The John A. Moran Eye Center is an integral part of University of Utah Health Care, which for five years running has won the University Health System Consortium’s Quality Leadership Award and continues to rank among the nation’s top academic medical centers. This winning streak is matched by only one other health system in the US.
ROBERT F BENNETT  
Falls Church, Virginia

JOHN BLOOMBERG  
La Jolla, California

REED BRINTON  
Salt Lake City, Utah

ALAN S CRANDALL, MD  
John A. Moran Eye Center

IAN CUMMING  
Jackson Hole, Wyoming

SPENCER F ECCLES  
Salt Lake City, Utah

WAYNE IMBRESCIA  
John A. Moran Eye Center

CLAUDIA S LUTTRELL  
Salt Lake City, Utah

JOHN A MORAN  
Palm Beach, Florida

RANDALL J OLSON, MD  
John A. Moran Eye Center

LYNN WARD  
John A. Moran Eye Center

NORM A ZABRISKIE, MD  
John A. Moran Eye Center
THE RIPPLE EFFECT

The John A. Moran Eye Center was designed to encourage collaboration. Our research and clinical care pavilions are connected by bridges that promote the exchange of ideas and information, making it easy for researchers and physicians to work together to better understand blinding diseases and improve patient outcomes.

But our focus on collaboration doesn’t end within Moran. Over the years, our doctors and scientists have worked with an array of partners and institutions, both in the US and around the world, to improve products, processes, and patient outcomes. Our ideas and innovations have rippled from home to remote areas of the globe and touched the lives of millions of people, restoring sight and transforming communities.

Experts at Moran are widely considered thought leaders who have cultivated a broad circle of influence, advancing research and patient care industry-wide. In FOCUS 2015, you will read about some of their work, including the following:

- The Intermountain Ocular Research Center, one of the most influential intra-ocular lens research labs in the world.
- Moran’s Outreach Initiative, a model for sustainable eye care in underserved communities domestically and abroad.
- Our Resident and Fellow Training and Education Program. Internationally respected and innovative, we are graduating some of the most knowledgeable and best-prepared ophthalmologists.
- Trailblazing research initiatives that are hastening the pace at which discoveries become medicine.
- Caring experts who specialize in the toughest cases, affecting individuals and families on a daily basis.

I never get tired of saying thank you to the patients, study participants, co-investigators, alumni, and generous donors who believe in the Moran Eye Center and help advance our research and humanitarian efforts. They spread the word about our programs and provide the support that makes our work possible. With their assistance, we are tossing our ideas into the sea of ophthalmology and changing the landscape as we impact the future of vision care.

Sincerely,

Dr. Randy Olson

RANDALL J OLSON, MD
Professor and Chair, Department of Ophthalmology and Visual Sciences; CEO, John A. Moran Eye Center, University of Utah
"When you drop any new idea in the pond of the world, you get a ripple effect." —Joel A. Barker
Go-to Experts in IOL Research for the World

THE RIPPLE EFFECT
For the past 30 years, Moran’s Intermountain Ocular Research Center has emerged as the go-to center for new IOL technologies and design, for IOL-related complications, for surgically removed IOLs, and for ocular tissue with lens-induced disease. “There are very few labs in the entire world doing the kind of work we do,” says Mamalis. “When we began in the early 1980s, there were no centers doing any IOL analysis or research—we were the pioneers, and today we are doing the ultimate in translational research. As a surgeon, what excites me the most is actually being able to take an implant in the very early design phases, work to make it a better implant, get it approved, and put it in my patient’s eyes.”

Combined Experience
Lens manufacturers partner with the Intermountain Ocular Research Center because of the team’s combined expertise: both Mamalis and Werner specialize in lens design, materials, and surface modifications, such as the shape and size of the optics—the part of the lens that focuses on the retina—and the haptics—small filaments connected to the optics that hold the lens in place in the eye. Also, they look at how these materials interact with ocular tissue.

Master Sleuths
Despite the technological advances in cataract surgery, challenges of all kinds present themselves. Lens design flaws—not to mention the occasional baffling mystery—find their way to the Mamalis Werner lab.

“While surgically removing an implant is relatively uncommon—less than one percent—the impact is still huge,” says Werner. “Since 2000, our lab has received over 8000 explanted IOLs from all over the world needing to be evaluated for flaws or complications; some very puzzling.” The team examines the history of each lens, identifies flaws and successes, and prepares a report for every lens. Findings help doctors around the world make better surgical and lens choices for each of their patients and help lens manufacturers improve their designs.
Never, Ever Routine
The center also functions as a registry for removed IOLs and eye tissue with lens-induced disease. Packages arrive each week—malfunctioning lenses from manufacturers, calcified lenses, opacified lenses—even actual donated eyes with lenses still in them. “We honestly don’t always know what the day will bring. I may get a lens that is so interesting, I want to stop everything and dedicate myself to that. It is so exciting,” says Werner. “One day, we received a box with various explanted IOLs that had mysteriously turned white. Scrupulous detective work led us to discover that the lenses had been stored near pesticides and had absorbed some of the chemicals. Another day, a surgeon from Brazil actually flew to Moran with an explanted corneal implant in her carry-on luggage for me to evaluate. Our work is never, ever routine. I think if I improve anything—from developing future lenses to figuring out a problem—it doesn’t just impact one patient, but so many people, including manufacturers and ophthalmologists. If we can change one surgeon’s thinking, we have helped all of his patients. I’m very proud of that.”

“Liliana is the workhorse that keeps the center going. She puts a lot of time into writing protocols and reports and doing analyses—the center certainly couldn’t function without her. She is delightful to work with.”

—Nick Mamalis, MD

TASS Task Force
Cataract surgery is one of the safest surgeries performed today, but some post-operative complications can occur. One day, in the late 1980s, Dr. Randall J Olson, chairman of the Moran Eye Center received a call from a baffled and concerned doctor who said all of his Friday cataract patients developed tremendous inflammation after surgery, and he wasn’t sure why. Dr. Olson immediately contacted Dr. Mamalis, and upon investigating the matter, they discovered a heat-resistant toxin in the ultrasound bath in which the instruments soaked during the week. By Friday, this bacterial toxin formed on the instruments causing patients’ raging post-surgery eye inflammation. As a result of this finding, the American Society of Cataract and Refractive Surgery (ASCRS) asked the lab to help
Corrective cataract lenses have developed from a single distance-only monofocal lens, to a multifocal, which corrects vision for near and far, eliminating the need for glasses. The bulk of what the lab is working on now is designing a truly accommodating implant that will give patients clear, near, intermediate, and distance vision without compromising their vision or breaking up the light as it comes in. There are also designs for implants that actually have separate optics that come together and go apart to allow people to see both near and distance clearly. In addition, the lab is working on a lens with silicone oil inside its haptics. The silicone moves to the center of the lens when the patient focuses up close, changing the curvature of the lens and providing near vision. When the patient focuses far away, the silicone moves to the periphery of the lens where it won’t affect the curvature of the lens, similar to the way the normal human lens works. And they are working on a lens that can have its corrective power modified by an exchangeable optic or even changed by a laser, designed for a child, for example, whose eyesight changes as he or she grows.

The FluidVision lens (PowerVision®) as well as the Synchrony lens (Visiogen®) are just two examples of accommodating intraocular lens designs evaluated in the Mamalis Werner laboratory.

**The Next Big Thing**

Evaluate unexplained inflammatory complications following cataract surgery. So they developed the Toxic Anterior Segment Syndrome (TASS) task force. The task force gets calls from surgeons worldwide asking for help with cases of post-op inflammation, 80 percent of which, to this day, are caused by problems with instrument cleaning and sterilization.

