care in a state-of-the-art setting. “This new clinic,” says ophthalmologist John Temprano, MD, medical director of the new UW Health Eye Clinic at Deming Way, “allows us to provide outstanding eye care in a patient-friendly environment. From start to finish, our patients were the focal point in designing this new space.”

As the latest asset in the UW Health Eye Clinics portfolio, the new Deming Way clinic offers a full array of comprehensive eye care services, including refractive surgery screenings; medical treatment of retinal disease; and care of patients with diabetes, glaucoma and cataracts. Encompassing more than 10,000 square feet of space, the facility contains 16 examination rooms and a refractive surgery screening suite—with additional rooms for minor office procedures, YAG and argon laser treatments, visual field and corneal thickness testing, patient education, high-resolution digital photography and contact lens training.

Deming Way’s patient-centered design also features an interior secondary waiting area for patients who have had their eyes dilated. This design feature has allowed the patient waiting area in the front lobby to retain its bright, open view of the landscape outside.

The new facility represents a consolidation of two UW Health Eye Clinics and optical shops from 1 South Park Street and 7102 Mineral Point Road, as well as an expansion to accommodate more comprehensive eye care providers. Deming Way brings together seven ophthalmologists and five optometrists, plus technicians, optical staff and administration.

Dr. Temprano sees the increased size of this clinic as an advantage for his patients, his eye care colleagues, his staff and himself. “One of the greatest advantages of this facility is that we have more eye care providers at one site, so patients have more choice and referring doctors can always count on someone being available. I also have more opportunity to discuss patient care cases with my UW Health colleagues, since more of us are in one place now,” Dr. Temprano says. “This is a major site for eye care in the community, with room to grow.”

Norbert Toussaint, MD (l), uses a slitlamp ophthalmoscope to examine the eyes of patient John Barsch, MD (r), of Madison.

The new UW Health Eye Clinic at Deming Way is located on the second floor of the UW Health Transformations building, which also houses state-of-the-art cosmetic and reconstructive surgery services.
Burton J. Kushner, MD
Professor
Pediatric ophthalmology & strabismus, amblyopia, surgical techniques

Michele M. Martin, OD
Clinical Optometrist
Optometry

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

Mark J. Lucarelli, MD
Associate Professor
Ophthalmic plastic surgery

Sarah M. Nehls, MD
Assistant Professor
Vice-Chair/CME & Faculty Development
Refractive surgery, cornea & cataract surgery, uveitis

Ronald Klein, MD, MPH
Professor
Vitreoretinal disease, diabetic retinopathy, age-related eye diseases, epidemiology

Daniel W. Knoch, MD
Assistant Professor
Comprehensive ophthalmology, cataracts

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

Mark J. Lucarelli, MD
Associate Professor
Ophthalmic plastic surgery

Michele M. Martin, OD
Clinical Optometrist
Optometry

Robert W. Nickells, PhD
Professor
Vice-Chair/Research Molecular biology of cell death in glaucoma & retinoblastoma

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

Sarah M. Nehls, MD
Assistant Professor
Vice-Chair/CME & Faculty Development
Refractive surgery, cornea & cataract surgery, uveitis

T. Michael Nork, MD, MS
Associate Professor
Diseases & surgery of the retina & vitreous

Todd W. Perkins, MD
Professor
Glaucoma, normal tension glaucoma, implant devices, cataracts

Arthur S. Polans, PhD
Professor
Cancer-related ocular pathologies

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

Norbert F. Toussaint, Jr., MD
Assistant Professor
Comprehensive ophthalmology, cataracts

Andrew T. Thliveris, PhD, MD
Assistant Professor
Chief of Ophthalmology William S. Middleton Memorial Veterans Hospital Comprehensive ophthalmology, cataracts, ocular genetics

James N. Ver Hoeve, PhD
Senior Scientist
Visual electrophysiology

Amy L. Walker, OD
Clinical Optometrist
Optometry

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

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

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

John E. Temprano, MD
Associate Professor
Comprehensive ophthalmology, cataracts

Nader Sheibani, PhD
Associate Professor
Vascular cell adhesion & signaling, retinopathy

