Legacy of SIGHT
2014 Community Report

50th Anniversary

UW Medicine
Department of Ophthalmology
Message from the CHAIR

The milestone was, like so many features of modern life, a Roman invention. These stone obelisks (each called a millarium, origin of our ‘mile’) measured the distance the Roman Legion would cover in 1,000 steps. Millaria were placed along all Roman roads and counted down to the millarium at the center of the Roman Forum, the ‘Millarium Aureum’ or Golden Mile, from which all Roman roads emanated. By reference to the milestones, a traveler knew where he was, and where he was going.

2014 was a milestone year in many ways for the Department of Ophthalmology at University of Washington. It was 50 years ago, in 1964, that the Regents of the University of Washington voted to establish a Department of Ophthalmology at the UW Medical school (although it would be another two years before the Department had any faculty). And it was 5 years ago that we established the UW Medicine Eye Institute, our major clinical facility.

Over the past half century, our department accomplished much in its mission of education. Our residency training program has long been the core of our academic activities. We have trained over 100 ophthalmologists in the past 40 years.

In its half century, the Department has produced a number of regional and national leaders in ophthalmology and vision science.

Amongst our graduates are many successful comprehensive ophthalmologists, subspecialists, academicians, and leaders. Our residency has recently expanded to 5 residents per year. We have also added several fellowships in the past few years (including pediatrics, cornea, and restarting our retina fellowship). We continue to provide outstanding clinical training for young ophthalmologists.

We have also made substantial contributions to research in vision sciences. Four current or previous members of our Department’s faculty — Sid Futterman, PhD, Anita Hendrickson, PhD, Jack Saari, PhD, and most recently Kris Palczewski, PhD — have been honored with either the Proctor or Friedenwald medals (the highest international research honors given by ARVO). Our research programs have been revitalized in the past several years with the opening of the UW Vision Science Center at South Lake Union, a beautiful new research facility that serves as home for nearly a dozen vision science laboratories from several departments. As a department, our funding from the National Eye Institute is at historically high levels, exceeding $3M annually. We have vibrant programs in stem cell research, gene therapy, visual neurobiology, occludometer systems, ocular inflammatory disease, and advanced imaging within our department.

In terms of clinical service, our department provides ophthalmologic care at numerous sites throughout the Seattle region, including Harborview Medical Center, University of Washington Medical Center, the Puget Sound VA Hospital, Seattle Children’s Hospital, and the UW Neighborhood Clinics. Continuing our tradition of excellent care, in aggregate our faculty saw over 50,000 patient visits last year and performed over 2,000 surgeries. Within UW Medicine, our Department continues to be a leader in patient satisfaction. This year, six of our faculty were listed as ‘Top Doctors’ in Seattle Metropolitan magazine, along with at least six of our residency and fellowship alumni (together constituting over 1/3 of the list).

In its half century, the Department has produced a number of regional and national leaders in ophthalmology and vision science. Our founding chairman, Dr. Carl Kupper (who passed away in 2013), became the inaugural director of the National Eye Institute; a position he held for 30 years. Dr. Robert Kalina, who chaired the Department for over half its existence, from 1970 until 1994 (and who remains an active emeritus faculty member), served as President and Executive Vice President of the Association of University Professors of Ophthalmology. Dr. Kalina, long-time faculty member Dr. Richard Mills, and Dr. Jim Orcutt have all served as directors of the American Board of Ophthalmology; Dr. Orcutt recently served as Chair of the Board. Dr. Orcutt additionally served many years as Chief of Ophthalmology for the national VA system. And I have the honor to serve next year as President of the American Academy of Ophthalmology, a position previously held by Dr. Mills. Also in 2015, Adjunct Professor of Ophthalmology John Clark, PhD, will serve as President of ARVO.

A milestone tells where one has been but also tells where one is headed. We are in the midst of the largest expansion in our department’s history, which began with the opening of the UW Medicine Eye Institute in 2009 and continued with the opening of the Vision Science Center in 2013. Our faculty has nearly doubled in size in the past seven years; we have more trainees currently than ever before; and our research portfolio is at a historic high point as well. We have re-energized our relationships with our community through creation of the Community Action Board, and are truly grateful for great support from our CAB members and others in the community for their generosity.

Eye disease remains a great public health challenge both in the US and world-wide. With the aging of the population in the Western world, the need for ophthalmologists and for improvements in our treatments will become even more pressing. Our mission remains the eradication of suffering from eye disease. Our faculty, staff, and students work toward this goal every day through our direct patient care, our education of the next generation of ophthalmologists, and our research. In a perfect world, this 50th anniversary milestone will be our last, and we will reach our ‘Millarium Aureum’ of a world without eye disease before our 100th anniversary in 2064. To do so will require sustained and heroic efforts. We appreciate your interest in our department’s past, present, and future, and I invite you to explore our history in more depth in this year’s special annual report.

Russell N. Van Gelder, MD, PhD
Boyd K. Rucey Memorial Chair
Professor and Chair
Director, UW Medicine Eye Institute
Legacy of SIGHT

Robert E. Kalina, MD, Professor Emeritus

When I first became Chair, I was the only clinician in the department. My concern was building the clinical enterprise at Harborview, Children’s, University, and the VA, as well as to expand the research mission that had been established. We were successful in doing that by the end of my tenure as Chair.

It has been 17 years since I was Chair and there have been dramatic changes in the department and ophthalmology — all for the good. We’ve expanded the residency, research, and patient care programs. I would single out cataract surgery for being the most remarkable thing that’s happened during my professional lifetime. Patients used to be essentially disabled not only by their cataracts, but by the results that were achieved after surgery, and now that’s no longer the case. It’s extremely successful, and in my field of retinal surgery, there have also been great advances.

I think the future for ophthalmology is bright. I think there will be discoveries just as there have been in the past 50 years that never could have been anticipated. I think that it will always be an attractive profession. It’s one of the oldest of the medical specialties. And I think that the University of Washington and our department is well positioned to be part of that.

“Legacies are determined by others. I would hope that mine would include the thousands of patients for whom I’ve had the privilege to care, the many residents and fellows that I’ve helped train for their own successful careers, and the research that was generated by the scientists and clinician scientists that composed our department.”

ROBERT E. KALINA, MD

Robert E. Kalina, MD is a graduate of the University of Minnesota Medical School and the ophthalmology residency training program of the University of Oregon Hospitals and Clinics. After service as a Flight Medical Officer in the United States Air Force and further training in retinal diseases and surgery in San Francisco and Boston, he joined the faculty of the University of Washington Department of Ophthalmology in 1967. He served as Department Chair for 27 years and now is Professor Emeritus. He has authored more than 130 original papers, book chapters, and reports. He is past president of UW Physicians, Director Emeritus of the American Board of Ophthalmology, and Past President and Past Executive Vice President of the Association of University Professors of Ophthalmology.

Two words: tremendous teacher! Dr. Kalina has an incredible amount of knowledge on essentially all retina topics. The R4s have found working with him in clinic a highlight of their residency experience.

RESIDENT CRITIQUE

Robert E. Kalina Endowed Professorship for Ophthalmology Education

“Right from the beginning, I knew my fellowship was going to be very different from my residency,” says Robert J. Champer, M.D., F.C.C. Champer did his ophthalmology fellowship at UW Medicine with Robert E. Kalina, M.D., former chair of the Department of Ophthalmology. “He would be one-on-one with you in the clinic and in the operating room. It was an absolutely wonderful experience,” says Champer. “Technically, he taught me how to be a first-rate clinician and surgeon, but more than that, he taught me how to be a doctor — how to listen to patients, how to comfort them.” Champer, a retina specialist who practices in Eugene, Ore., is far from alone in being impressed by Kalina’s mentorship style.

In 2009, a group of former residents and fellows, led by Robert J. Champer, M.D., Ph.D., approached the department with an idea to honor Robert E. Kalina, M.D. the longest serving chairman of our department, by creating an endowed professorship in his name. Since then, more than 60 other residents, fellows, and faculty members have made pledges or gifts totaling more than $500,000 to the Robert E. Kalina, M.D. Endowed Professorship for Ophthalmology Education Fund.

The Robert E. Kalina Professorship for Ophthalmology Education supports the Department of Ophthalmology’s education program, including its residency program director. Dr. Kalina specifically requested that we focus this professorship on education because he believes that — when it comes to funding for the “three-legged stool” of research, education, and patient care — the teaching component can get short shrift. By creating an endowed professorship to support the education program, the department will have a permanent, reliable source of funds to support educational activities for both residents and fellows.

“The number one thing is to acknowledge the effect that this man has had on tens of thousands of patients,” says Dr. Champer.

“Technically, he taught me how to be a first-rate clinician and surgeon, but more than that, he taught me how to be a doctor — how to listen to patients, how to comfort them.”

ROBERT J. CHAMPER, M.D., F.C.C.
Richard P. Mills, MD, MPH

I was with the department almost 50 years and I can tell you that the way we practice ophthalmology is so different now than it was back when I started that it defies description. But we’ve all done our work in continuing education and are ready to enter the next 50 years with a good head start.

I first became interested in ophthalmology on my very first clinical rotation in medical school. I took my brand new ophthalmoscope into the newborn nursery to examine my first patient and I could not see the fundus. Well, I went into the resident’s room and I got my resident who said “Come I’ll teach you how to use this.” We went in and sure enough, he couldn’t see it either because the baby had cataracts in both eyes. So I felt pretty proud of myself making a diagnosis like that — sort of. I should mention, though, that I couldn’t see the fundus on the second baby I examined either, but by then I had already committed to ophthalmology.

The landscape of the department while I was acting Chair mostly consisted of me trying to hold things together until the next real Chair could arrive. Acting Chairs have very little power and a lot of responsibility. I became very good at short-term solutions to long-term problems.

Patient care is undergoing a welcome sea change to being more patient centered. Physicians are learning how to involve the patients in the decisions about their healthcare rather than dictating it to them. So I think the future is very bright because patients respond extremely well to being involved in their care decisions.