**Ripple Effect**

“As a physician, one of our primary goals is to give patients the best possible vision and to prevent vision loss. This is why we go into ophthalmology. There is extensive research in blinding eye diseases like macular degeneration and other diseases of the retina, but we don’t want to forget that we also want to treat preventable blindness, and that’s where our research comes in—cataracts are a tremendous cause of preventable blindness,” says Mamalis. “We can better our surgical techniques and better the implants that go into providing the best possible vision for our patients’ eyes. But we could not have been doing the work we do in a different setting. Moran is really unique for a major research institution, and it all starts with Dr. Randall Olson. He gives us the necessary resources and allows us the independence and latitude to do the work that we see fit. It is amazing.”
From post-World War II through the 1970s, cataract surgery required removing the natural lens by making a large incision, removing the cataract in one piece, and applying multiple sutures. Patients suffered a lengthy recovery, and after it all, still had to wear thick “Coke bottle” glasses.

Since the 1980s, cataract surgery has improved markedly. Sophisticated intraocular lenses are now placed directly in the eye after a cataract is removed, allowing people to have functional vision without having to wear thick glasses. Implants were originally made of a stiff Plexiglas-like material. Now, we have foldable lenses that can go into the eye through a miniscule incision that doesn’t require sutures. Surgical techniques have improved as well, from removing cataracts manually to using ultrasound and lasers. All of these improvements allow the patient to rapidly go back to normal activity, often the day after surgery.

“The ambiance in our lab is so great. I can count on Nick to be very stable and calm—that helps because sometimes it is very stressful—we have so much to do.”
—Liliana Werner, MD, PhD

Cataract Surgery Then and Now

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Fifty-four-year-old Cole has worn glasses since age four. Without corrective lenses, all she could see of the eye chart was the shape, the white box. “My lenses were so thick—I never wore them out in public,” says Cole. “I was very self-conscious as a child and now. It’s been this way for most of my adult life—you learn to get by.”

As chief financial officer of Deer Valley Corporation, Cole’s work requires hours at a computer proofing thousands of numbers and figures. “At the end of the day, my whole body was exhausted, and it began to affect my work,” says Cole. “I used eye drops just to keep my eyes moist, drank lots of liquids and exercised, and converted to a larger computer screen. And I always had this fear that I might be viewed as less competent because of my vision. I avoided driving at night.”

Finally, in June of 2014, Cole was a candidate for cataract surgery. The results were immediate and astonishing. “My vision is amazingly clear. I see things I’ve never seen before: the veins in an aspen leaf; birds in the trees, in the sky, the detail and the color in their feathers and beak; and fish and turtles down in the water. Colors are more vivid. I see people differently—details in their faces, the color of their eyes. I see detail in movies. I’m no longer fatigued at the end of the day. I can drive at night. And I have a new-found passion for photography, cooking, and painting. It is amazing,” says Cole, “I feel this incredible joy and exploration in my life now.”

“One of My Happiest Patients

“Debra Cole is one of the most nearsighted patients I’ve had—legally blind in her right eye—20/500 and 20/950 in her left, and then she developed cataracts,” says Dr. Nick Mamalis. “But, she is now one of my happiest patients.”

“For me, it is extraordinary to see someone you love have a whole new level of enjoyment of the universe. We watched the World Cup together. She was gob-smacked: for the first time in her life, she could actually see the ball in play.”

—Peter Cole, Debra’s husband

Debra Cole

Peter and Debra Cole
In 2012 when we launched our Hope in Sight fundraising campaign, we had ambitious goals in mind—goals at the heart of our belief that no one facing vision loss should be without hope, understanding, or treatment.

We needed $22.3 million to meet these goals, and we are thrilled and humbled to announce that we succeeded—and even exceeded our goals—thanks to our strong campaign leadership and more than 3,400 amazing donors. With their support, we have made significant advances in science, in new AMD therapies, and in our efforts to treat preventable blindness in Utah and around the world.

Thanks to Our Volunteer Leaders!
We are particularly grateful to our campaign leadership who championed the Hope in Sight campaign. They hosted round tables and parties, attended our galas, and introduced friends and associates to the visionary work of the Moran Eye Center. With their support, in three short years we grew our donor base by 62 percent and our average gift by 181 percent.

Campaign Co-chairs
Thomas D. Dee, III  
Lawrence T. Dee and Janet T. Dee Foundation  
A. Scott Anderson  
President and CEO, Zions Bank  
John H. Firmage, III  
President, Firmco Financial Inc. and BMW of Murray

Honorary Chairs
William H. and Patricia W. Child  
Lisa E. Eccles  
Sharon Steele-McGee
Transformational Years

While the three-plus decades that preceded Moran’s Hope in Sight campaign saw one great leap after another, the past three years have been nothing short of remarkable.

CTM

Moran’s CTM was created in 2010 as an efficient model for new drug development. Focused on age-related macular degeneration (AMD), we used CTM-designated campaign funds to open a clinical research center and enrolled more than 1,500 patients in a genetic study of the disease. The eye repository—a globally unmatched collection of donated human eye tissue—grew by nearly 2,000 pairs. And, pharmaceutical giant Allergan, Inc. entered into a powerful research collaboration with the CTM designed to maximize our unique resources and their drug development experience to hasten the pace at which new therapies can be introduced into the market. The partnership is meeting or exceeding all milestones, and to date, we have confirmed that AMD is at least two distinct diseases—and we are identifying new drug targets for each. Generous campaign support has enabled the CTM to accomplish in 12 months what usually takes several years and millions of dollars. We are hopeful that within three years, we will have a new AMD treatment in clinical trials.

Research

The Hope in Sight campaign launched at a time when traditional funding for scientific research was at risk. While Moran is currently seventh nationwide in National Institutes of Health funding for ophthalmic science, the federal research budget has been shrinking for the last 10 years. Campaign support has enabled our research program to remain fully funded and focused on finding cures for blinding eye disease. Researchers in Moran’s 16 labs have made vital breakthroughs in understanding diseases like glaucoma, AMD, retinitis pigmentosa, and retinopathy of prematurity. They have created new forms of drug delivery, improved key surgical tools, and been involved in dozens of high-profile clinical trials. And last year, the top two vision science awards in the world were awarded to Moran researchers.

Outreach

Hope in Sight support has also transformed Moran’s Outreach Program. What began as a few passionate doctors traveling overseas has become a coordinated effort to send more than 30 medical providers to dozens of countries to train ophthalmic surgeons and staff, annually. We now provide desperately needed eye care to underserved communities as we help build or improve their health systems. The sustainability of our model resides in our commitment to train local medical providers. Each year, more than 16 surgeons from around the world come to Moran for advanced training and then return home with skills to vastly increase their patient volumes and train their own residents. We also made a long-term commitment to the Navajo Nation in 2013, bringing vision screenings, eyeglasses, and surgical care to the Native Americans living in the Four Corners region of Utah. In addition, we conduct a twice-yearly Charity Surgery Day that has become the model for Operation Sight, a national effort to coordinate organizations and volunteer surgeons who wish to end cataract blindness in the US.
Hope in Sight Foundation Supporters—A Lasting Legacy

Many charitable foundations are created as a way for donors to support future generations, as well as their own. Their gifts are a perfect fit for Moran’s research and outreach programs, which also focus on long-term goals of improved treatment options and sustainable care. Below are foundations that have supported our campaign at a level of $2,500 or above.