Gary W. Sterken, MD
Assistant Professor
Comprehensive ophthalmology, cataracts, glaucoma

T. Michael Nork, MD, MS
Associate Professor
Diseases & surgery of the retina & vitreous

Todd W. Perkins, MD
Professor
Glaucoma, normal tension glaucoma, implant devices, cataracts

Arthur S. Polans, PhD
Professor
Cancer-related ocular pathologies

Heather A.D. Potter, MD
Assistant Professor
Comprehensive ophthalmology, ophthalmic pathology, cataracts

Brian Puont, OD
Clinical Optometrist

Stephen K. Sauer, MD
Assistant Professor
Director of Resident Care Competency
Comprehensive ophthalmology, cataracts

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

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

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

John E. Temprano, MD
Associate Professor
Comprehensive ophthalmology, cataracts

Andrew T. Thliveris, PhD, MD
Assistant Professor
Chief of Ophthalmology William S. Middleton Memorial Veterans Hospital Comprehensive ophthalmology, cataracts, ocular genetics

James N. Ver Hoeve, PhD
Senior Scientist
Visual electrophysiology

Amy L. Walker, OD
Clinical Optometrist
Optometry

Gary W. Sterken, MD
Assistant Professor
Comprehensive ophthalmology, cataracts, glaucoma
A Natural History Study of Macular Telangiectasia: The Mactel Study – Mactel
Principal Investigator: Barbara Blodi, MD
Study Coordinator: Shelly Olson

Synopsis:
This study is a prospective, cross-sectional study of participants with a diagnosis of macular telangiectasia. At least 200 participants will be enrolled and all affected subjects will undergo examinations. A complete family history will be solicited. First-degree relatives (primary siblings, secondary parents) of the proband will be actively recruited and asked to contribute a blood sample. For genetic genotyping and analysis of markers of systemic disease, as well as undergo a complete ophthalmologic examination.

Participants’ genetic information (including issues of adoption and paternity, which may be discovered from this study) will not be revealed to other family members or other people. Only in the unlikely situation in which such information has direct medical implications for the participant or his/her family will these issues be discussed with the participant. Published information regarding the participant’s family tree will keep the identity of the participant and family members coded so as to maintain confidentiality.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment is open. For more information, contact Shelly Olson at (608) 263-7169.

Age-Related Eye Disease Study 2 (AREDS 2)
Principal Investigators: Suresh Chandra, MD, and Barbara Blodi, MD
Study Coordinator: Shelly Olson

Synopsis:
A multi-center, randomized trial of lutein, zeaxanthin, and omega-3 long-chain polyunsaturated fatty acids (DHA) and eicosapentaenoic acid (EPA) in age-related macular degeneration.

The primary objective is to assess whether nutritional supplements with lutein and zeaxanthin and/or omega-3 long-chain polyunsaturated fatty acids, specifically DHA and eicosapentaenoic acid (EPA), have a beneficial effect on AMD when compared to placebo.

There will be four study treatment groups:
- Lutein/zeaxanthin and placebo both with the same DHA/EPA pill.
- DHA/EPA and a placebo that resembles the lutein/zeaxanthin pill.
- Lutein/zeaxanthin and DHA/EPA.
- Placebo (lutein and zeaxanthin pills) and the DHA/EPA pills.

We will be recruiting approximately 150 patients here at the UW. Approximately 4,000 people will participate in this study at various medical centers in the United States. Patient participation will last until 2012 and will require two visits in the first three months of the study and then one visit each year for the remainder of the study. A third month and six-month visit after the second visit during the first year and then every six months in between study visits, patients will also receive a phone call.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment is open. For more information, contact Dr. Blodi at (608) 263-7169.

Brainport
Principal Investigator: Michael Ip, MD
Study Coordinator: Barbara Soderling

Synopsis:
The primary outcome of this study will be to test the ability of the HMI prototype device, following the proper training, to improve visual function in patients. Aviary function tests will be performed. Additional outcomes of this proposal include the use of the prototype device and acceptability of the device from the patient’s perspective (cosmesis).