The legacy I wish to leave behind is, perhaps, not so important as the legacy that we all want the department to leave behind. I think that the department is building a culture of excellence that will apply consistently through time, resulting in less preventable blindness. It is a legacy of sight.

Dr. Mills received his medical degree from Yale University School of Medicine in 1968 and completed an ophthalmology residency at the University of Washington, and a glaucoma fellowship at the University of British Columbia. In 1999 he completed a master’s degree in public health at the University of Washington.

After serving on the faculty at the University of Washington for more than 20 years, becoming acting chair of ophthalmology Dr. Mills took the position of professor and chair of the department of ophthalmology at the University of Kentucky. In 2003, he returned to Seattle in private glaucoma practice and continues to serve the University of Washington as clinical professor.

He is active on numerous committees, professional boards and educational task forces. Dr. Mills is past president of the American Academy of Ophthalmology and has just retired from eight years’ service as a director of the American Board of Ophthalmology and delegate to the American Board of Medical Specialties. He is a governing Council member of the American Ophthalmological Society and has served as vice chair for the Residency Review Committee for Ophthalmology at the Accreditation Council for Graduate Medical Education. He has also served as Secretary of the American Glaucoma Society.

James Orcutt, MD, PhD

From my initial training in pharmacology, I wanted to be in academics. My goal was to be an excellent practitioner and researcher. When the opportunity to join the department arose, I made the decision immediately. I was very excited to join a department with the reputation of not only the department but the chair, Dr. Kalina.

I was assigned as the chief at the VA hospital, not a position that I had aspired to, but unexpectedly formed my career. The department was very supportive of my work at the VA and my development as a local and national leader within the Department of Veterans Affairs. Without the department, I would never have developed my leadership abilities. What a fortuitous combination!

I am extremely happy to have made my career associated with so many great clinicians and leaders in the Department of Ophthalmology. Such associations and professional support lead to some of what I consider my most important successes. I feel the crowning achievement was as a director of the American Board of Ophthalmology. I served for eight years, the last year as president. During this time, I was the ABO representative to the ACGME: Ophthalmology RRC for six years. I am confident that without the mentoring, leadership and support of faculty members, I would never have reached this level.

At the time of my retirement, I consider myself blessed. A great family, a great career and many lifetime friends. What more could one have asked?

Thank you all, especially Dr. Kalina who was instrumental!

Dr. Orcutt attended the University of Colorado in Boulder where he obtained his Bachelor of Pharmacy degree in 1969, PhD in pharmacology in 1976 and MD in 1977. Dr. Orcutt completed his ophthalmology residency at the University of Washington in 1981. He subsequently completed fellowships in Orbital Surgery and Neuro-Ophthalmology at Moorfields Eye Hospital and Hospital for Nervous Diseases, respectively, in London, England. Following training he joined the Ophthalmology Department at the University of Washington. Dr. Orcutt subsequently was promoted to Associate Professor in 1988 and to Professor of Ophthalmology at the University of Washington in 1995.

His clinical expertise is in orbital surgery, neuro-ophthalmology and ocular oncologic surgery. Dr. Orcutt served as a physician at VA Puget Sound during his career. Since 2009 he has been the VISN 20 Chief Surgical Consultant. During his tenure as V20 Surgical Consultant he led the implementation of the National Surgery Complexity Directive in V20.
Ann Milam, PhD, Professor Emerita

Dr. Milam joined the department in 1971 and became a full professor in 1983. In addition to teaching and conducting research on normal animal retinas, she spent her sabbatical in 1979 studying human eye pathology with Professor Mark Tao at the University of Illinois. In 1988 she was awarded a grant from the Foundation Fighting Blindness (FFB) to establish its Histopathology Lab at UW. She directed the FFB Eye Donor Program and studied donor retinas from patients with retinitis pigmentosa and other inherited diseases. She was a member of the US and Canadian FFB Scientific Advisory Boards and enjoyed evaluating research grants and presenting her research to patients and other researchers at FFB meetings. As Professor Emerita, she remains active on the editorial board of Investigative Ophthalmology and Vision Science and serves as the Scientific Advisor to the Eyesight Foundation of Alabama.

John Saari, PhD, Professor Emeritus

Professor Saari has been a member of faculty since 1974 and has had a truly exemplary career. He is internationally known for his work on the biochemistry of visual pigment regeneration, and was recognized with the Friedenwald award, by the Association of Vision Research in Ophthalmology (ARVO), one of the nation’s highest honors in vision research. He has trained legions of students and has taught generations of medical and graduate students biochemistry. Dr. Saari has given exemplary service to the department and school in a number of capacities over the years, not least serving as PI for the school’s NEI CORE grant.

Professor Saari received his B.S. in Chemistry from the University of Oklahoma, Norman, OK and his M.S. in Biochemistry from the University of Minnesota, Minneapolis. St. Paul. Jack received his PhD in Biochemistry in 1970 from the University of Washington, Seattle. He was a Postdoctoral Fellow, Service de Biochimie Cellulaire, Institut Pasteur, Paris XV, France.

Elaine L. Chuang, MD, Associate Professor Emerita

Jack Saari taught us about the various seasons (CRAL..place your favorite combination of “Bi” “Sl” and/or “Ps” here) sprinkled between photoreceptors. Anita Hendriksen spun out the intrigues of foveal development. Murray Johnstone describing his glaucoma research, circa 1980, showed transmission EM of the trabecular meshwork and Jim Kinyoun luring an unsuspecting R-2 into examining a prosthetic eye at the slit lamp...

Dr. Elaine Chuang is affiliated with the Veterans Affairs Puget Sound Health Care System. She received her medical degree from University of Texas Medical School at San Antonio and has been in practice for 35 years. She is one of 12 doctors at Veterans Affairs Puget Sound Health Care System who specialize in Ophthalmology, and Associate Professor of Ophthalmology, University of Washington from 1993-2013. Dr. Chuang taught hundreds of trainees during her 20 years service on faculty.

1987
RP Foundation Histopathology Laboratory Established, Ann H. Milam, Ph.D.
James Kinyoun, MD, Professor

Congratulations Department of Ophthalmology on your 50th anniversary at the University of Washington! I’ve had the privilege of being part of our department for 36 of those years and can speak for some of the reasons this department is special.

The faculty who work here make our department special, those persons carrying out the department’s missions of patient care, basic science and clinical research, teaching, and service. Some of those faculty are: Anita Hendrickson, Bob Kalina, Dick Mills, Jack Saari, Ann Milam, Jim Orcutt, and Bonnie Pagon. Getting to work with and learn from these always present, smart, nice, well-rounded, creative, and hard-working core-group of academicians for over nearly all of the department’s first half century makes our department very special, particularly in the world of academic medicine.

A strong characteristic of these faculty has been resilience. They have persisted and grown during not only the good times but their share of less than good times. This group of ‘first generation’ UW ophthalmology faculty have had the privilege of being a part of the interviewing and hiring process of ‘new’ faculty, several of whom are nearing a quarter century in our department, to lead our department into the second half of our department’s first century. The qualities mentioned above for the department’s first generation of faculty live on in this new generation who give us all lots of pride and promise that the second 50 years will be even better than the first 50. Continued success and, especially, personal satisfaction in your professional lives in this very special academic department!

Dr. Kinyoun earned his bachelor’s degree from the University of Nebraska in Lincoln. He completed his medical degree at the University of Nebraska College of Medicine in Omaha and completed his internship and residency at Medical College of Wisconsin. Dr. Kinyoun completed his fellowship in diseases and surgery of the Retina and Vitreous from the University of Minnesota in Minneapolis.

Our mission is to eliminate suffering from eye disease, in our community and world-wide. We do so by practicing the state-of-the-art in ophthalmology, extending the state through scientific research, and by sharing our knowledge with our students, our colleagues, and our community.
RESEARCH

Understanding Disorders that Affect Vision and Finding the Treatments for Tomorrow

We have a commitment to vision research with the goal of improving diagnosis, treatment, and ultimately prevention of disorders of the eye and visual system.

The Vision Science Center at UW Medicine’s South Lake Union research facility provides collaborative opportunities, bringing together scientists from across departments to work on research that will lead to the discovery of next-generation tools for diagnosing, preventing, and treating all manner of eye disease.

“It’s sort of like having the sword of Damocles above your head,” says Jennifer Chao, Ph.D., M.D., UW assistant professor in the Department of Ophthalmology. She’s referring to the diagnosis of macular degeneration, a condition that affects the sight of approximately 1.8 million people in the U.S., especially older people. “There is no cure. You go to the eye doctor, and you try to manage your symptoms. And sometimes there’s just nothing you can do,” Chao says.

The Chao Lab is investigating potential applications of induced pluripotent stem cells (iPSCs) for treating eye diseases and identifying new drug therapies for eye disease. Like many faculty at UW Medicine, Dr. Chao, a vitreoretinal specialist, sees patients and conducts research. She hopes that precision medicine approaches will help her learn how to prevent the condition.

Through a study being conducted at UW Medicine, however, Chao hopes to take several steps toward a cure, or at least toward understanding the causes of macular degeneration. And she has found a way around her first obstacle. How do you study a live, malfunctioning human eye — one still very much attached to its owner?

The answer is to create a partial model of the eye. To this end, Chao and her colleagues have recruited 12 volunteers. Some have macular degeneration, and some do not, but all of them donated blood.

First, Chao and her colleagues manipulated the blood cells to create patient-specific stem cells, which can transform into other types of cells. Then they provided the stem cells into transforming into retinal pigment epithelium (RPE) cells. RPE cells maintain the retinal environment in the eye, and play a major role in macular degeneration.

These clumps of RPE are then tested at the Quellas High-throughput Screening Core — a service that enables rapid studies. They are first bombarded with factors thought to cause macular degeneration — factors that can cause cell death — and then exposed to each of nearly 2,000 medical compounds. The object of the experiment is twofold: to see if any of the compounds can save the eye models from dying and to better understand how macular degeneration affects the RPE.