ARCS Foundation Inc., Utah Chapter
ASCRS Foundation
Bamberger-Allen Health and Education Foundation
John I. and Toni F. Bloomberg Foundation
Brindle Foundation
Burningham Foundation
Robert S. Carter Foundation, Inc.
The Castle Foundation
Cumming Foundation
Lawrence T. and Janet T. Dee Foundation
Thomas and Candace Dee Family Foundation
Dream Weaver Foundation
George S. and Dolores Doré Eccles Foundation
Willard L. Eccles Charitable Foundation
William and Fern England Foundation
Henry W. and Leslie M. Eskuche Foundation
Thomas H. and Carolyn L. Fey Family Foundation, Inc.
John B. and Geraldine W. Goddard Family Foundation
Val A. and Edith D. Green Foundation
The Huntsman Foundation
Johnson Foundation
Helen K. and Arthur E. Johnson Foundation
Judelson Family Foundation
KAT Charitable Foundation, Inc.
Ben B. and Iris M. Margolis Foundation
Herbert I. and Elsa B. Michael Foundation
Larry H. and Gail Miller Family Foundation
The Mark and Kathie Miller Foundation
Mitchell and June Morris Foundation
John and Marcia Price Family Foundation
Rafati Foundation
Raymond James Charitable Endowment Fund
Retina Research Foundation
Rothman Family Foundation
Ruvo Family Foundation
Peter and Nancy Salter Family Foundation
The Semnani Family Foundation
Harris H. and Amanda P. Simmons Foundation
Sam and Diane Stewart Family Foundation
The Donald J. Trump Foundation, Inc.
Wattis Dumke Foundation
Stephen A. Wynn Foundation

“As a long-time member of the John A. Moran Eye Center Advisory Board, I am pleased that our foundation was able to help create tailor-made space for the outstanding work of Dr. Gregory S. Hageman and his team. We are delighted that Dr. Hageman is part of the world-class faculty associated with Moran, and we hope our support will hasten the development of therapies to address age-related macular degeneration.”
—Spencer F. Eccles, Chairman and CEO, George S. and Dolores Doré Eccles Foundation

“When it comes to Moran, we have a long and trusting relationship, so we all know that whatever the needs are, they are worthy. I don’t hesitate to tell people facing vision challenges, “this is where you have to go—there is no better place in the country—so put your eyes in their hands.”
—Val Green, President, Val A. and Edith D. Green Foundation
The ALSAM Foundation—
Honoring One of Utah’s First Families
With the passing of L. Sam Skaggs in 2013 and Aline Skaggs in 2015, the Moran Eye Center lost dear friends who were instrumental in building the John A. Moran Eye Center. We are grateful for their belief in our efforts, and we want to thank the entire ALSAM foundation for their generous support.
Paul S. Bernstein, MD, PhD, received the Utah Ophthalmology Society’s Lewis A. Peterson Humanitarian Award for 2014. Bernstein, who specializes in macular and retinal degeneration, vitreoretinal diseases, and retinal biochemistry, is a skilled surgeon and educator, dedicated to bringing modern vitreoretinal services to the developing world, where access to retinal care can be extremely limited. The hands-on specialty training that he brings to local providers is key to expanding available and quality care in a sustainable manner.

Mary Elizabeth Hartnett, MD, FACS, FARVO, received the 2014 Women in Ophthalmology (WIO) Scientific Contribution Award and the Honorary Lecture Award. Dr. Hartnett, an exceptional clinician who is passionate about improving care for pediatric retinal patients, received WIO’s two highest honors in recognition of her research into retinopathy of prematurity and other retinal diseases.
While perfecting a technology for imaging the metabolism of cells, the Marc Lab created this color-coded map of part of a mouse kidney as it breaks down food to make energy through chemical reactions. Colored red, blue, and green, molecules produced by some of these reactions show how metabolism can vary between cells in the same organ at a given point in time.

Credit: Jefferson R. Brown, Robert E. Marc, Bryan W. Jones, Glen Prusky, and Nazia Alam.

“Metabolites in Mouse Kidney,” a collaborative effort from Moran’s Marc Lab, is a 2015 Wellcome Image Awards winner. Each year, the award recognizes the creators of 20 of the most informative, striking, and technically excellent images, which go on display at science centers and public galleries across the United Kingdom, as well as additional venues in Europe and the US. Jefferson R. Brown, MD, PhD, accepted the award on behalf of the lab at the Wellcome Trust Headquarters in London in March, 2015.
Pressure Kills Healthy Cells

While studying the mechanisms that cause pressure to damage the eye, Moran researcher David Krizaj, PhD, and his team made exciting discoveries that relate cell injury in glaucoma to that from blast pressure. When the head is subject to an explosion, the eye’s cellular tissues distort and rupture due to the over-pressurized wave that envelopes the body. This causes retinal detachment, death of retinal cells, damage to the optic nerve, and vision loss. “In recent wars, massive explosives targeting people and vehicles have exposed so many soldiers to blasts—it is alarming,” says David Krizaj, PhD. “As a result, eye damage among infantry has skyrocketed.”
But How?
Collaborating with other departments from the University of Utah and worldwide, Krizaj’s team researched how cells communicate with each other. They knew that pressure and inflammation caused eye damage, and they knew that pressure could be reduced with medication and surgery, but they didn’t know how the eye senses pressure and how that pressure kills cells. “We thought that if we could find that mechanism, we could block those pressure sensors with pressure-reducing drugs, and we could protect cells from dying from pressure. And we did it!”

The group identified the pressure sensors in neuronal cells that die in glaucoma and found that with new drugs that target pressure-sensitive ion channels in their membranes, they could protect these cells. Importantly, they also discovered that these sensors are localized to two other types of retinal cells known to be impacted in glaucoma and by blast injury: astrocytes and microglia—amoeba-looking glial immune cells. Their job is to feed neurons, remove metabolic waste, and get rid of unhealthy cells; however, if they become over activated, they start to release chemicals that can be deadly to neurons.

Confused Astrocytes and Microglia Cells
Krizaj’s team discovered that astrocytes and microglial cells get confused when strongly activated by different types of mechanical stress, such as intraocular or blast pressure, and they wreak havoc in the surrounding brain tissue. “They sense the pressure, think the healthy cell is dead and that tissue is damaged, swarm like a pack of angry wolves, release molecules meant to kill, and attack it—literally eating our brain,” says Krizaj. “That is what we want to stop. The over-active cells make blast-induced cell damage worse. But we don’t want to kill astrocytes or microglia cells; they are critical in development. Ideally, we want to control their activity—keep them quiet by controlling the stress and the excessive swelling. Because excessive swelling is the most immediate problem after the blast, we hope our new therapies will help mitigate injury by reducing pressure immediately following blast impact in the field.”

Saving Sight—Saving Lives
Since finding that treatments to reduce pressure in glaucoma are relevant to treatments for traumatic blast injuries, Krizaj’s team has received a grant from the Department of Defense to develop drugs that could be administered onsite as an injection or a pill for blast-trauma patients. Their goal is to reduce immediate pressure-induced swelling and inflammation and hopefully to prevent long-term functional damage to the soldier. In the past year, Krizaj’s team has developed and patented therapies that will soon go to clinical trials.

“Treating a serious disease is not something a single person can do—it is a multidisciplinary endeavor that involves and requires expertise from many different branches of science, industry, and government. To succeed, all of them have to work together, which is not easy. Moran is one of the few places in the world where this is not only possible, it is happening.” —Dr. David Krizaj
“We're all lucky that Gracie came to Moran when she did," says Hartnett. "I performed an urgent exam under anesthesia that showed leakage from the abnormal vessels in her right eye and confirmed an inoperable retinal detachment in the left. We also confirmed that she has a really challenging case of FEVR—basically leaking and hemorrhaging blood vessels in the retina. I treated her with laser to stop the leakage and continued to follow her every two weeks, then every two months or so, continuing laser treatments." FEVR is rare—as are most pediatric retina diseases—and it's hereditary. It turns out that Jamie has the same mutation as Gracie, but Jamie doesn't manifest the symptoms, so it's not something the family would have known about.

“That first year, we traveled back and forth at least 12 times," says Ryan. "Everything was going well until last June when Dr. Hartnett discovered that Gracie's right retina was starting to detach. She ended up doing two 'lens-saving' vitrectomies, so Gracie can still see. In fact, she has good close-up vision. She likes to play catch and she can hit a ball off a tee. All I can say is, we could not be in better hands.”

“Gracie continues to have functional vision,” says Hartnett. "We'll keep monitoring her and preserve as much vision as possible. Meanwhile, we need to keep up the research to prevent or find a way to slow down the activation of the vessels—it's so important.”
Rare eye diseases and conditions specific to children require accurate, timely diagnosis and treatment. They also demand that doctors and parents act as constant advocates, staying on top of patients’ treatment. These facts, along with the area’s growing population, helped spur development of Moran’s Pediatric Retina Center, the only such facility in the Intermountain West. Specializing in surgery, medical diagnosis and treatment, and oncology, the center provides ongoing care and guidance to the youngest—and tiniest—patients and their families.