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment is open. For more information, contact Dr. Soderling at (608) 263-7168.

CABERNET Trial
Principal Investigator: Kris Dietzman and Guy Somers, RN

Synopsis:
The objective of the CABERNET Trial is to evaluate the safety and efficacy of focal delivery of radiation for the treatment of subfoveal choroidal neovascularization (CNV) associated with wet age-related macular degeneration (AMD). The CABERNET Trial is a randomized, prospective, controlled study of the Epi-Rad 90 TM Ophthalmic System for the treatment of subfoveal choroidal neovascularization associated with wet age-related macular degeneration.

Subjects will be randomly assigned in a 2:1 ratio to receive one of two treatment arms:
- Arm A: A single surgical procedure with the Epi-Rad 90 TM Ophthalmic System and two injections of Lucentis (0.5 mg). The first injection will be administered immediately following surgery and the second will be administered at the Month 1 visit; or
- Arm B: Lucentis (0.5 mg) administered monthly for the first three injections followed by quarterly injections for two years.

The following endpoints will be used to measure efficacy:
- Primary: Primary efficacy endpoints include the non-inferiority of the Epi-Rad 90 TM Ophthalmic System against an active control (Lucentis) with regard to the proportion of subjects losing fewer than 15 letters of best-corrected visual acuity score at 12 months, compared to baseline, with an inferiority margin of 20 percent.
- Secondary:
  1. Percentage of subjects gaining ≥ 15 ETDRS letters
  2. Percentage of subjects gaining ≥ 10 ETDRS letters
  3. Mean change in ETDRS visual acuity
  4. Change in total lesion size by fluorescein angiography
  5. Change in total CNV size by fluorescein angiography
  6. Number of rescue injections of Lucentis

The study will be conducted in the United States. Patient participation will last until 2012 and will require two visits in the first year for the remainder of the study. A third month and six-month visit after the second visit during the first year and then every six months in between study visits, patients will also receive a phone call.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment is open. For more information, contact Kris Dietzman at (608) 263-9035 or Guy Somers at (608) 262-9424.

Complications of Age-related Macular Degeneration Prevention Trial: Genetic Patterns Among People with Age-Related Macular Degeneration
Principal Investigator: Suresh Chandra, MD
Study Coordinator: Jennie Perry-Raymond

Synopsis:
This study aims to establish the association of genotypes of specific complement factors with phenotypes of age-related macular degeneration (AMD). Responders to low-intensity laser treatment, and particular patterns of drusen and pigmentary changes. In addition, the study will establish a resource of DNA samples to allow evaluation of future candidate genes for AMD.

The following outcomes will be measured:
- Association with progression to neovascular AMD and geographic atrophy, response to CAPT treatment and association with phenotypes of drusen and pigmentary changes.
- Establish a resource of DNA to allow to evaluate further candidate genes for AMD

Recruitment/Eligibility:
Previous enrollment in the Complications of Age-related Macular Degeneration Prevention Trial. Recruitments closed in 2007. For more information, contact Jennie Perry-Raymond at (608) 265-4659.

Diabetic Retinopathy Clinical Research Network (DRCR)
Principal Investigator: Justin Gottlieb, MD
Study Coordinator: Kathryn Burke

Synopsis:
A randomized trial comparing Intravitreal Triamcinolone Acetoneide and Laser Photocoagulation for Diabetic Macular Edema

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment is open. For more information, contact Kris Dietzman at (608) 263-9035 or Guy Somers at (608) 262-9424.
Synopsis:
The purpose of the study is to compare: 1) sham injection plus laser treatment; 2) injection of intravitreal ranibizumab (Lucentis) plus laser treatment; 3) injection of intravitreal ranibizumab plus deferred (or delayed) laser treatment; or 4) injection of intravitreal triamcinolone plus laser treatment. It is a three-year study with follow-up visits every four weeks. During years 2 and 3, follow-up visits will be every four weeks as long as injections of the study drug are still being given. Once injections are no longer given, follow-up will be every four months.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Kathryn Burke at (608) 263-7172.