The work has started, and rapid screening has shown some preliminary “hits” — therapeutic compounds that may work to defeat macular degeneration in one or more of the models. This is precision medicine in action — at a very early stage in the scientific process.

“It’s very exciting,” says Chao. She pauses when asked about the value of having the Quellas Core at UW Medicine. “I don’t really know where else we would do this,” she says. “It’s fantastic.”

Curing Color Blindness

Time magazine chose the work of Professors Jay and Maureen Neitz as one of its top ten scientific discoveries of the year for 2009. An article detailing the research, in which members of the Neitz laboratory successfully cured color blindness in monkeys using gene therapy, was published in the prestigious journal Nature and led to worldwide interest. National Geographic visited the lab for their publication.

Including their discovery in Time’s year end summary, “The Top Ten of Everything” showed that not just scientists, but the press and the public understand the potential of this research. The Neitz lab successfully introduced a gene for the missing color gene pigment into male squirrel monkeys born color blind. The monkeys developed the ability to see red and green. This result raises the possibility that someday humans born without color vision may be afforded the ability to see in Technicolor, and may also provide a key to successfully treating other inherited vision disorders with gene therapy.

The Neitz Labs are developing genetic tests and treatments for common vision disorders, and investigating the retinal circuitry for vision. Jay and Maureen Neitz collaborate in their studies of the visual system, taking a multidisciplinary approach that uses techniques ranging from molecular genetics to human and animal psychophysics. Major focus areas include developing gene therapy for cone-based vision disorders, investigating the role of genetic variability in the cone photopigments in common eye diseases including AMD, myopia, and glaucoma, understanding the physiological basis for color perception. In addition, the Neitzes are developing genetic tests to identify individuals at risk for developing common eye diseases so that therapeutic interventions can be started before symptoms appear.
Developing Innovative Solutions to Treat Global Blindness

The Shen Lab is developing artificial corneas and ocular biosensors for preventing blindness on a global scale. Corneal opacity is a major cause of blindness. Using donor corneas is often not feasible due to availability and cultural barriers. Artificial corneas developed to date have shown serious limitations. The development of a new biomaterial structure with greatly improved sclera tissue integration and excellent optics shows potential to overcome many of these issues and allow construction and application of an improved prosthesis that can eventually be used to restore sight to a much wider population than is possible now. The Shen Lab is also developing microelectronic wear biosensors to allow physicians to monitor the health of patients remotely. The overarching goal is to treat global blindness by leveraging technological advancements in polymer sciences.

Sensor in Eye Could Track Pressure Changes, Monitor for Glaucoma

Your eye could someday house its own high-tech information center, tracking important changes and letting you know when it’s time to see an eye doctor. University of Washington engineers have designed a low-power sensor that could be placed permanently in a person’s eye to track hard-to-measure changes in eye pressure. The sensor would be embedded with an artificial lens during cataract surgery and would detect pressure changes instantaneously, then transmit the data wirelessly using radio frequency waves.

The researchers recently published their results in the Journal of Micromechanics and Microengineering and filed patents on an initial prototype of the pressure-monitoring device. “No one has ever put electronics inside the lens of the eye, so this is a little more radical,” said Karl Böhringer, a UW professor of electrical engineering and of bioengineering. “We have shown this is possible in principle. If you can fit this sensor device into an intraocular lens implant during cataract surgery, it won’t require any further surgery for patients.”

The research team wanted to find an easy way to measure eye pressure for management of glaucoma, a group of diseases that damage the eye’s optic nerve and can cause blindness. Right now there are two ways to check eye pressure, but both require a visit to the ophthalmologist. At most, patients at risk for glaucoma may only get their pressure checked several times a year, said Tuong Shen, MD, PhD, a collaborator and UW professor of ophthalmology.

But if ophthalmologists could insert a pressure monitoring system in the eye with an artificial lens during cataract surgery — now a common procedure performed on 3 million to 4 million people each year to remove blurry vision or glare caused by a hazy lens — that could save patients from a second surgery and essentially make their replacement lens “smarter” and more functional.

“Sometimes damage to vision is noticed late in the game, and we can’t treat patients effectively by the time they are diagnosed with glaucoma,” Shen said. “Or, if medications are given, there’s no consistent way to check their effectiveness.” As a result, many patients with the disease aren’t diagnosed early enough or aren’t on an accurate treatment plan, she added. Both cataracts and glaucoma affect a similar aging population so it seems a natural pairing to place a pressure monitoring device in a new lens during cataract surgery, researchers said.

The team is working on downsizing the prototype to be tested in an actual artificial lens. Designing a final product that’s affordable for patients is the ultimate goal, researchers said. “I think if the cost is reasonable and if the new device offers information that’s not measurable by current technology, patients and surgeons would be really eager to adopt it,” Shen said.
**RESEARCH**

### Reversing Blindness

Allowing the blind to see again: it sounds improbable, maybe even miraculous. “If I looked at through the lens of 100 years ago, this would be pure science fiction,” says Russell Van Gelder, M.D., M.B., Ph.D., director of the U.W. Medicine Eye Institute and holder of the Budy K. Bushey Memorial Endowed Chair in Ophthalmology.

In 2016, thanks to a collaboration spanning U.W. Medicine, UC Berkeley and the University of Munich, science fiction has turned into a distinct possibility.

**The mystery, the revelation**

The retina — the light-sensitive tissue at the back of the inner eye that translates images to the brain — is something of a mystery. “No one fully understands the code that the retina uses to communicate with the brain,” Van Gelder says. What is known is that the millions of cells in the retina are grouped into families that sense and encode different types of information: motion, direction, contrast and radiance, for example.

And for two of the diseases that cause retina damage and lead to blindness — age-related macular degeneration and retinitis pigmentosa — there is no cure. At least, not yet. Enter AAQ, a compound that blocks potassium channels, the connectors

“As promising as AAQ was, however, it had drawbacks. ‘It didn’t turn off by itself, says Van Gelder, and it needed two types of light to act as triggers: blue; on; green; off. ‘That’s not going to be very useful in people.’

So the collaboration continues, now expanding to the University of Munich, where Dirk Trauner works. With the support of a Nanotechnology Roadmap Grant from the National Institutes of Health, Trauner developed second-generation versions of AAQ, DENAQ and PhINAQ.

U.W. Medicine and Berkeley began testing the drugs, and the results are positive. DENAQ is an improvement over AAQ in several ways: it activates at lower light levels and with both blue and green light; it also responds well to white light. Kramer, Van Gelder, Trauner and collaborators published their results with AAQ and DENAQ in two major papers in the journal Neuron last year.

**The paralympian’s perspective**

Mark Bathum is a 55-year-old businessman, a University of Washington alumnus and an award-winning Paralympic skier. He is also one of Van Gelder’s patients. Bathum has retinitis pigmentosa.

In classic disease progression, Bathum had trouble seeing in the dark as a child; he remembers trick-or-treating forays that left him tripping and stumbling. In later years, vision problems likely cost him a place on the U.S. Ski Team. He can now see only straight in front of him.

Bathum has noticed a major shift — fueled by research — in how his physicians approached his problems. In the 1980s and 90s, their diagnoses offered little hope beyond disease progression. Things, happily, have changed. “Since five or 10 years ago,” Bathum says, “all the doctors are more optimistic about retina treatments.”

**If looked at through the lens of 100 years ago, this would be pure science fiction.**

RUSSELL VAN GELDER, M.D., Ph.D.

between cells that, as potassium flows back and forth, allow neurons to communicate.

A few years ago, organic chemist Dirk Trauner, Ph.D., modified AAQ to become light-sensitive. He and his colleagues at UC Berkeley — Richard Kramer, Ph.D., John Flannery, Ph.D., and Ehab Isacoff, Ph.D. — then conducted an experiment. They put brain tissue in a petri dish, added AAQ and inserted an electrode. The result? They found that AAQ rendered the tissue light-sensitive. They then began experimenting with retinas from blind mice, thinking that AAQ might be able to restore vision.

In the meantime, Van Gelder and his colleagues had developed an efficient tool to study and record the activity of many photo receptors at once: multi-array electrodes. When Van Gelder saw Kramer present AAQ findings at a conference, he had a revelation.

“The little light bulb that went off in my head,” he says, “was that our technique would be a very rapid way to demonstrate if AAQ had the potential to restore vision.”

Blind mice begin to see

“I was excited about this project because it was something so new and novel,” says Jack Sychev, M.D. Now in his fourth year of residency, Sychev had taken off a year from medical school at Washington University in St. Louis to do research in Van Gelder’s lab.

The UC Berkeley group had already proven that — in the dish, at least — a retina from a blind mouse would become light-sensitive if exposed to AAQ. Sychev would be part of the next step: ascertaining if a blind mouse dosed with AAQ would react to light.

It worked. Sychev watched and recorded as mouse pupils contracted in response to certain wavelengths of light, an indication that the retina was back online, at least partially.

**The little science behind it was sound,” says Sychev. Still, experimentation can be hit and miss: a plan can look good on paper, but then fail in the lab. Not this time. “The first time it works, that’s kind of marvelous,” he says.

The light switch and the five-year plan

What’s the science behind the work? “It’s as though Dirk put an on/off switch on AAQ,” says Van Gelder. Unless it’s bathed in the right light, AAQ is inactive; the switch is off.

In its first stage of development, green wavelengths put AAQ in the off-position; it had no effect on the photoreceptor channels it would normally affect. “But when we put blue light on it, the drug is active. It will find the channel and block it,” Van Gelder says. And once the channel is blocked, the retina starts “seeing” light.

As promising as AAQ was, however, it had drawbacks. “It didn’t turn off by itself,” says Van Gelder, and it needed two types of light to act as triggers: blue; on; green; off. “That’s not going to be very useful in people.”

He shares that optimism, and he hopes that Van Gelder’s work could arrest or cure his condition. “It’s not that I expect a solution in five years,” Bathum says. “But maybe 15.”

**The possibilities**

Using the small-molecule approach — developing AAQ and its successors — is only one of a number of promising projects at the U.W. Medicine Eye Institute.