**Rare Eye Disease Specialists**
Healthy development and function of the retina, a light-sensitive layer of tissue lining the back of the eye, is critical for normal vision. The Pediatric Retina Center at Moran provides a range of unique services and procedures to help prevent and treat blinding retinal conditions in children and infants. Specialists here have expertise in diagnosing these conditions, including several rare diseases—many involving genetic predisposition, infection, trauma, or prematurity.

Services offered in conjunction with the Pediatric Retina Center include pediatric imaging, genetic counseling, and surgical care. Please visit the Patient Care section at [moraneyecenter.org](http://moraneyecenter.org) for details on these services and on a range of pediatric eye conditions.

Mary Elizabeth Hartnett, MD, is the force behind the Pediatric Retina Center’s development. A vitreoretinal surgeon, her clinical interests include vitreoretinal surgical diseases, pediatric vitreoretinopathies, trauma, retinal detachments, and diabetic eye disease. She is also a leading researcher on retinopathy of prematurity, commonly known as ROP—vision-threatening abnormal blood vessel development in the eyes of very premature babies. In addition, Hartnett is the author of *Pediatric Retina*, the main industry reference on the subject.
“When it comes to kids, the first pair of glasses is the most challenging,” says Ellen Linde-Fagergren, American Board of Opticianry (ABO) Certified Pediatric Specialist at the Moran Optical Shop. She’s been fitting children’s glasses for all ages, including children with special needs, for 17 years.

The stakes are incredibly high in the world of kids’ vision. Whether they have special needs or require a slight correction, their vision is constantly developing, so the wrong prescription or “slightly off” fit can actually cause further complications.

“The child’s world changes entirely when he or she puts on glasses. It can change their depth perception,” Linde-Fagergren notes. “The brain and eyes have to work together to force the eye muscles to properly align. You don’t want kids to be looking above or below their lenses, so it’s function first, fashion second.” That’s precisely why Linde-Fagergren’s expertise in customizing every pair she fits is so important. From her workbench stocked with tools for creating special frames, tweaking, sewing straps for proper fit, and fixing broken parts, she creates miracles, big and small. She often works with the smallest pair of glasses made: a 27mm-eye size for babies born with conditions such as retinopathy of prematurity or congenital cataracts. Resembling tiny doll glasses, they have straight, paddle-shaped arms to compensate for the cartilage around the nose and ears that is not fully developed. For each pair, Linde-Fagergren adds a soft strap to go around the back of the head. In other cases, special needs kids may be missing ears or have head shapes that require customized solutions for keeping the glasses in place. Whatever the need, she’s on it. She also follows up with regular appointments, checking the child’s growth, making sure the glasses still fit and are doing their job.

It’s not unusual to find Linde-Fagergren sitting on the floor with her pint-size clients as she talks to them and to their parents at the same time, reassuring everyone about the benefits of glasses and schooling them in the challenges—from breaking them in slowly to what to do when they break—to the benefits, including important warranties. A mom herself, she has a gentle but confidence-inspiring way of getting clients of all ages to listen—and see.
Houston Gets Glasses

Houston Thompson was less than a year old when his parents, Krystal and Blake, met with Moran pediatric optician Ellen-Linde Fagergren to fit his first pair of glasses.

The event marked one more step in the process of adjusting to Houston’s microtia—a congenital condition affecting the outer ear where the ear does not develop fully. As a result of microtia, he also has “unilateral congenital ptosis”—in this case, a slightly droopy eyelid on his right side and a fixation preference for the left eye compared to the right.

“Houston’s depth perception is off on his right side,” says his mom, “so until he started wearing glasses, it was hard for him to even put objects into a bucket if the objects fell behind him on his right side. He has no hearing on his right side and that makes it a little harder to hear noises that most people would hear normally. Altogether, this has heightened his other senses, and it can be hard for him to want to wear glasses or gloves, as he feels it is taking another sense away. But even though he has glasses and only one ear, he can do all the things other children do.”

At a recent fitting, where Linde-Fagergren adjusted a new customized hand-sewn T-strap on Houston’s glasses, a few things were evident the moment he put the glasses on. Clearly, he could see more of the world around him as he looked around the shop; he is a typically active, curious toddler who is still adjusting to these corrective lenses and the T-strap in his wavy brown hair; and he and Linde-Fagergren have bonded. As Houston grows, she will be here for him, possibly up until he is a young teenager. If he needs protective sports glasses or ski goggles, she has solutions for those, too.

“We chose Moran because it’s one of the only places that have glasses to fit a child this young,” says Krystal. “Also, we heard that Ellen was great to work with, and that certainly turned out to be true.”
Traveling to some of the neediest areas of the world, the Moran Eye Center Outreach team conducts nine major outreach medical eye camps each year. Most recently, they have established vital local partnerships and made five-year commitments to Haiti, Micronesia, and Guatemala.

In December, 2014, the team conducted its second outreach medical eye camp in Salamá, Guatemala—a region with 700,000 people and only one ophthalmologist. Here’s a day-by-day account of that experience.

Day 1

Before the driver can turn off the engine, the team is off the bus and unloading medical supplies. A single-file line forms, and each person steps forward to receive an equipment bag. As the final duffels are carried in, the operating room team begins tearing down the existing clinic. They move tables, clear shelves, and relocate equipment. They want a clean canvas for their surgical supplies, operating tables, and microscopes.

Before the week’s end, they will restore sight to more than 100 patients—a feat made possible by Moran’s many dedicated professionals who have spent years creating and refining best practices for delivering care to remote and underserved regions. The support of dozens of volunteers and hundreds of donors have made this mission, and others like it, possible.

Day 2

Shuffling backwards, Lucia Pasqual glances over her shoulder as she leads her mother by both hands into the clinic. Local Lions Clubs have spread the word that Moran’s surgeons are in Salamá, and Lucia has brought her mom, blind in both eyes, for help. Like most of the patients, her mother has cataracts from years working the fields under the intense sun. Her family worries that her mom will fall or hurt herself, so Lucia has quit work to care for her. The family is now down two incomes.

All morning, patients stream in. Most have blinding cataracts in both eyes. They are brave and trusting as their families navigate the organized chaos, leading them from check-in, to scans and measurements, to registration and lens selection, to dilation and surgery. The team completes 34 surgeries.
Day 3

Still wearing his post-surgical eye shield, Santiago is carefully guided by his daughter to a seat in the waiting room. His head hangs and his expression is empty. Santiago has been completely blind for years; he is used to a world without sight. As the medical team works its way down the line of post-operative patients, Santiago waits patiently to have his patch removed. At last, he is instructed to lift his head. A volunteer gently pulls the tape from his brow, and his eye patch falls. Santiago stares vacantly for a minute before blinking and moving his eye. Slowly, he turns toward his daughter and smiles. She laughs and smiles back. Santiago can see! When asked what they are looking forward to now that his vision is restored—“freedom”—they say in unison. The family is free from the burden of having to care for him, and Santiago is free to return to the fields to work. Today, the team restores sight to 37 patients.

Day 4

Patients and their families are crammed in the clinic. Busloads have arrived from Coban, a rural village eight hours away. Others have come by cart and oxen. Marta Morente Ixcopal has used the family’s savings to hire a taxi to bring her mother, Cornelia, for surgery. Cornelia is deaf and blind and must be carried everywhere. Marta does not know where they will stay for the night, but she trusts there will be help. She is right. The local Lions Club has arranged for patients who have traveled far distances to stay in the locker room of a nearby soccer stadium where they will be fed and given bedding. The team completes 35 surgeries.