STUDY I: Intravitreal Ranibizumab or Triamcinolone Acetonide in Combination with Laser Photocoagulation for Diabetic Macular Edema
Principal Investigator: Justin Gottlieb, MD
Study Coordinator: Kathryn Burke

Synopsis:
The study objective is to determine the course of changes in optical coherence tomography (OCT)-measured macular thickness and visual acuity (VA) following a single session of focal photocoagulation for center-involved DME. The response will be evaluated separately in eyes with and without prior focal photocoagulation for DME. The purpose is to determine the proportion of eyes that continue to improve at least 5 letters in VA or at least 10 percent in central retinal thickness after a session of focal photocoagulation. Follow-up visits for all subjects at eight weeks and 16 weeks. Treatment is to be deferred and follow-up is continued as long as VA has improved by 5 letters or OCT central subfield has decreased by 10 percent compared with baseline. Follow-up ends for eyes that receive additional treatment.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Kathryn Burke at (608) 263-7172.

STUDY K: The Course of Response to Focal Photocoagulation for Diabetic Macular Edema (DME)
Principal Investigator: Justin Gottlieb, MD
Study Coordinator: Kathryn Burke

Synopsis:
The study is being conducted to determine whether intravitreal ranibizumab (Lucentis) or intravitreal triamcinolone acetonide will benefit patients following PRP. All patients will receive focal and panretinal (full scatter) photocoagulation and be randomly assigned to one of the following three intervention groups: 1) Intravitreal injection of ranibizumab at baseline and four weeks; 2) Intravitreal injection of triamcinolone acetonide at baseline and sham injection at four weeks; 3) Sham injection at baseline and four weeks. It is a 56-week study, in which patients will receive focal and PRP within 14 days of injection (can complete up to three PRP sessions within 49 days), with three additional visits at 14, 34, and 56 weeks.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment is open. For more information, contact Kathryn Burke at (608) 263-7172.

Evaluation of Vitrectomy for Diabetic Macular Edema Study
Principal Investigator: Michael Altaweel, MD
Study Coordinator: Kathryn Burke

Synopsis:
The purpose of the study is to collect information about the effectiveness of vitrectomy in patients diagnosed with diabetic macular edema who are treated with standard therapy. Patients will be examined before vitrectomy and then follow-ups will be performed at 3, 6, 12, 24, and 36 months.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Kathryn Burke at (608) 263-7172.

Electroretinogram Before and After Intravitreal Injection of Avastin Trial – EAT
Principal Investigator: Thomas Stevens, MD
Study Coordinator: Kris Dietzman

Synopsis:
The purpose of the study is to use electroretinography (ERG) to see whether there are changes in the way the retina works before and after an intravitreal injection of bevacizumab (Avastin). The study will include approximately 12 patients. The study involves up to two visits over two months. The patients will have ETDRS visual acuity test, ERG, and injection on visit 1, and ETDRS and ERG on visit 2.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Kris Dietzman at (608) 263-9035.

Eli Lilly LVGO
Principal Investigator: Michael Altaweel, MD
Study Coordinator: Guy Somers, RN

Synopsis:
This study will evaluate the effect of monocular intravitreal injection of bevacizumab (Avastin) on the fellow eye in patients with bilateral diabetic macular edema measured with optical coherence tomography (OCT), best corrected visual acuity (BCVA), and fundus photography. It also will evaluate the effect on OCT, BCVA, and fundus photography of intravitreal injection of bevacizumab in the injected eye. The study will last no longer than six months for each subject. Follow-up will consist of an office visit each month after the injection to measure central retinal thickness by OCT and visual acuity by ETDRS. Re-treatment will occur if deemed necessary by the treating physician.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Guy Somers at (608) 262-9424.

Expression of Inflammatory Mediators in Allergic Conjunctivitis
Principal Investigator: Neal Barney, MD
Study Coordinator: Barbara Soderling

Synopsis:
The purpose of this study is to determine which inflammatory substances are involved in causing allergic conjunctivitis. Allergic conjunctivitis is a common problem, with symptoms of temporary redness, itching, tearing, and swelling of the eyes. Substances released by cells in the affected tissues cause allergic reactions in the eye and elsewhere in the body.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Barbara Soderling at (608) 263-7168.