In the effort to defeat blindness, researchers are also pursuing stem cell solutions: growing new, working eye cells, then transplanting them into the eye to replace non-working tissue. Another group is developing minimally invasive techniques to introduce gene therapy vectors into the eye, with the aim to fix faulty photocaptors.

That said, Van Gelder and his colleagues are invested in DENAQ and the compounds that are likely to follow. A chemical solution has decided benefits over, say, a prosthetic eye implant (even with current technology, the resolution is low) or a genetic modification (which offers only one opportunity to fix the problem). In contrast, drugs can be modified and improved, so that patients can start a treatment, then upgrade as the medication is upgraded.

Even now, DENAQ and PhINAQ are being refined. The compounds need to be made more soluble, so that they are easier to deliver to the eye, and they need to be tested for toxicity. The end goal, of course, is to help the millions of people affected by macular degeneration and retinitis pigmentosa worldwide.

Van Gelder cautions that this work may not come to fruition. But he’s still optimistic, and he even gives an estimate for how long it will take until a compound is ready to test in humans. “As a scientist, I’m naturally skeptical,” says Van Gelder. “But barring the unforeseen...I’d say that a five-year time window is reasonable.”
The UW Ocular Pathology Laboratory

The UW Ocular Pathology Laboratory is a collaborative endeavor between the University of Washington Department of Pathology and the University of Washington Department of Ophthalmology whose goal is to provide regional and national leadership in eye pathology related research and education.

The UW Ocular Pathology Laboratory is CLIA (Clinical Lab Information Act of 1988) certified and is equipped with state of the art growing and photo documentation facilities, tissue processors, biotechnical and immunohistochemical staining technology, and diagnostic light microscopy and bolstered by leveraging the extensive resources of the University of Washington Pathology and Laboratory Medicine Departments which include ultra-structural (electron microscopy) analysis, confocal and epifluorescence microscopy, cytopathology services for ocular fine needle aspirates, flow cytometry and hematopathology services, a wide array of molecular diagnostics, and proteomics.

Pathology and ophthalmology residents and fellows from UW and other training programs participate in preparation and diagnosis of tissue specimens as an essential part of their training.

OCULAR PATHOLOGY FACULTY
A.J. Amadi, MD
Clinical Assistant Professor of Ophthalmology
Holly Chang, MD
Clinical Assistant Professor of Ophthalmology
Luis Gonzalez-Cuyar, M.D.
Acting Instructor, Neuropathology
Sasha Hanna, M.D.,
Assistant Professor, Ophthalmology
C. Dirk Keene, M.D., Ph.D.
Assistant Professor, Neuropathology
Joshua Sonnen, M.D.,
Assistant Professor, Neuropathology
Jing Zhang, M.D., Ph.D.
Professor, Neuropathology

The Core Grant for Vision Research

The Vision Core Lab at UW Medicine South Lake Union provides shared instrumentation, expertise, and services to NEI funded vision Scientists. The Core Grant for Vision Research provide groups of investigators who have achieved independent National Eye Institute (NEI) funding with additional shared support to enhance their own and their instructee’s capability for conducting vision research. Secondary objectives of the program include facilitating collaborative studies and attracting other scientists to research on the visual system.

The Vision Core Grant is comprised of three modules, each of which offers shared instrumentation, and module scientists to help investigators. The Cellular Module includes a JEOI, 1230 TEM, Olympus FY1000 Confocal microscope, a Nikon Widefield microscope, and a new sapphire block face scanning electron microscope (Gatan PIView and Sigma VP 3000). The Systems Module includes a shared electrophysiology rig, FRG, Instrumentation, a Micron II fundus Imaging system for mice and a RetCam II imaging system for animal research. The Molecular Module includes a custom antibody making service, help with immunohistochemistry, intracellular injection equipment, and access to several specialty centrifuges.

VISION SCIENCE RESEARCH FACULTY & ASSOCIATES
Susan E Breckerhoff, PhD
Adjunct Professor (Biochemistry)
John I. Clark, PhD
Adjunct Professor (Biological Structure)
Jennifer Chao, MD, PhD
Assistant Professor (Ophthalmology)
Jane Fite, PhD
Associate Professor (Psychology)
Anita Hendrickson, PhD
Professor Emerita (Biological Structure)
Jim Hurley, PhD
Adjunct Professor (Biochemistry)
Dirk Keene, MD, PhD
Assistant Professor (Biopathology)
Murray Johnstone, MD
Clinical Professor (Ophthalmology)
John P. Kelly, PhD
Affliliate Assistant Professor, Seattle Children’s Hospital
Cecilia Lee, MD
Assistant Professor (Ophthalmology)
Ann Millam, PhD
Professor Emerita (Ophthalmology)
Mike Mustari, PhD
Research Professor (Ophthalmology)
Jay F. Neitz, PhD
Bishop Professor (Ophthalmology)
Maureen E. Neitz, PhD
Ray Hill Professor (Ophthalmology)
Roberta Pagon, MD
Adjunct Professor (Clinical Genetics, Pediatrics)
Kathryn Pegge, MD, PhD
PhD, Assistant Professor (Ophthalmology)
Thomas A. Roh, PhD
Adjunct Professor (Biological Structure)
Frederick M. Rieke, PhD
Adjunct Professor (Physiology and Biophysics)
John C. Saari, PhD
Professor Emeritus
Tsung T. Shen, MD, PhD
Professor (Ophthalmology)
Russell Van Gelder, MD, PhD
Bovay K. Rice Professor and Chair (Ophthalmology)
Ruikang “Rick” Wang, PhD
Adjunct Professor (Biomedical Engineering)
Rachel Wang, PhD
Adjunct Professor (Biological Structure)
Jing Zhang, PhD
Adjunct Professor (Neuropathology)
Research in the Manoskin laboratory is focused on the retinal encoding of the visual scene and the treatment of blindness. The laboratory has made considerable progress in understanding how retinal interneurons contribute to encoding of visual information and is currently collaborating with the Van Gelder laboratory on the physiology of intrinsically photoreceptive ganglion cells. In addition, the laboratory will be collaborating with the Van Gelder, Heitz, and Mustari laboratories to develop photoreceptors for the treatment of blindness.

Research in the Ono laboratory focuses on visuomotor mechanisms responsible for adaptive plasticity using the smooth pursuit as a model of volitional eye movements. The lab has made progress in understanding the effects of smooth pursuit adaptation on the gain of visuomotor transmission using target perturbation, which was published in the Frontiers in System Neuroscience. We also published the neuronal basis of on-line control in smooth pursuit eye movements in the Vision Research showing that the internal gain parameter in the cortical pursuit system including MST and FEF is regulated by smooth pursuit adaptation which alters the efficacy of on-line gain control. We continued to determine the role played by neurons at different nodes of the cortico-brainstem-cerebellar circuits in pursuit adaptation.

Research in the Mustari laboratory focuses on neural mechanisms for visual and oculomotor function in cortical and brainstem pathways. Research scientist Mark Walton has published two new studies in the Investigative Ophthalmology and Vision Science related to motor control of strabismic eye movements. His studies demonstrate that brainstem centers normally responsible for coding conjugate eye movements are altered in association with infantile strabismus. Specifically, paramedian pontine reticular formation may be a source for driving dysconjugate horizontal and vertical eye movements observed in cases of strabismus. Past doctoral fellow Lukas Brostek published studies in the journal Cerebral Cortex indicating that neurons in the medial superior temporal (MST) cortex encode eye velocity related to smooth pursuit and optokinetic. Using computational methods he showed that MST neurons may play a role in visual-motor transformation of signals from retinal to head-centered visual stimulus information for control of the optokinetic response. The Mustari laboratory has also made progress in studies related to the differential contribution of frontal and parietal lobe centers in visual and eye movement behavior.

Select Grants and Trials

Clinical trials and other non-federal grants and trials are the tools of translation between patient care and research.

Diabetic Retinopathy Clinical Research (DRCR)
SPONSOR: Job Center for Health Research, Inc. (JCHR)
PERIOD: 2014-2018

A Prospective Case – Crossover Study to Evaluate the Possible Association Between the Use of PDE6 Inhibitors and the Risk of Acute Nonarteritic Anterior Ischemic Optic Neuropathy
SPONSOR: E. Lilly and Company
PERIOD: 2012-2015

Personalized Medicine for Macular Degeneration: High Throughput Screening for Small Molecule Therapeutics
SPONSOR: BNI and Armita Gales Foundation
PERIOD: 2010-2015

Microbiome analysis of the ocular surface in dry eye disease
SPONSOR: Alcon Laboratories, Inc.
PERIOD: 2012-2017

Myopia risks and disease mechanisms
SPONSOR: National Institutes of Health (NIH)
PERIOD: 2011-2016

Genes and visual pigments of red-green color vision
SPONSOR: National Institutes of Health (NIH)
PERIOD: 2011-2015

Function of nano-medical compounds in the treatment of blindness
SPONSOR: UC Berkeley/NATIONAL INSTITUTES OF HEALTH
Subcontract #00000717 AM07
PERIOD: 2010-2015

Photo switchable channel blockers for treatment of blindness
SPONSOR: NATIONAL EYE INSTITUTE#TR261023937
PERIOD: 2014-2019

K08 – Stem-cell properties of human corneal keratocytes
SPONSOR: NATIONAL INSTITUTES OF HEALTH-SK28610197146
PERIOD: 2010-2015

Light encoding properties of wavy-type and starburst amacrine cells of the primate retina
SPONSOR: NATIONAL INSTITUTES OF HEALTH-T32EY024007
PERIOD: 2014-2016

Flare photometry in uveitis patients
SPONSOR: Chevrela, et al. (subcontract)-OFAM_PRO_120417
PERIOD: 2013-2015

K08 Uveitis Grant – The role of the innate and adaptive immune system in a novel mouse model of uveitis
SPONSOR: NATIONAL EYE INSTITUTE-EY024994
PERIOD: 2014-2019

Double-Masked Randomized Sham-Controlled Trial of QP1-1007 Delivered by a Single Intravitreal Injection to Subjects with Acute Primary Angle-Closure Glaucoma (APACO)
SPONSOR: Quark Pharmaceuticals
PERIOD: 2013-2016

K23 Grant – The ocular surface microbiome in potentially infectious ophthalmic disease
SPONSOR: NATIONAL INSTITUTES OF HEALTH
PERIOD: 2014-2019

SCORE2 (Clinical Trial) – SCORE2 Comparative Trial (SCT) – Pennsylvania State University
SPONSOR: NATIONAL INSTITUTES OF HEALTH (Subcontract)
PERIOD: 2014-2018

F32 Grant – Functional imaging of retinal ganglion cells receiving s-cone inputs using viral-delivered arclight
SPONSOR: NATIONAL INSTITUTES OF HEALTH
PERIOD: 2014-2017

2001 Murdock Grant Funded for Purchase of a Multi-photon Confocal Microscope
THE UW MEDICINE EYE INSTITUTE

Fast Facts

Facilities
- The Eye Institute opened in the Ninth and Jefferson Building at Harborview Medical Center in July 2009.
- The Eye Institute has over 25,000 square feet of clinic space. It is the flagship clinic of the UW Medicine Department of Ophthalmology.
- Other sites associated with the department are located at Harborview Medical Center, University of Washington Medical Center, Seattle Children's Hospital and Medical Center, and the Veterans Administration Puget Sound Medical Center, Eyes On James, and select UW Neighborhood Clinics.