Day 5

Today there are tears. Cornelia’s daughter, Marta, waits anxiously for Cornelia’s patch to be removed. Yesterday, the doctors told her there is nothing they can do for her mother’s right eye— the damage is permanent; but they operated on the left eye hoping to restore partial vision. When the patch comes off, Cornelia struggles to open her eye. She is stoic, and it is unclear if the surgery has worked. Marta asks if she can see, and Cornelia nods. She can perceive light. The doctor comes. He tells them the surgery was successful and she should gradually start to see more. They wait quietly for the taxi that will take them home. When it arrives, Marta prepares to lead her mom out of clinic, but Cornelia waves her off. She wants to walk on her own. Mother and daughter both start crying. Cornelia is seeing! They hug each other and the Moran staff. Then, side by side and hand in hand, they walk to their taxi. “Thank you, thank you,” they say the entire way.
The team boarded the Caroline Voyager, a 180-foot merchant cargo ship, for an arduous 39-hour journey across 300 miles of open sea from Pohnpei to the Satawan Atoll. Due to limited space, half of the team had to sleep on the 30’ x 35’ deck of the cargo hold doors, covered with a tarp as shelter from the ongoing mix of rain and blazing sun. Micronesian citizens, who rarely get the opportunity to travel between islands, also climbed aboard the Caroline Voyager for the opportunity to return to Satawan and its neighboring islands.

Summer 2014: The Moran outreach team traveled 6,200 miles from Salt Lake City, Utah, to their most remote destination yet—the islands of Pohnpei and Satawan Atoll in the Federated States of Micronesia (FSM)—to conduct the first of many eye camps over the next several years. Only 70 of the 607 tiny islands are inhabited, with a population of 110,000 people living across 271 square miles of land. Not a single ophthalmologist resides in the FSM, and the backlog of blindness is staggering. The team conducted 500 screenings and performed 242 surgeries on their first trip and will return in July, 2015. Change will happen gradually, but it has already started with one Micronesian physician, Dr. Padwick P. Gallen, who is training to become the first and only ophthalmologist in the FSM and will be practicing by the end of 2015. Each year, Moran physicians will return to work with Dr. Gallen and other local medical providers to conduct eye screenings, surgeries, and ophthalmic training, in keeping with Moran’s model of sustainable eye care.
Each year, the Moran Eye Center Outreach Division meticulously plans and performs several outreach medical eye camps (OMECs) around the world. Often, these camps take place in remote, difficult-to-reach areas that offer few, if any, medical facilities, sanitation, or even lodging. Each OMEC requires that the team lock down mountains of details well before the trip. Here’s a typical checklist, starting three to four months before each trip.

**Visas to vaccinations**

- Exactly what does every team member need, and when?
- Contact Centers for Disease Control, local governments.

**Do we need security?**

- If so, who provides it? What’s the cost?

**Screening and surgery situation**

- Number of patients?
- What’s the facility like?
- Does it have walls? Screens?
- Operating tables? Sterilization?
- What equipment do we need to bring with us?

**Accommodations**

- Hotel, houses, tents? Toilets, or not?
- Do we need a site visit? Arrange all lodging, take into account room sharing.
- Where will patients stay?
- Who’s feeding all of us?
- Where does the food come from?
- How’s it washed, prepped, served? (Water must be boiled or bottled.)
- Need to hire a local cook?
- Need to truck food in?
- Start planning and hiring now.

**Logistics**

- Distance of airport from the OMEC? How to transport team and equipment?

**Team**

- Assemble medical and volunteer teams based on need. Every professional must be credentialed to work in the destination country, each time they visit.
- Ask teams to visit secure website for credentialing all visa, passport, medical, information and a long, long packing list: imodium to head lamps, mosquito nets to ear plugs.
- Get copies of every team member’s CV, diploma, licensing, extra passport photos, travel insurance, emergency contacts, and more. Plan to carry with you at all times.

**Incidentals**

- Exchange currency. Take cash. (Might need it for tips or “special favors.”)

**Equipment**

- Items such as operating room chairs, IV poles, syringes, flashlight headlamps, disposable surgical drapes, retinoscopes.
- Double check: Do we know exactly what we need to do to get equipment through Customs?
- Count and pack supply and pharmacy lists. You may be looking at more than 200 items and have up to 300 cases.
- Have a pizza party for packing 50-lb duffle bags, and every team member must carry at least one! Pack the content list in each bag to expedite customs.

**Team meeting Q&A**

- Is every team member prepped?

**Meet at the airport or gather for carpools, and we’re off.”**

*“Our trip is officially launched when we receive a formal invitation from the country in need.”*

Lori McCoy
Outreach Division Coordinator
Craig John Chaya, MD, grew up in Southern California in a family of physicians and a world of medical missions initiated by the Seventh-day Adventist Church. “The overseas work I did in high school was formative,” he says. “Building schools, churches—even toilets—I developed a joy and passion for humanitarian work.” But when the shifting of the earth’s plates in the Indian Ocean on December 26, 2004, caused a rupture more than 600 miles long, creating one of the world’s most devastating earthquakes and tsunamis, Chaya’s understanding of humanitarian outreach deepened even further. “I was just finishing up my residency in internal medicine at the West Los Angeles VA Medical Center. A friend of mine, an ER doc, talked about going to Banda Aceh to volunteer. In just over two weeks after the tsunami occurred, we headed to Indonesia and joined a medical team from the Medan Adventist Hospital. Arriving in Banda Aceh was surreal. The city was completely leveled as far as you could see. For 10 days, we provided disaster care—with no time to really process the magnitude of what occurred. When I came home and started looking at the pictures from the trip, I started processing how devastating the situation was, and I wondered, did we make a difference? I discovered that for many humanitarian groups, the impact of their work can be highly intense but also highly transient.”
That realization was key in drawing Chaya to Moran’s global outreach work. “Moran’s model is sustainable,” he says. “In addition to providing sight-restoring surgeries in remote areas, we look for local medical talent. We groom and support them; we bring them here for training; and we make long-term commitments, going back year after year. People need to understand that it takes time—and that you can’t just train an ophthalmologist—you have to train an entire health care delivery system. In Haiti, for example, glaucoma is a major challenge. Getting patients to agree to surgery is a very hard sell. But really early screening and education can make a huge difference.”

Oncology to Ophthalmology

Chaya started out with aspirations to be an oncologist, but in his third year medical school surgical rotation, he had some surgical elective time and randomly decided to fill it with ophthalmology. He first became acquainted with Moran as a medical student when he did an away-rotation with Dr. Norm Zabriskie. “It was a great experience, and I was enamored with Moran,” he recalls. “I was immediately overwhelmed with the difference you could make in someone’s life—with how precious sight is to all of us, so I made a late career change, shifted my aspirations. My long-time dream had been to become an international doctor, and I knew that Moran had two of the most recognized leaders in that realm—Drs. Alan Crandall and Geoff Tabin.

“My wife, Michele, is a nurse practitioner, and after I graduated, we committed as a family to doing full-time medical mission work overseas. We were mainly in Guam, but I came back to the US for a conference and ran into Dr. Randall Olson. He suggested I come back to Moran, make it my home base. At that time, we were very close to moving to New Zealand, but Dr. Olson was very compelling.”

Today, Chaya practices comprehensive ophthalmology and specializes in the medical and surgical management of adult and pediatric cataracts, glaucoma, and anterior segment surgery at Moran. Michele homeschools their three children—Mica, Malia, and Malachi, ages eight, six, and three respectively. Whenever possible, the family accompanies Chaya on his outreach missions. “We like to think of our work as a team effort,” he says. “We feel it’s important for our children to have a global perspective—to see how other communities live, to understand the importance of helping those who are less advantaged.”
Local Outreach IN A FORGOTTEN LAND

The Moran Eye Center, in partnership with Utah Navajo Health System, Inc. (UNHS) and Blue Mountain Hospital, is committed to bringing pediatric and adult eye care to residents of the Utah Strip of the Navajo Nation, providing surgical care and hundreds of eye screenings for patients monthly.