Fellow Eye Changes After Unilateral Avastin Injection for Bilateral Diabetic Macular Edema – FEAD ME
Principal Investigator: Jon Gunther, MD
Study Coordinator: Kris Dietzman

Synopsis:
This study will evaluate the effect of monocular intravitreal injection of bevacizumab (Avastin) on the fellow eye in patients with bilateral diabetic macular edema measured with optical coherence tomography (OCT), best corrected visual acuity (BCVA), and fundus photography. It also will evaluate the effect on OCT, BCVA, and fundus photography of intravitreal injection of bevacizumab in the injected eye. The study will last no longer than six months for each subject. Follow-up will consist of an office visit each month after the injection to measure central retinal thickness by OCT and visual acuity by ETDRS. Re-treatment will occur if deemed necessary by the treating physician.

Recruitment/Eligibility:
For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Kris Dietzman at (608) 263-9035.
**CLINICAL TRIALS 2007 continued**

please contact the study coordinator. Recruitment is open. For more information, contact Kris Dietzman at (608) 263-9035.

**Health Measurement in Patients: Tracking Clinical Outcomes (Cataract Study)**
Principal Investigator: Neal Barney, MD
Study Coordinator: Kris Dietzman

**Synopsis:**
The overall goal of this program of research is to create a versatile “toolbox” of summary measures of health-related quality of life that can be used by health care professionals, policy-makers, and researchers in the United States to track the health of the public, over time and across different subgroups of population. The focus of this project is to evaluate the sensitivity of these various measures to clinical outcomes among groups of patients.

**Recruitment/Eligibility:**
Patients will be identified and recruited in heart failure clinics and ophthalmology clinics by researchers at each of three participating academic health centers at the University of California, Los Angeles; the University of California, San Diego; and the University of Wisconsin-Madison. It is anticipated that 150 patients will be recruited at each of the participating clinics, for a total of 900 patients overall (450 cataract extraction and 450 heart failure patients).

For a complete list of inclusion/exclusion criteria, please contact the study coordinator. Recruitment closed in 2007. For more information, contact Kris Dietzman at (608) 263-9035.

**Molecular Prognostic Assay for Uveal Melanoma**
Principal Investigator: Michael Altaweel, MD
Study Coordinator: Guy Somers, RN

**Synopsis:**
This study will investigate the accuracy of a molecular test for predicting metastases in uveal melanoma patients. This may lead to better prognostic testing and prophylactic treatment for high-risk patients.

**Recruitment/Eligibility:**
Patients over 18 years old who have been diagnosed with a uveal melanoma or suspicious uveal nevus in whom tumor tissue can be obtained by tumor resection, enucleation (removal of the eye), or needle biopsy are eligible. Exclusion criteria: Patients who do not wish to participate in the study. Recruitment is open. For more information, contact Guy Somers at (608) 257-7721.

**OPHTEC – Model 311 Artificial Iris Lens**
For the Treatment of Visual Disturbances Resulting from Partial or Total Absence of the Human Iris. Continued Access Compassionate Use Study.

**Principal Investigator:** Michael Altaweel, MD
**Study Coordinators:** Kris Dietzman, Jennie Perry-Raymond

**Synopsis:**
OPHTEC’s Model 311 Artificial Iris Intraocular Lens is a unique, single-piece lens manufactured from colored, ultraviolet light absorbing polymethyl methacrylate (PMMA). The lens is designed for implantation into an aphakic or phakic eye for the correction of visual disturbances resulting from an incomplete or totally absent iris and the correction of the spherical refractive error as necessary. The lens is available in three colors: brown, blue, and green. Available powers range from +10.00 to +30.00 diopters in 5.00 diopter increments or without power (plano). The colored portion of the lens is 9.0 mm in diameter, while the central clear optic is 4.0 mm in diameter. The optic configuration is bi-convex and the anterior to posterior radius is dependent on lens power. The lens has two C-loop haptics, each with an eyelet at the haptic apex to provide the option to suture fixate the lens. The overall diameter of the lens is 13.75 mm (uncompressed haptico-tropic). The objective of this study is to provide continued access to the Model 311 Artificial Iris Lens during the preparation and FDA review of the Humanitarian Use Device Application. The sponsor has provided FDA with sufficient safety data for the lens to justify continued access during the FDA registration process.