Faculty
- The Department of Ophthalmology currently has 43 faculty members, including 36 Ph.D. scientists and 6 faculty who hold both M.D. and Ph.D. degrees.

Education
- The department educates ophthalmology residents currently through its ACGME accredited training program.
- The residency program is expanding to include 5 residents per class in a 3 year training program (8,000 hours of training), as well as 4 fellowships, specializing in medical retina and vitreoretinal surgery, ocularplastics, uveitis, and pediatric ophthalmology.
- Resident pathology/research rotation established.

Patient Care
- Physicians in the Eye Institute see about 27,000 patients per year and perform more than 1,800 surgical procedures.
- The Eye Institute covers the full range of ophthalmic specialties – from retinal diseases, to glaucoma, to neuro-ophthalmological diseases, to elective services.
- Faculty members of UW Ophthalmology also serve adult patients at other UW Medicine entities, pediatric patients at Seattle Children’s Hospital, and veterans at the Puget Sound Veterans Administration Health Care System.
- The UW Medicine Eye Institute is the only full-service ophthalmology trauma service in the states of Washington, Wyoming, Alaska, Montana and Idaho.
- About 20% of patient visits are provided free or at reduced cost.

Clinical – Patient Care

The Gift of Vision: Joan and Gordon Bergy’s Story

When diabetic retinopathy began to take a toll on Gordon Bergy’s sight, the UW faculty members role switched abruptly; the physician became the patient. And a teaching aid, too. His physician, James Kinyoun, M.D., brought trainees into the exam room to learn from Dr. Bergy’s case. He enjoyed it, remembers his wife, Joan Bergy. “Gordon had a great sense of the value of teaching.”

The Bergys’ connection with Dr. Kinyoun and with the UW Medicine eye clinic was important to the couple. And even though Gordon Bergy, M.D., Ret’99, passed away a few years ago, Joan retains a strong interest in the Department of Ophthalmology and the UW Medicine Eye Institute. Such a strong interest, in fact, that she has made significant investments in their work.

First, she created the Joan and Gordon Bergy, M.D., Lectureship in the Vision Sciences — an educational legacy Dr. Bergy would have been proud of. More recently, she decided to make a gift through her will to support ophthalmology.

“Well, it’s essential that you have a plan. I’d be nervous if I didn’t have a plan in place at my age!”

If the desire to have a plan prompted Joan to make a planned gift, so did inspiration. She remembers hearing the director of the eye institute, Russell Van Cleeve, M.D., Ph.D., talk about the power of research. “He thinks that in 40 or 50 years, eye disease will be largely eliminated,” she says.

“To be part of the group of people who makes this happen is a warm, wonderful, exciting feeling,” says Joan. “What could be more important than the gift of vision?”

Affiliation with Harborview Medical Center
PATIENT CARE FACULTY

Comprehensive

Eisea Hanna, MD
Dr. Hanna is an assistant professor of ophthalmology at the University of Washington and is the director of Consult Services for Harborview Medical Center’s 4West Clinic.

EDUCATION
BA – University of Florida
Residency – Columbia University/Presbyterian Medical Center
Fellowship – University of Iowa – Ophthalmology
MD – University of Florida
Fellowship – University of Iowa – Ophthalmology
MD – University of California, San Francisco
Fellowship – Moorfields Eye Hospital, University of London
MD – University of Iowa
Psychological Services, Northwestern University, Evanston, IL

PATIENT CARE PHILOSOPHY
He believes that the patient–physician relationship is built on trust and maintained through patient education. Ultimately, it is both the patient and the physician who work together for the desired outcome.

SCOPE OF CARE
As a comprehensive ophthalmologist, Dr. Hanna treats a wide variety of conditions that affect the eye and eyelids.

Deborah L. Lam, MD
Dr. Lam is a comprehensive ophthalmologist and an Associate Professor. She is an attending physician and service chief at the Veterans Affairs Puget Sound Healthcare System.

EDUCATION
BA – Northwestern University
Residency – University of Washington
Fellowship – University of Iowa Hospitals & Clinics
MD – Northwestern University, Evanston, IL
Residency – University of Washington Hospitals, Seattle, WA
Fellowship – University of Iowa Hospitals, Seattle, WA

PATIENT CARE PHILOSOPHY
She believes the foundation of the patient–physician relationship is communication. Her care is focused on the needs of her patients and their families.

SCOPE OF CARE
Diagnosis and treatment of a comprehensive range of eye conditions, including such entities as cataract, glaucoma, diabetic retinopathy, macular degeneration, ocular surface diseases and eye trauma.

Jennifer J. Lee, MD
Dr. Lee is a UW clinical instructor of ophthalmology and an attending physician at 4 West Clinic at Harborview Medical Center.

EDUCATION
BA – University of Michigan, Ann Arbor, MI
PhD – Washington University School of Medicine
MD – Washington University School of Medicine
Residency – Washington University School of Medicine

PATIENT CARE PHILOSOPHY
She believes good patient care starts with listening to the patient and addressing his or her concerns. She also believes that health care is a partnership between the physician and the patient. This involves patient education and helping the patient make informed decisions.

SCOPE OF CARE
Dr. Lee is a comprehensive ophthalmologist who diagnoses and treats a wide range of eye conditions such as dry eye, cataracts, and glaucoma.

Cornea and External Disease / Refractive Surgery

Heen C. Jung, MD
Dr. Jung is a UW assistant professor of ophthalmology and joined the VA Puget Sound Health Care System in 2014. After formal educational training, Dr. Jung went on to serve as an active duty surgeon with the United States Air Force for over 4 years serving as both chief of the ophthalmology service at his hospital as well as medical director of the Refractive Surgery Division. His service also includes tours in combat areas during Operation Enduring Freedom. He has also served as the Surgeon General of the Hospital for the regional United States Air Force Reserve station at Niagara Falls, NY while training to become a certified flight surgeon.

EDUCATION
BA – Cornell University
MD – University of Rochester
Intern – Tri-Service Year, United Health Services
Residency – Ophthalmology, University at Buffalo
Fellowship – Cornea and External Disease, University of Rochester

PATIENT CARE PHILOSOPHY
Each visit between a physician and patient should lead one step further in the pursuit of improved understanding of health and delivery of personalized care.

SCOPE OF CARE
Dr. Jung specializes in treatment of cataract and corneal diseases.

Bryan S. Lee, MD, JD
Dr. Lee is an assistant professor in the Department of Ophthalmology at UW. He specializes in cornea, cataract, and refractive surgery and has research interests in health policy.

EDUCATION
BS – Harvard College
JD – Harvard Law School
MD – Washington University in St. Louis
Residency – Wills Eye Institute, Johns Hopkins Hospital
Fellowship Anterior Segment – Minnesota Eye Consultants

2009

UW Medicine Eyes on James Optical Opens
**PATIENT CARE FACULTY**

**Glaucoma**

**Philip P. Chen, MD**

Dr. Chen is the Grace E. Hill Chair in Vision Research, professor, and chief of ophthalmology at UW Medical Center and Harborview Medical Center.

**EDUCATION**

BS – Stanford University
MD – Yale University
Residency – Daheny Eye Institute
Fellowship in Glaucoma – Bassem Palmer Eye Institute

**PATIENT CARE PHILOSOPHY**

Dr. Chen’s professional passion is to prevent blindness caused by glaucoma.

**SCOPE OF CARE**

All types of glaucoma and cataracts, particularly complex glaucoma and cataract surgery.

**Raghu Mudumbai, MD**

Dr. Mudumbai is an UW associate professor of ophthalmology and an attending physician at the UW Medicine Eye Institute at Harborview Medical Center. Dr. Mudumbai specializes in glaucoma, neuro-ophthalmology, and treats patients with multiple sclerosis.

**EDUCATION**

BA – City University of New York
MD – State University of New York
Residency – State University of New York Health Science Center

**Jeanne C. Wen, MD**

Dr. Wen is an assistant professor of ophthalmology at the University of Washington. She specializes in the medical and surgical management of glaucoma.

**EDUCATION**

BA – Harvard University
MD – University of California at Los Angeles
Internship – Internal Medicine, Cedars-Sinai Medical Center
Residency – University of California at Los Angeles
Fellowship – Glaucoma, Duke University

**PATIENT CARE PHILOSOPHY**

Dr. Wen believes in educating and working with her patients to develop a management plan that maximizes the prevention of glaucoma-related blindness.

**SCOPE OF CARE**

Dr. Wen’s clinical interests include the medical and surgical management of glaucoma and cataracts.