Sixty-year-old Betty Jelly tends sheep near Hovenweep, about an hour’s drive from Blue Mountain Hospital in Blanding, Utah, where the Moran team performed her cataract surgery. To the Utes and Paiutes, “Hovenweep” means “Deserted Valley.” To Betty, it’s the land she depends on to help maintain her independence as she tends her flock. But, like so many citizens of the Navajo Nation, blindness threatened to rob her of her livelihood. “With one eye, I see one sheep; with the other eye, I see two,” she told doctors, speaking in Navajo translated by her son Charles. “It is very confusing.” When Betty and Charles came to Blue Mountain, they each had cataracts in both eyes. At the time of his surgery, Charles was living with his mother and unable to work at all. They depended on a driver to bring them to the hospital and to take them home again. As both waited expectantly for surgery, tiny Betty, enveloped in surgical cap and gown and an enormous-looking bed, nodded her head, smiled, and said, “I feel good about having eye surgery today.”

Betty and Charles are just two of the over 600 Navajo citizens within the past 12 months to receive free vision screenings and exams by Moran volunteers.
Contrasts and Challenges
While southern Utah's stunning red rock country is a coveted vacation destination for over 10 million people each year and provides over 600 million dollars in economic benefit to the region's economy, it is also home to the Navajo Nation—one of the most underserved, isolated, and neglected areas in the Lower 48. Citizens living in the remote Four Corners region, where Utah, New Mexico, Arizona, and Colorado meet, struggle with some daunting obstacles: the remoteness of the land makes daily transportation a challenge; the unemployment rate is around 50 percent; a lack of basic infrastructure means that approximately 25 percent live without running water or electricity; and specialized health care is limited. “The sheer vastness and remoteness makes access to health care difficult,” says Michael Yei, Moran Outreach Division Manager. “Many folks fall through the cracks. It is hard for them to navigate the system, to figure out how it all works.”

The high incidence of Type 2 Diabetes, UV exposure, and the overall impact of poverty has created an urgent and critical need for eye-care delivery in the area. Unnecessary blindness from cataracts, lack of vitamin A during pregnancy, diabetic retinopathy, and uncorrected refractive errors in children are common, even though most of these eye conditions are either curable or preventable.

Partnerships and Commitment
In addition to UNHS, Moran contracts with Sight Path, a national organization that provides specialized mobile ophthalmic equipment that is not available at Blue Mountain Hospital, and with Angel Flight, a volunteer nonemergency air transportation service.

“We are only as good as our partners,” says Yei. “We are so thankful for their ability to support our efforts on this part of the Navajo Nation. I’ve always believed that health care is a basic human right. In areas where there is not access to it, the burden of disease matches places in the developing world. We are committed to reaching populations that are the most underserved right here in Utah. Because we have the resources and the ability, I think we have an obligation and responsibility to provide that care.”
American Society of Cataract and Refractive Surgery
Looks to Moran as a National Model for Treating Curable Blindness

Every day, thousands of people in the US have to put their lives and livelihoods on hold because they suffer from treatable blinding conditions, most often caused by cataracts. They are often forced to rely on others for everyday functioning and care. In turn, many suffer from depression and low self-esteem. Many in this population are too young for Medicare, earn low wages, or are underinsured or uninsured. Through our semi-annual Charity Surgery Day, the Moran Eye Center works to restore sight for people in our community.

Initiated three years ago by Moran residents, Charity Surgery Day is an outgrowth of the volunteer eye care Moran residents provide at Salt Lake City’s Fourth Street Clinic. As they saw a growing need to follow up on cases where surgery could help patients get back to work and live more independent lives, the residents took action. Today, Charity Surgery Days are still organized by Moran residents and have proven so successful and cost-efficient, the American Society of Cataract and Refractive Surgery (ASCRS) Foundation’s new Operation Sight network adopted Moran as a model in 2014. Moran is now one of five founding members of the network, whose mission is to provide a centralized approach for organizations and volunteer surgeons who wish to end cataract blindness in the US.

Dr. Derek J. Sakata, MD, and Lavenita Mahanga.
A retired English school teacher, 63-year-old Lavenita had cataracts in both eyes. She is the sole caretaker for her husband, who is disabled from a stroke. Prior to her surgery, she could only tell who some people were by their voices; she couldn’t make out where to step up for a curb or stairs—and she had fallen. She was excited to be at Moran and to have her eyesight restored. After surgery, Lavenita was all smiles as she beamed, “I can see out of my right eye now. It is clear. I feel so happy.”
Volunteers Make it Happen
Through Moran’s low-cost charity surgery model, physicians, nurses, anesthesiologists, technicians, and staff volunteer their time to provide surgeries to pre-screened patients at no cost. The operating room is staffed and run as it would be on any other day, except patients are not billed for their care. Donors and the Moran Eye Center’s annual “Night for Sight” fundraiser event cover all the costs. The October 2014 Charity Surgery Day was underwritten by the Henry W. and Leslie M. Eskuche Foundation and received additional support from Operation Sight and ASCRS.

“Moran is a wonderful model for us,” says Don Bell, ASCRS chief executive officer. “I’ve observed two of their events, and the amount of work is incredible, as is the remarkable caring and empathy. Last October, at the end of the day, 21 people left with vision that will improve their lives. Overall, there is an incredible socioeconomic benefit, not only for patients, but for families and the community as well.”

For more on Operation Sight:
ascrsfoundation.org/operation-sight

Dr. Brian Zaugg gives patient Ed Ylst, a reassuring talk before Ylst’s cataract surgery. Ed went into surgery with a great attitude and came out with a much brighter future.

Former commercial truck driver, Ed Ylst is 64 years old. A friend drove him to Moran for surgery, as he lost his commercial driver’s license because of his impaired vision. Ed was also a journeyman carpenter until about 12 years ago, but lost his depth perception, making that work extremely dangerous for him. He was continuing to do handyman work, but really hoped to resume driving. “This whole cataract thing has really had a severe financial impact on me,” he said. “I’ve also suffered a lot of depression. When you can’t drive, can’t read, and can’t work, it just all adds up to some bad times.” Ed’s surgery was a success, and he was able to resume driving within a few days.
The term, “Moran model” continues to describe Moran’s cutting-edge programs, from our sustainable outreach model, to fast-tracking clinical trials and new therapeutics, to quantifying surgical techniques that ensure safe and efficient patient outcomes. While the term “model” can be ambiguous, at Moran, it embodies a philosophy that begins with Chair and CEO, Randall J Olson, MD, who supports a culture of independence, creativity, and resourcefulness.

This philosophy is at the heart of Moran’s unique education program, which allows residents the latitude to tailor their own training. Jeff Pettey, MD, Director of the Education and Residency Program at the John A. Moran Eye Center describes it as a supportive culture, designed to help residents succeed. “When you bring in a spectacular group of people—three applicants out of over 400 are selected—and offer support rather than requirements and restrictions, you allow them to accomplish great things,” says Pettey. “I trust residents are going to work hard and study. I trust they are going to be active and motivated learners. As we listen and give them tools they need to succeed, they are able to accomplish truly amazing things because we are getting out of their way.”

How We Provide Support

International Outreach: Moran’s Outreach Division is unparalleled in our mission to eradicate curable blindness worldwide through a perpetual, sustainable model. Moran pioneered international ophthalmology elective time for residents who choose to take advantage of a three-week rotation of humanitarian outreach. The opportunity to travel out of the country to participate in training and education has produced the next generation of leaders in international ophthalmology.

Charity Surgery Days: Moran’s focus on supporting residents in pursuing their unique passions produced Charity Surgery Day. In 2012, Moran residents and University of Utah medical students spearheaded a volunteer program—now a national model—to provide charitable surgery to a group of Utah’s underserved population two Saturdays each year. Partnering with local clinics, residents continue to drive the program that has provided surgery for 75 patients in less than three years.

Patient Care: Under the supervision of a board certified ophthalmologist, residents perform approximately 300 cataract extractions and almost 400 other major surgical operations. During a weekly resident-staffed “Continuity Clinic,” they learn how to become the key provider for each of their patients with graduated levels of responsibility, beginning day one.