The objective of this Continued Access phase of the study is to collect additional safety data on a larger population that may provide further insight regarding potential complications that may occur at lower rates not necessarily detected in the primary study for this device.

**Recruitment/Eligibility:**
This is a “compassionate use” trial only. Patients are not being recruited. For more information, contact Kris Dietzman at (608) 263-9035 or Jennie Perry-Raymond at (608) 265-4659.

**Pediatric Eye Disease Investigator Group (PEDIG)**

**Amblyopia Treatment Study (ATS6)**
Principal Investigator: Yasmin Bradford, MD
Study Coordinator: Kris Dietzman

**Synopsis:**
This is a randomized trial comparing near versus distance activities while patching for amblyopia in children three to seven years old.

**Recruitment/Eligibility:**
Recruitment closed in 2007. For more information, contact Kris Dietzman at (608) 257-7721.

**Nasolacrimal Duct Obstruction Study (NLD1)**
Principal Investigator: Yasmin Bradford, MD
Study Coordinator: Kris Dietzman

**Synopsis:**
This is a prospective study of primary surgical treatment of nasolacrimal duct obstruction in children less than 4 years old.

**Recruitment/Eligibility:**
Recruitment closed in 2007. For more information, contact Kris Dietzman at (608) 257-7721.

**Nasolacrimal Duct Obstruction Study (NLD2)**
Primary Investigator: Yasmin Bradford, MD
Study Coordinators: Kris Dietzman

**Synopsis:**
This is a randomized trial comparing balloon catheter nasolacrimal dilatation versus nasal intubation for the treatment of nasolacrimal duct obstruction in children less than 4 years old.

**Recruitment/Eligibility:**
Recruitment closed in early 2008. For more information, contact Jennie Perry-Raymond at (608) 265-4659.

**The Standard Care vs. Corticosteroid for Retinal Vein Occlusion Study (SCORE)**
Principal Investigator: Michael Altaweel, MD
Study Coordinator: Jenny Perry-Raymond

**Synopsis:**
This study has two randomized trials to compare the efficacy and safety of intravitreal injection(s) of triamcinolone acetonide with standard care; 3) 4 mg triamcinolone acetonide intravitreal injections with standard care; 4) 1 mg triamcinolone acetonide intravitreal injections with verteporfin-PDT alone.

**Recruitment/Eligibility:**
Recruitment closed in 2007. For more information, contact Barbara Soderling at (608) 263-7168.

**Photodynamic Therapy and Triamcinolone-Acetonide Preservative-Free in Patients with Neovascular Age-Related Macular Degeneration (VERTACL)**
Principal Investigator: Justin Gottlieb, MD
Study Coordinator: Barbara Soderling

**Synopsis:**
The objective of this study is to investigate the efficacy and safety profile of administration of a 1 mg and 4 mg preservative-free formulation of triamcinolone acetonide by intravitreal injection and photodynamic therapy (PDT) with verteporfin in age-related macular degeneration compared with verteporfin-PDT alone.

**Recruitment/Eligibility:**
Recruitment closed in 2007. For more information, contact Barbara Soderling at (608) 263-7168.
2007 AWARDS, LECTURES & PUBLICATIONS

Daniel M. Albert, MD, MS


Michael M. Altaweel, MD
Honor Award, American Academy of Ophthalmology. 2007.


Curtis R. Brandt, PhD

Bultmann H, Teuton JR, Brandt CR. Addition of a c-terminal 3-cysteine improves the anti-herpes simplex virus activity of a peptide containing the HIV-1 Tat protein transduction domain. Antimicrobial Agents Chemother. 2007;51:1596-1607.


Suresh R. Chandra, MD


Karen J. Cruickshanks, PhD


Ronald P. Danis, MD
Senior Achievement Award, American Academy of Ophthalmology. 2007.