**Medical and Surgical Retina**

**Jennifer Chao, MD, PhD**

Director, Division of Ophthalmology, University of Washington
Director, Glaucoma Services, Harborview Medical Center
Director, Vision Core, Translational Research Institute for Population Health

**EDUCATION**

BS – Stanford University
MD, PhD – Yale University
Residency – USC/Daheny Eye Institute
Fellowship, Vitreoretinal Surgery – USC/Daheny Eye Institute

**PATIENT CARE PHILOSOPHY**

Dr. Chao is dedicated to bringing the highest quality of care to her patients by offering the most up-to-date diagnostic and treatment options to her patients. She enjoys partnering with her patients in their care, listening to them, and keeping them informed of the latest in current research regarding challenging retinal diseases.

**SCOPE OF CARE**

Dr. Chao offers both medical and surgical treatments for vitreoretinal diseases. She has a particular interest in patients with hereditary retinal degenerations.

**James L. Kinyoun, MD**

Professor of Ophthalmology and Attending Physician at the UW Eye Institute at Harborview Medical Center, specializing in medical and surgical diseases of the retina and vitreous. His clinical research interests include diabetic retinopathy and retina complications of prior radiotherapy.

**EDUCATION**

BS – University of Nebraska
MD – University of Nebraska College of Medicine
Intern – Medical College of Wisconsin
Residency – Medical College of Wisconsin
Fellowship – Retina and Vitreous – University of Minnesota Board Certification – National Board of Medical Examiners
American Board of Ophthalmology

**PATIENT CARE PHILOSOPHY**

Dr. Kinyoun offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**SCOPE OF CARE**

Dr. Kinyoun offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**KAISA REZAEL, MD**

Dr. Rezael is an UW assistant professor of ophthalmology and an attending physician in the UW Eye Institute at Harborview Medical Center.

**EDUCATION**

MD – Azad University, Tehran, Iran
Residency – General Surgery – Vanderbilt University
Fellowship – Vanderbilt University
Fellowship, Vitreoretinal – Associated Retina Consultants

**PATIENT CARE PHILOSOPHY**

Dr. Rezael offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**SCOPE OF CARE**

Dr. Rezael offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**G. Atma Vemulakonda, MD**

Dr. Vemulakonda is an UW associate professor of ophthalmology and an attending physician at the UW Eye Institute at Harborview Medical Center. He has numerous clinical interests involving diseases and disorders of the retina and vitreous of adults, including vitreoretinal surgery, age-related macular degeneration, diabetic retinopathy, retinal vascular disease and occlusions, vitreoretinal infectious disease and trauma, involving the retina and vitreous.

**EDUCATION**

BA – Washington University
MD – Washington University School of Medicine
Residency – Washington University School of Medicine
Fellowship, Vitreoretinal Disease and Surgery – Oregon Health & Science University

**PATIENT CARE PHILOSOPHY**

Dr. Vemulakonda offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**SCOPE OF CARE**

Dr. Vemulakonda offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**J. CAROLYN TAYLOR, MD**

Dr. Taylor is an associate professor of ophthalmology at the UW Eye Institute. She specializes in medical and surgical diseases of the retina and vitreous. Her research interests include diabetic retinopathy, macular degeneration, and retinal vascular disease.

**EDUCATION**

BA – Concordia College
MD – University of Nebraska College of Medicine
Residency – Medical College of Wisconsin
Fellowship – Medical College of Wisconsin

**PATIENT CARE PHILOSOPHY**

Dr. Taylor offers both medical and surgical treatments for vitreoretinal diseases. She has a particular interest in patients with hereditary retinal degenerations.

**SCOPE OF CARE**

Dr. Taylor offers both medical and surgical treatments for vitreoretinal diseases. She has a particular interest in patients with hereditary retinal degenerations.

**HAIDAR KHALED, MD**

Dr. Khaled is an assistant professor of ophthalmology at the UW Eye Institute. He specializes in medical and surgical diseases of the retina and vitreous. His research interests include diabetic retinopathy, macular degeneration, and retinal vascular disease.

**EDUCATION**

BA – University of Washington
MD – University of Iowa
Residency – University of Iowa
Fellowship – Medical College of Wisconsin

**PATIENT CARE PHILOSOPHY**

Dr. Khaled offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**SCOPE OF CARE**

Dr. Khaled offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**LAURIE J. RABINOVIC, MD**

Dr. Rabinovic is an associate professor of ophthalmology at the UW Eye Institute. She specializes in medical and surgical diseases of the retina and vitreous. Her research interests include diabetic retinopathy, macular degeneration, and retinal vascular disease.

**EDUCATION**

BA – Harvard University
MD – University of Washington
Residency – University of Iowa
Fellowship – University of Iowa

**PATIENT CARE PHILOSOPHY**

Dr. Rabinovic offers both medical and surgical treatments for vitreoretinal diseases. She has a particular interest in patients with hereditary retinal degenerations.

**SCOPE OF CARE**

Dr. Rabinovic offers both medical and surgical treatments for vitreoretinal diseases. She has a particular interest in patients with hereditary retinal degenerations.

**JACOB D. COHEN, MD**

Dr. Cohen is an assistant professor of ophthalmology at the UW Eye Institute. He specializes in medical and surgical diseases of the retina and vitreous. His research interests include diabetic retinopathy, macular degeneration, and retinal vascular disease.

**EDUCATION**

BA – Northwestern University
MD – University of Iowa
Residency – University of Iowa
Fellowship – Medical College of Wisconsin

**PATIENT CARE PHILOSOPHY**

Dr. Cohen offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.

**SCOPE OF CARE**

Dr. Cohen offers both medical and surgical treatments for vitreoretinal diseases. He has a particular interest in patients with hereditary retinal degenerations.
PATIENT CARE FACULTY

Neuro-Ophthalmology

Courtney Francis, MD
Dr. Francis is an assistant professor of ophthalmology and an attending physician at the UW Eye Institute at Harborview Medical Center. Dr. Francis is a clinician educator with primary clinical interest in neuro-ophthalmology. She is also director of medical student education. Dr. Francis cares for adult patients with strabismus.

EDUCATION
BS – Brown University
MD – University of Rochester
Residency – University of Alabama at Birmingham School of Medicine
Fellowship in Neuro-Ophthalmology – University of Southern California Keck School of Medicine

PATIENT CARE PHILOSOPHY
Dr. Francis enjoys educating her patients on their diagnoses and making them active participants in their medical care.

SCOPE OF CARE
Dr. Francis specializes in neuro-ophthalmology. She treats patients with optic neuropathies, cranial nerve palsies, idiopathic intracranial hypertension, tumors involving the visual pathways, in addition to patients with systemic diseases such as multiple sclerosis, myasthenia gravis and Crave’s disease. She offers both medical and surgical treatments for adult strabismus.

James C. Orent, MD, PhD
Dr. Orent is UW professor of ophthalmology and adjunct professor of otolaryngology, head and neck surgery based at Fred Hutchinson Cancer Research Center. His interests include neuro-ophtalmology, orbital disease and oculoplastic surgery.

EDUCATION
BS – University of Colorado School of Pharmacy
PhD – University of Colorado, School of Medicine, Department of Pharmacology
MD – University of Colorado, School of Medicine
Residency – University of Washington
Fellowship – Orbis, Moorfields Eye Hospital, London, UK
Fellowship in Neuro-Ophthalmology – National Hospital for Neurology and Neurosurgery, London, UK
Fellowship in Oculoplastic – University of Wisconsin
Hospital for Sick Children, London, UK

PATIENT CARE PHILOSOPHY
He is a strong proponent of team-based care, bringing together the appropriate individuals to address a patient’s problems. He is patient-centered in his approach to clinical care.

SCOPE OF CARE
Dr. Orent is involved in the scope of services provided to veteran patients and has oversight responsibilities for surgical care delivered to veterans in Alaska, Oregon, Washington and Idaho. In addition, he served as the Veterans Affairs National Program Director for Ophthalmology and as such has oversight responsibilities across the United States.

Oculoplastics

A.J. Amadi, MD
Dr. Amadi is a UW clinical associate professor of ophthalmology and attending physician at 4 West Clinic at Harborview Medical Center.

EDUCATION
BS – Rensselaer Polytechnic Institute
MD – State University of New York
Residency – New York University Medical Center
Fellowship in Eye Pathology/Oculoplastic – Harvard Medical School, Massachusetts Eye and Ear Infirmary
Fellowship in Oculofacial Surgery – Department of Ophthalmology, University of Washington

PATIENT CARE PHILOSOPHY
Patients always come first.

SCOPE OF CARE
Ocular and oculofacial plastic surgery.

Shuo Hong (Heidi) Chang, MD
Dr. Chang is a UW clinical assistant professor of ophthalmology and attending physician at the UW Eye Institute at Harborview Medical Center. She cares for patients with plastic surgery disorders affecting the eyelids, nasolacrimal system, orbit, face, and neck.

EDUCATION
BA – Duke University
MD – Johns Hopkins University
Residency – Washington University
Fellowship in Ophthalmic Pathology – Washington University
Fellowship in Oculoplastic Surgery – University of California

PATIENT CARE PHILOSOPHY
As an ophthalmic pathologist as well as orbital and oculofacial plastic surgeon, Dr. Chang understands the microscopic basis of diseases, but approaches each patient as individuals with unique reconstructive and aesthetic goals.

SCOPE OF CARE
Dr. Chang provides medical and surgical care for patients with all forms of pias (bleeding eyelids and eyeballs), nasolacrimal duct disease, orbital tumors/inflammation, Graves disease, eye socket abnormalities, facial skin cancers, and facial trauma. Cosmetic procedures include botulinum toxin injections, periocular and facial synthetic and fat fillers, chemical and laser skin resurfacing, eyebrow and eyelid lift, and face/neck rejuvenation.

Oncology and Ocular Tumors

Robert E. Kalina, MD, Professor Emeritus
Dr. Kalina is a UW professor emeritus and past chair of the UW Department of Ophthalmology. He is past president of UW Physicians, director emeritus of the American Board of Ophthalmology and a recipient of the Life Achievement Honor Award of the American Academy of Ophthalmology.