Research: Residents who have a strong research interest are given a half day a week of protected research time throughout their residency. Beyond the commitment of protected time, residents can become eligible for an Achievement Rewards for College Scientists (ARCS) Award of $15,000 for research the first year of their residency. Thanks to generous donors, Moran is able to provide an additional $15,000 dollars each year for the remainder of their training to continue their research.
Moran Resident Brian C. Stagg, MD, Honored to be Chosen to Represent All US Ophthalmology Residents

Congratulations to Brian C. Stagg, MD, who was appointed “resident representative” for ophthalmology’s Resident Review Committee (RRC) for the Association of Graduate Medical Education (ACGME), effective July 2014 through June 2016. The RRC reviews and awards accreditation for all specialties for the ACGME, which means Stagg represents all ophthalmology residents in the United States. This two-year appointment is an honor for Stagg and for Moran. He also received the 2013 Achievement Rewards for College Scientists Foundation Inc. (ARCS) Award.

“I chose Moran for residency because it provides the ideal training environment to become a successful physician-scientist within the field of ophthalmology. The idea of the triple-threat physician is alive and well here at Moran!” —First-year resident, Rene Choi, MD, PhD.

Triple-threat physician: world-class researcher, teacher, clinician.
Consistently Ranked as One of the Top 10 Ophthalmology Education Programs in the Nation

For over 30 years, the ophthalmology program at the University of Utah School of Medicine has offered excellent didactic training and extensive surgical experience. Each year, faculty from the Moran Eye Center provide ophthalmology training to approximately 70-80 medical students and visiting residents as well as three interns, nine residents, seven to eight fellows, and many international observers. As the only medical school in the Intermountain area, the University of Utah plays an important role in training the region’s next generation of physicians and ophthalmologists.

**Residency Program 2014-2015**

**First Year**
- Julia Byrd, MD
- Rene Choi, MD, PhD
- Eileen Hwang, MD, PhD

**Second Year**
- Adam Jorgensen, MD
- Brian Stagg, MD
- Russell Swan, MD

**Third Year/Chief Residents**
- Zachary Joos, MD
- Trent Richards, MD
- Brian Zaugg, MD

**Fellowship Program 2014-2015**

**Cornea**
- Carlton Fenzl, MD
- Jason Feuerman, MD
- Reuben Valenzuela, MD

**Neuro-Ophthalmology**

**Retina**
- Nikhil Batra, MD
- Jim Bell, MD

**Glaucoma**
- Dan Bettis, MD
- Hari Bodhireddy, MD
- Anya Gushchin, MD
A superb overall experience

With 11 locations and four state-of-the-art ophthalmic surgery suites, over 40 ophthalmology specialists carry out more than 6,500 surgeries per year at the Moran Eye Center. This ensures that residents and fellows have ample opportunity to participate in a full spectrum of clinical and surgical experiences.

Located at the base of the spectacular Wasatch Mountains, the University of Utah is the flagship institution of higher education in Utah. Within reach of seven major ski resorts, gorgeous desert country, and a population known for its friendliness, Salt Lake continues to rank among the top cities in which to live.

**Resident Alumni Day:** One day each year, residents present an overview of their interesting or unusual patient cases, treatments, and results to faculty and community physicians and provide an update on current research in the Department of Ophthalmology and Visual Sciences. Designed to enhance and expand medical knowledge skills of the residents, presentations are based on their interest, relevance, and applicability to current ophthalmologic concerns and treatments. In addition, a keynote speaker from an affiliate academic institution presents the Robert H. Hales Memorial Lecture.

The Moran Eye Center offers ophthalmology fellowship programs in cornea and refractive surgery, glaucoma, neuro-ophthalmology, retina, and international outreach. For more information, please contact the Department of Ophthalmology and Visual Sciences Academic Office at 801-585-6701.
First-year resident Eileen Hwang, MD, PhD, remembers that, at age nine, she read an article about the origins of life and decided then and there to become a molecular biologist. Never wavering from that decision, she earned a PhD—while in medical school—in molecular biology, which was supported through a prestigious National Institutes of Health F30 fellowship to study hereditary diseases of collagen at Robert Wood Johnson in New Jersey. In 2014, she was honored with the Achievement Rewards for College Scientists Foundation Inc. (ARCS) “Randall J Olson Scholar Award,” including a $15,000 unrestricted grant to continue her research interests. “One of the things that attracted me to Moran’s residency program is that residents have time to research, to publish, and to tailor our own training,” says Hwang. “This is not the case in other programs. Here, I don’t have to put my research on hold.”

Currently, Hwang is researching biophysical techniques used to measure blood molecules in relation to the genetic risk factors for advanced age-related macular degeneration. And her research won’t stop after her first year. Moran builds on ARCS’ generosity by providing matching funds for second- and third-year residents to continue their research.

Hwang’s impressive scientific and exploratory nature manifests in her other passions as well. She describes being a ski patroller, EMT, mountain biker, rock climber, and overall adventure-seeker. One year, she “wanted to explore somewhere new,” so she took a position as a park ranger and landed in Furnace Creek, Death Valley National Park. “Ophthalmology is a perfect fit for me. I really love learning and exploring new places, concepts, ideas; I enjoy hands-on surgery and patient care,” says Hwang. “My dream for the future—I would like to keep living in the west and become an excellent clinician and researcher. I’m so glad I chose to come to Moran and that they chose me!”

Meet Eileen Hwang, MD, PhD: Scientific, Curious, Independent

Moran’s Elite Resident Program Attracts Award-winning Scholars from Across the Nation

The ARCS foundation, committed to advancing science and technology in the United States, provides financial awards to academically outstanding US citizens studying to complete degrees in science, engineering, and medical research. Only US universities whose departments are ranked in the top 100 in the country are eligible to receive ARCS Foundation Scholar Awards.
Cecinio “Nikko” Castillo Ronquillo Jr. PhD, ’(13), MD ’(15)
Research Prodigy to World Expert

While working as an MD/PhD student in the lab of Moran’s Proctor-Award-winning biochemist and genetic researcher, Wolfgang B. Baehr, PhD, Dr. Nikko Ronquillo became the world expert on Senior-Loken syndrome (SLS). A rare inherited disease caused by a genetic mutation, SLS affects one in one million people worldwide—350 in the US. Kids as young as seven start developing subtle symptoms of retinitis pigmentosa, a blinding eye disease. By age 11, they develop cysts on the kidneys and need a transplant, or the kidneys fail.

Sparking an Idea
“One day Wolfgang said, ‘Why don’t you start your own project?’ I had no idea what I wanted to do, except that I was interested in studying inherited retinal diseases and developing animal models to study these diseases,” says Ronquillo. “That’s the expertise of Wolfgang’s lab worldwide—it is why I came to the University of Utah and to Moran.” Ronquillo found an ideal target for his project when he read that people with mutations in the gene Nephrocystin-5 (NPHP5) develop SLS. “There are around five other known genes that cause SLS, but NPHP5 is the most common cause. This means when you are missing NPHP5, you will always get SLS. That’s clean-cut genetics. I was baffled that people were not doing anything about this gene—so I started from there.”

Pursuing a Passion
Ronquillo wrote a proposal and received a competitive grant from the National Institutes of Health to create an NPHP5 knockout mouse model, designed to be blind and develop kidney problems. “The importance of this work is that now we have a platform to delve deeper into how NPHP5 mutations cause disease and to design potential therapies that can be tested in the animal model.” Ronquillo has also found three families affected with SLS in Utah. For each person affected in the SLS family, the goal is to identify new disease-causing genes. This information will lead to better understanding this currently incurable condition.

Fighting a Disease
He has already made a gene-therapy model and is collaborating to make a virus to deliver normal NPHP5, which should stop the progression of the disease. And he is collaborating with the National Eye Institute and an SLS family carrying the NPHP5 mutation to research stem-cell therapy.

“SLS is a devastating disease. I design my studies thinking about the patients I have met and what that patient really needs. My dream is to stop the progression of this disease,” says Ronquillo. “This is a career-long endeavor.”