Justin L. Gottlieb, MD


Michael S. Ip, MD


Paul L. Kaufman, MD

Distinguished Service Award, Association for Research in Vision and Ophthalmology. 2007.


Barbara E. K. Klein, MD, MPH

James M. Barr Award for Outstanding Retina Research Achievement, Retina Research Foundation. 2007.


Ronald Klein, MD, MPH


Leonard A. Levin, MD, PhD


Mark J. Lucarelli, MD


Invited: Member, Steering Committee, International Thyroid Eye Disease Study Group (ITEDS). April 7, 2007.

Julie A. Mares, PhD


Arthur S. Polans, PhD


Stephen K. Sauer, MD


Instructor: Midwest Regional Phacoemulsification Course. UW Department of Ophthalmology and Visual Sciences, UW School of Veterinary Medicine, University of Iowa Department of Ophthalmology, Madison, Wis. October 2007.


Nader Sheibani, PhD
Lecture: “Isoform Specific Function of PECAM-1 in Angiogenesis.” Department of Pathology, Yale University, New Haven, Conn. April 24, 2007.


Michael C. Struck, MD


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Two Rivers Lions Club
Other Contributions:
The Department of Ophthalmology and Visual Sciences receives an annual contribution from the University of Wisconsin Medical Foundation. In 2007, $372,211 was provided for research and development support as part of the department’s participation in the clinical practice plan. Each of the department’s clinicians contributed to this partnership.

The Department of Ophthalmology and Visual Sciences gratefully acknowledges the ongoing support of Research to Prevent Blindness, the Retina Research Foundation, the Wisconsin Lions Foundation, and the National Eye Institute.
**2007 GRANTS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Institute/Grant</th>
<th>Project Description</th>
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<tbody>
<tr>
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<td>NIH Molecular biology of retinoblastoma</td>
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<td>Levin, Leonard A.</td>
<td>NIH Novel mitochondrial targeted neuroprotectants for glaucoma</td>
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<td>Mares, Julie A.</td>
<td>NIH Diet and lifestyle factors reducing risk for age-related eye disease</td>
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<td>Nickells, Robert W.</td>
<td>NIH The molecular mechanisms of retinal ganglion cell death</td>
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<td>NIH</td>
<td>Mapping RGC susceptibility alleles in mice</td>
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<td>NIH/HAFAF Cell-basedneurotrophintherapyforglaucoma</td>
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<td>Nork, T. Michael</td>
<td>NIH The signficance of outer retinal injury in glaucoma</td>
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<td>Polans, Arthur S.</td>
<td>NIH Angiogenic factors associated with uveal melanoma</td>
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<tr>
<td>NIH/RRF Retina Research Foundation</td>
<td>Inhibiting neovascular diseases of the retina: A new drug discovery</td>
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**KEY**

Federal funding:
- NIH = National Institutes of Health Foundation:
- AHAF = American Health Assistance Foundation
- AICR = American Institute for Cancer Research
- JDRF = Juvenile Diabetes Research Foundation
- RRF = Retina Research Foundation

Shiebani, Nader
- NIH Pecam-1 and retinopathy of prematurity
- RRF High-throughput screening of antiangiogenic compounds
- JDRF Fibronectin and diabetic retinopathy

Tian, Baohe
- NIH Will cytoskeletal drugs prevent pco?

van Ginkel, Paul
- AICR The role of mitochondria in resveratrol-induced cell death in human neuroblastoma
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To create, integrate, transmit and apply knowledge in ophthalmology and visual sciences.

To provide high-quality comprehensive and tertiary eye care for the university health center, the Madison community, and the surrounding region in an efficient and cost-effective manner; and in select areas to serve as a resource for the nation.

To facilitate multidisciplinary research and scientific development by fostering research collaboration and mutual learning; and to play a leading role in research, teaching and collaborative studies related to the visual sciences.

To educate medical students, ophthalmologists in training (residents and fellows), practicing ophthalmologists, researchers in visual sciences and related disciplines, non-ophthalmology physicians, non-ophthalmology health care providers and the public.