EDUCATION
BA – University of Minnesota
BS – University of Minnesota
MD – University of Oregon Medical School
Special Fellow – National Institute of Neurological Diseases and Blindness, Massachusetts Eye and Ear Infirmary

PATIENT CARE PHILOSOPHY
Dr. Kalina thoroughly enjoys meeting patients and trying to help them solve their health problems.

SCOPE OF CARE
Intraocular tumors and retinal diseases, particularly retinal degenerations, inherited retinal diseases, and macropathy of prematurity.

Optometric Services

Claire Angel, OD
Dr. Angel is a UW teaching associate practicing in UW Neighborhood Clinics; her clinical focus is on corneal disease. She was the clinician director of Omni Eye Services and the Optometric Director of Refractive Services at TSL Laser Eye Centers and was in private practice for 15 years.

EDUCATION
BS – University of Florida
OD – Southern College of Optometry

PATIENT CARE PHILOSOPHY
Compassion and individual attention are critical in providing care to patients with high standards of comprehensive optometric care. Dr. Angel believes in giving patients a thorough explanation and providing them with the tools to be proactive in their care. She feels fortunate to work with an outstanding team at the UW that synchronizes care to provide patients with a seamless experience.

SCOPE OF CARE
Comprehensive optometric eye care which includes annual eye examinations, baseline dilated fundus exam for patients diagnosed with systemic diseases and evaluations, treatment and appropriate referrals for red eye.

Tiffany Hollenbeck, OD
Dr. Hellenbeck is a UW teaching associate and optometric who practices at Eyes on James Optical Shop and the UW Neighborhood Clinics. Prior to joining UW Medicine, Dr. Hellenbeck worked in private optometry and ophthalmology practices for 10 years. After working in a group practice, Dr. Hellenbeck built a private clinic in Redmond, Washington, working largely with primary care and contact lens.

EDUCATION
BS – Biology and Natural Science, Guatamala Adolphus College
OD – Pacific University College of Optometry

PATIENT CARE PHILOSOPHY
Dr. Hellenbeck is compassionate with her patients and believes in providing them with the knowledge needed to be proactive with their eye health.

SCOPE OF CARE
Dr. Hellenbeck provides comprehensive optometric care, specializing in eye exams, contact lens fitting, treating dry eye and allergies as well as screening for cataracts, glaucoma, and macular degeneration. She also has experience working with optometrists to assist in caring for patients with refractive surgery, cataract surgery, and corneal transplants.
**PATIENT CARE FACULTY**

**Vivian Manh, OD, MS**
Dr. Manh is a UW clinical instructor in ophthalmology. She provides comprehensive pediatric eye care at Seattle Children's Hospital.

**EDUCATION**
BSc – University of Waterloo School of Optometry
OD – University of Waterloo School of Optometry
MS – Indiana University School of Optometry
Postgraduate – Southern California College of Optometry

**PATIENT CARE PHILOSOPHY**
Vision is a crucial aspect of a child's overall development. It is a privilege to be able to provide my young patients with clear and comfortable access to their visual environments and to help families maximize their children's potential for learning and growth.

**SCOPE OF CARE**
Dr. Manh's clinical provides eye care for the pediatric and special needs populations and diagnosis and management of strabismus, amblyopia and non-strabismic binocular vision disorders.

**Nancy Ross Anbarro, OD**
Dr. Ross is a UW teaching associate and primary optometrist for the Refractive Surgery Center at UW Medusa Center.

**EDUCATION**
BA – Exercise and Sport Science, Minor in Chemistry, Western Washington University
OD – Pacific University College of Optometry
Postgraduate – Wescide VAMC, Chicago, IL

**PATIENT CARE PHILOSOPHY**
Compassion and individual attention are critical in providing patients with highest standards of comprehensive eye care. Dr. Ross believes in giving patients a thorough explanation and providing them with the tools to be proactive in their care. She feels fortunate to work with an outstanding team at the UW that synchronizes care to provide patients with a seamless experience.

**SCOPE OF CARE**
Comprehensive primary eye care which includes annual eye examinations, baseline dilated fundus exam for patients diagnosed with systemic diseases and evaluation, treatment or appropriate referrals for red eye emergencies.

She also provides refractive surgery consultations, comprehensive pre-operative eye exams for LASIK, PRK and cataract patients, post-operative follow-up and general eye exams for post-refractive surgery patients.

**James Toop, OD, PhD**
Dr. Toop is a primary care optometrist and UW teaching associate with an emphasis on contact lens fitting. He sees patients of all ages.

**EDUCATION**
BSc – University of Edinburgh, Scotland
PhD – University of Edinburgh, Scotland
OD – New England College of Optometry
Fellowship in Muscle Revascularization – University of California

**PATIENT CARE PHILOSOPHY**
All patients receive the full benefits of care without discrimination. Patients will be treated courteously and will be seen in a timely fashion if possible.

**SCOPE OF CARE**
Complete eye exams, with referral to appropriate specialists as needed; fitting of soft and hard contact lenses for cosmetic or therapeutic reasons.

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**Pediatric and Strabismus**

**Francine M. Baran, MD**
Dr. Baran is a UW clinical associate professor of ophthalmology and a member of the surgical faculty team at Seattle Children’s.

**PATIENT CARE PHILOSOPHY**
Her daily commitment is to providing children a comfortable and friendly environment so they feel at ease during eye exams. She understands that an unfamiliar environment can be intimidating, so she tries to make the whole experience as much fun as possible, which makes each day an exciting opportunity to help young people. Good vision is essential for proper physical and emotional development, as well as educational progress in growing children. She aims to empower her adult patients to understand their medical condition and take an active role in their care. She also believes that listening is the first step in treating a patient’s medical condition.

**EDUCATION**
BA – Washington University
MD – Hahnemann School of Medicine
Residency, State University of New York – Downstate, Brooklyn, NY
Pediatrics Fellowship – Children’s National Medical Center

**SCOPE OF CARE**
Pediatric Ophthalmology, Strabismus.

**Michelle T. Cabrera, MD**
Dr. Cabrera is a UW assistant professor of ophthalmology and a physician at Seattle Children’s. Dr. Cabrera is the founder and director of the Lanthus Chinese ROP Training Program – a program to train and collaborate with Chinese ophthalmologists in the screening and treatment of retinopathy of prematurity, the number one cause of childhood blindness in China. Dr. Cabrera is also the principal investigator for a study involving retinal optical coherence tomography in premature infants.

**EDUCATION**
BS – Stanford University
MD – University of California at San Francisco
Residency – University of California at San Francisco

**PATIENT CARE PHILOSOPHY**
Dr. Cabrera believes that a child’s ocular health depends on establishing a good relationship with both the family and the patient, and in open communication and discussion with everyone involved.

**SCOPE OF CARE**
Dr. Cabrera's clinical interests include pediatric strabismus, amblyopia, nasal orbital disorders, pediatric cataracts, pediatric glaucoma, retinopathy of prematurity, and systemic diseases that affect the eyes.

**Erin P. Herlihy, MD**
Dr. Herlihy is a UW assistant professor of ophthalmology and a physician at Seattle Children’s.

**EDUCATION**
BS – University of Notre Dame, Notre Dame
MD – Loyola University Stritch School of Medicine
Residency – University of Washington
Fellowship – Pediatric Ophthalmology and Strabismus, Kellogg Eye Center

**PATIENT CARE PHILOSOPHY**
A fun and nonthreatening environment is essential in engaging children and their families to participate in their eye care. Children are not just little adults.

**Uveitis, Ocular Inflammation, and Medical Retina**

**Cecilia Lee, MD**
Dr. Lee is a UW acting instructor of ophthalmology, she is a clinician scientist and her time is divided between seeing patients with uveitis conditions, performing cataract extractions, teaching, and pursuing her research in medical retina and uveitis.

**EDUCATION**
BS – Emory University
MD – Emory University School of Medicine
Residency, Translational – Emory University
Fellowship – Uveitis, Washington University in St. Louis
Medicine Retina, Moorfields Eye Hospital

**SCOPE OF CARE**
Pediatric and adult strabismus, amblyopia, nasal orbital disorders, refractive error in children, pediatric cataracts, pediatric glaucoma and systemic diseases that affect the eyes.

**Kristina carczy-Hornec, MD, DPhil**
Dr. Tarczy-Hornec is associate chief of ophthalmology at Seattle Children’s Hospital and a UW Medicine ophthalmology associate professor. Her clinical and research interests focus on disorders that affect visual development in children.

**Avery H. Weiss, MD**
Dr. Avery H. Weiss is chief of the division of ophthalmology at Seattle Children’s Hospital, the Roger H. & Angie Karaiskian Johnson professor in pediatric ophthalmology, and professor of ophthalmology at the University of Washington School of Medicine.

**EDUCATION**
BS – University of Florida
MD – University of Miami
Residency – Washington University
Fellowship – Pediatric Ophthalmology, Children's Hospital National Medical Center

**SCOPE OF CARE**
Dr. Weiss' clinical interests include visual disorders, eye movement abnormalities, cataract and glaucoma, retinoblastoma and retinal tumors, ocular malformations and ophthalmological manifestations of systemic diseases.
**PATIENT CARE PHILOSOPHY**

Dr. Lee offers medical treatments for vitreoretinal diseases and performs vitrectomy surgeries. She enjoys being actively involved in clinical research and teaching residents. She is dedicated to educating her patients with the most current information and offering diverse treatment options.

**EDUCATION**

MD – Baylor College of Medicine
PhD – Baylor College of Medicine
Internship – The Methodist Hospital Residency – Ophthalmology, Duke University Fellowship – Medical Retina, Duke University, Uveitis, University of Washington

**PATIENT CARE PHILOSOPHY**

My goal is to prevent vision loss and blindness by providing high-quality clinical care and developing new treatments for patients with uveitis.

**SCAPE OF CARE**

Dr. Pepple specializes in uveitis, including Fuchs, pars planitis, retinitis, choroiditis and scleritis, and medical retinal disease including age-related macular degeneration, diabetic retinopathy, and retinal vascular diseases.

Kathryn L. Pepple, MD, PhD

Dr. Pepple is an acting assistant professor of ophthalmology. Dr. Pepple’s laboratory is interested in understanding the pathogenesis of ocular inflammation, and developing new therapies for treat patients with uveitis. Her lab is also interested in novel applications of advanced imaging modalities such as optical coherence tomography (OCT) and IVS in clinical and preclinical studies of uveitis.

**EDUCATION**

BS – Stanford University
MD – Stanford University School of Medicine
PhD – Stanford University
Residency – Washington University Medical School Fellowship – Barnes Retina Institute

**PATIENT CARE PHILOSOPHY**

Dr. Van Gelder practices evidence-based medicine supported by over a decade of practice in uveitis. He gives the same thorough, personal attention to each patient. He involves the entire eye care team in patient care, and he examines each patient and discusses his or her care with patience and thoroughness. Dr. Van Gelder involves patients in their care decisions and takes each patient’s individual philosophy and preference into account when deciding on a treatment course.

**SCAPE OF CARE**

Dr. Van Gelder treats ocular inflammatory and medical retinal disease primarily through medical treatments, as well as in-office procedures.

**1967**

Residency Training Program Begins

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**EDUCATION**

**Preparing the Next Generation of Physicians and Vision Scientists**

The University of Washington has trained more than 150 eye physicians and surgeons since 1966. Our Award-winning faculty members, modern teaching facilities, and volume of pathology make the University of Washington an ideal learning environment.

**Resident and Fellow Physicians**

**Residency Program**

The Ophthalmology Residency is designed to develop clinicians well trained in medical and surgical ophthalmology prepared to excel as community practitioners, or to follow a career track that will lead them to academic medicine or biomedical research. With our award-winning faculty and state of the art facilities, our residents are exposed to a wide variety of pathology from the greater WWAMI region (Washington, Wyoming, Alaska, Montana, Idaho).

**Fellowships**

**OPHTHALMIC PLASTIC & RECONSTRUCTIVE SURGERY FELLOWSHIP**

This competitive ASOPRS-approved two-year training program is designed to provide exposure to all aspects of ophthalmic plastic surgery.

**RETINA FELLOWSHIP**

This AUPO-approved two-year training program is designed to provide exposure to all aspects of medical retina disease, vitreoretinal surgery, uveitis, and ocular tumors

**PEDIATRIC OPHTHALMOLOGY FELLOWSHIP**

Seattle Children’s Hospital and the University of Washington Department of Ophthalmology offers a one-year, comprehensive medical and surgical Pediatric Ophthalmology and Strabismus Fellowship. This competitive training program is designed to provide exposure to all aspects of Pediatric Ophthalmologic and Adult Strabismic disease.

**UVEITIS AND OCULAR INFLAMMATION FELLOWSHIP**

The University of Washington Department of Ophthalmology offers a two-year, comprehensive AUPO FRC (Association of University Professors of Ophthalmology Fellowship Compliance Committee) approved Uveitis and Ocular Inflammation Fellowship.

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**UW Medicine Eye Institute Ophthalmology Resident Physicians 2014-2015**

[Image of residents]
DEPARTMENT OF OPHTHALMOLOGY RESIDENT ALUMNI

1970
CUSTER, Allen L.
MURROW, Loren E.
UPHON, Henry Y.

1971
GETTELFINGER, Thomas C.
WOLF, Bruce J.

1972
CHANDLER, John W.
MILLS, Richard P.
WORM, David A.
BORTNER, Timothy W.
FOERSTER, Robert J.
MINNINGER, Donald S.

1974
BROWN, J. Stephen
FOREST, Gary L.
MAILATT, William

1975
CARRIE, Emmett F.
KUECHENMEISTER, Mark G.
REAVEL, G. Thomas

1976
DEEM, Clark W.
JENKINS, Peter E.
SAKUE, Robert F.

1977
CSD, James E.
SWARTLEY, James R.
TOKAR, Ronald L.

1978
LECHNER, David J.
MEBRONC, Frank
OVERLAND, Paul K.

1979
BARD, David H.
GOHMAN, John D.
SWANSON, David E.

1980
CARR, John A.
MCKELLOP, Brian R.
POMERANZ, Gary A.

1981
HEFFERNAN, J. Timothy
MILLER, Frederick S.
ORCUTT, James C.

1982
ALLIE, John J.
BLACK, Richard A.
GAUTZMACHER, Richard D.

1983
BASSETT, Kent L.
CHANG, Eugene L.
WELLS, Craig C.

1984
FARMER, Samuel G.
KARR, Daniel J.
PARKER, James A.

1985
LINDQUIST, Thomas D.
MATHES, William D.
NIELSON, Bruce C.

1986
CHITTAU, Mark E.
HUGHES, Grady M.
WHITSON, William E.

1987
BEAUDRY, David C.
STERN, Fredric A.
TUCKER, William M.

1988
CARRS, Stanley L.
FRANCE, Robert R.
LEON, John A.

1989
BODDIE, Rodger D.
CHOI, Elisabeth S.
MATTA, Thomas H.

1990
CARROLL, Janet M.
HOFF, Richard H.
LEE, Michael G.

1991
BUT, James M.
COOPER, Carol L.
FITCH, Stafie D.

1992
NASP, Robert W.
RUT, Brian P.
ZAMBONI, Ronald W.

1993
BARRALL, Janet L.
BOES, David A.
THORNBURG, Teresa A.

1994
BERREON, John P.
SCHNEIDERMAN, Todd E.
SHERK, John E.

1995
BORKOVICHANAYAVIT, Sid
DUDLEY, Denise
GREENBAHL, Robin L.

1996
BRINNACH, Charles D.
GRAHAM, Debra A.
KEMPEN, John H.

1997
KUNTZ, Christopher
SILVERBERG, Steven H.
WEINSTEIN, Arnon P.

1998
ARNOUD, Patrick D.
JOY, Gregory N.
LAWLOR, David P.
READ, Russell W.

1999
FLÜSTER, Betty L.
KAYNOLO, Adam C.
SIME, Barbara A.
ZOLLNER, Ted M.

2000
BHANDELR, Anuja
FRAUNFELDER, Rick W.
MALLEY, Adrian E.
STELZNER, Sadie C.

2001
PARK, Roy J.
PERLMAN, Laura M.
RASCH, Michael W.
SHELDON, Jerry R.

2002
BOSCH, Michael D.
GOINS, Chad R.
JOSLIN, Peter J.
PORTER, Stacy L.

2003
CAEY, Samuel
EEDRO, Rachel
KAPACHA, Manava S.
OLIVA, Matthew S.

2004
BUSH, Michael B.
JENSEN, Johanna M.
KIM, Joshua W.
LITWIN, Josh P.

2005
KENNY, Richard
LAM, Brendan
MURCHISON, Anna P.
RALPH, David C.

2006
KRAWITZ, Seth
LAM, Deborah
NYONOGO, Omonde
SPITTEL, Peter H.

2007
HERLICH, Erin P.
SINGH, Christopher
SCHNEIDER, Elliott
YOUSSEF, Peter

2008
BROWN, Jamil
MOSCATO, Eve
SLABACH, Mark
WRIGHT, Brian

2009
ALMON, Camille
CHEN, Andrew
JACOBS, Douglas
SOONTornsRACHIN, Mark

2010
BACAL, Shelly
KNIPPELS, Johnny D.
MOELLER, Kristy
RANIKHAWA, Sandeep

2011
CHEN, Jessica Low
HAYDEN, Ashley M.
PEKNAUPT, Jeffrey
YANG, Louis

2012
DITTON, Jason
MOORE, Daniel
ONCHIN, Shari
STEIN, August

2013
CHOI, Dara
MANS, Kamal
SNAP, Emily
SHEFMAN, Joe

2014
DOAN, Thuy
GOYAL, Shiva
GUPTA, Divakar
ODELL, LUNSTROM, Naomi

Alumni Humanitarian Award: Matthew Oliva, M.D. '99, Res. ’03 Honors an alumnus or alumna who embodies the ideals of the School of Medicine and whose career reflects an ongoing commitment to serve others through the practice of medicine.

Excerpt from Nomination Letter (Marjorie Wernich)
“His work spans the range of ways to have an impact—from personally completing thousands of surgeries in third world countries on individuals who are blind due to cataracts, to advocacy through policy and organizational work, to conducting research to advance the eradication of blindness large-scale.”

1975 First Annual Resident Alumni Day
COMMUNITY ACTION BOARD

The ‘CAB’ is a group of motivated members of our community, who serve as ambassadors in the wider world, and who have generously supported the Department and Eye Institute with their own gifts this past year. These gifts will help spur innovation as well, in the form of seed grants for our junior faculty. We are honored and privileged to be able to work with such a fine group of individuals from the greater Puget Sound region as we pursue our mission of eliminating blinding eye disease.

Highlights of the boards philanthropic work include:
- a resident research rotation to create opportunities for residents to gain deeper experience with the research process
- the purchase of equipment for research
- targeted recruitment
- devices to support curriculum materials for residents
- Vision Research Innovation Awards

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Sidney Futterman Memorial Lecture
R. Janet Johnson Memorial Lecture
Jules and Doris Stein RBP Professorship
James L. Hargis Endowment to Support Oculoplastic Surgery Fellow
Alida and Christopher Latham Vision Research Innovation Awards

1999
Roger H. Johnson Macular Degeneration Endowment

Angie Dansky Johnson with Dr. Daniel T. Martin, 25th anniversary of the Roger H. Johnson Macular Degeneration Award
Legacy of SIGHT is published by the UW Medicine Eye Institute at the University of Washington.
Managing Editor: Michele D'Alessandro
Designer: Karin Melbinger, UW Creative Communications
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(206) 744-3937

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1959 N.E. Pacific St.
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(877) 744-9700

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