“Good students are curious, have a strong work ethic, and the ability to come up with their own ideas. With Nikko, it was like opening up a gold mine. He is a great student who has the talent and ability to move mountains in the future.”
—Wolfgang B. Baehr, PhD

“Nikko is pretty impressive stuff. He discovered a problem and researched how to solve it. He is going to go on and do great things.”
—Randall J Olson, MD, CEO, Moran Eye Center
Olafsson, who has been working with Salt Lake’s Veterans Affairs Medical Center (VA) and the Moran Eye Center since the mid-1980s, was first drawn to specialty contact lens fitting when he was stationed at a NATO hospital in Belgium in the late 1970s. “A young German officer came in with keratoconus, an eye disease that affects the structure of the cornea causing it to slowly change from the normal round shape to a cone shape. He had been all over Europe trying to get the right fit because his assignment required sharp vision but didn’t allow eyeglasses. I worked with him through lots of trial and error, because at that time, I was learning, too,” recalls Olafsson. “Finally, we found lenses that fit—and that actually saved his career. He practically became a patient for life, flying to Salt Lake to see me four or five times for follow-up until I assured him he was stable and didn’t have to come all this way. But that experience really sparked it for me.”

Thanks to Olafsson’s efforts, Salt Lake’s VA offers the only one-year accredited residency in the US that combines cornea, contact lens, and disease as well as general and primary eye care for ODs. “Residents get to see patients at Moran—and at the VA—where there is a huge need for specialty care for veterans who have diseased or injured eyes,” he says.

“The art of fitting lenses is almost as important as the science,” notes Olafsson. “There is definitely an intuitive element to it, a gut feeling of what might work. After 30-plus years, I’m still constantly evaluating new lens designs, but I know what might work and why certain lenses may have failed some patients. The key is you fit the lens to the patient, not the patient to the lens.”
Utah Lions Eye Bank Moving into Expanded, High-tech Space on New Midvalley Campus

The Utah Lions Eye Bank is dedicated to restoring and preserving sight through transplants, research, and education. Its mission is to consistently provide surgeons and researchers with the highest quality eye tissue while protecting the best interests and wishes of patients and donor families. Executive Director Chris Hanna says, it’s a “delicate, complex” enterprise.

For the past seven years, 24 hours a day, seven days a week, the dedicated eye bank staff has performed remarkable work from a 1,464 square-foot space on the second floor of the Moran Eye Center at the University of Utah. But that space has its limitations in terms of technical capacity and efficiency. In 2003, the eye bank received 710 eye tissue donations. In 2014, they received 2,810. “In 2003, we had a staff of five or six people,” notes Hanna. “Today’s organizational chart calls for 39, so it’s no surprise we’ve outgrown the space in more ways than one.” All of that will change when the group moves into a new 5,400 square-foot high-tech facility designed specifically to enhance the eye bank’s technical capabilities, work flow, and capacity. Located adjacent to the new Midvalley Health Center, the new facility will open later this year and include these features:

- A fully enclosed, private Communications Center for sensitive communication with donor families and healthcare workers.
- Ample lab space for cutting-edge technology used to process the tissue corneal surgeons need.
- Improved storage.
- An operating microscope.
- Two International Standard for Organization (ISO) Class 7 tissue-processing rooms.
- A dedicated evaluation room.
- An education/observation deck with a microphone and surgical camera that make procedures visible and audible on a flat panel display and from the break room. Residents and faculty will be able to use the space to test new procedures and to train future ophthalmologists on tissue that is not suitable for transplant or used for research.
- An employee wellness center for around-the-clock staff.

The ULEB received 2,810 eye tissue donations in 2014 alone, making it an all-time record year. This incredible effort was only made possible by the selfless actions of loving families and donors and the help and cooperation of many genuine and caring people.

Record Donations in 2014 Marked Milestones for The Utah Lions Eye Bank (ULEB) and Moran’s Center for Translational Medicine (CTM)

Thanks to the concerted efforts and strong collaboration with the ULEB, Moran’s Center for Translational Medicine (CTM) reached a milestone in 2014, receiving eye tissue dedicated for research purposes from over 2000 donors in four years, almost doubling the donations that previously took over 20 years to recover. Now at 6,000-plus pairs, this priceless collection is the largest research eye tissue repository in the world.

The CTM’s Biological Resources Team, Norma Jean Miller, MPH, and Marc Toso, PhD, senior laboratory specialists. Not pictured, Lisa Nichols, program coordinator, is the liaison between the ULEB and the CTM.
A Brand New Moran Eye Center Location in Murray

On March 2, 2015, Moran and the University of Utah’s Department of Dermatology welcomed patients to the new Midvalley Health Center—just north of the Fashion Place Mall at 243 East 6100 South. The 86,000 square-foot facility, with spectacular views of Mt. Olympus to the east, is now home to full ophthalmology and dermatology clinics.

Moran patients are able to tap into a wide range of services at this convenient location. These include diagnostic testing and ocular photography, full retina and glaucoma services, oculoplastic specialties, and a state-of-the-art laser center featuring the Alcon Wave Light Refractive Suite for LASIK and PRK procedures. The center includes 35 exam lanes and full optometry and optical services, including specialized and complex contact lens fitting. Faculty and fellows are now able to use this center for medical training as well.

Three of Moran’s former clinics in Rocky Mountain Ophthalmology, Old Mill Medical Center, and Greenwood Health Center have relocated to this new, more centralized space at the south end of the valley.
Hundreds attended Midvalley’s grand opening February 23, 2015.
Randall J Olson, MD, is the Chair of the Department of Ophthalmology and Visual Sciences and CEO of the John A. Moran Eye Center. He specializes in research dealing with intraocular lens and cataract surgery. Dr. Olson is the author of more than 300 professional publications and has given many named lectures all over the country and worldwide. He was selected to receive the 2012 Binkhorst Medal by the American Society of Cataract and Refractive Surgery, the 2014 Kelman Award by the American Academy of Ophthalmology, and the 2014 Rosenblatt Prize for Excellence by the University of Utah.

Time constraints limit the number of patients Dr. Olson is able to see, yet he continues to enjoy patient care visits on a regular basis.

**SPECIALTY**
- Cataract Services and External Eye Diseases

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**Balamurali K Ambati, MD, PhD, MBA,** specializes in cornea transplants, cataract extraction, keratoprosthesis (artificial cornea), LASIK, and other complex procedures of the cornea and anterior segment of the eye. He welcomes patients in these areas as well as general ophthalmic issues. Dr. Ambati also maintains a dynamic research laboratory and has authored more than 40 peer-reviewed publications and two books.

**SPECIALTIES**
- Cornea
- Cataract Services
- Vision Correction Surgery (LASIK, Laser, and Non-laser)
- Uveitis

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**William Barlow, MD,** is an experienced comprehensive ophthalmologist and ocular surgeon with a specific interest in cataracts, complex cataract surgery, pterygium removal, and refractive eye surgery such as LASIK and PRK. He provides medical and surgical care for these conditions as well as general ophthalmic concerns. He looks forward to welcoming you to his practice and meeting your ophthalmic needs.

**SPECIALTIES**
- Comprehensive Ophthalmology
- Cataract Services
- Refractive Surgery (LASIK, Laser, and Non-laser)

---

**James Beson, DO,** specializes in comprehensive ophthalmology with a focus on the medical management of routine and complex glaucoma.

**SPECIALTIES**
- Comprehensive Ophthalmology
- Glaucoma

---

**Paul S Bernstein, MD, PhD,** specializes in age-related macular degeneration with special emphasis on the role of nutrition and environment in its treatment and prevention; inherited retinal and macular dystrophies; and surgical treatment of vitreoretinal disorders such as diabetic retinopathy and retinal detachments.

**SPECIALTIES**
- Vitreoretinal Diseases and Surgery
- Retinal Biochemistry
- Macular and Retinal Degeneration

---

**Craig J Chaya, MD,** practices comprehensive ophthalmology and specializes in the medical and surgical management of adult and pediatric cataracts, glaucoma, and anterior segment surgery. Dr. Chaya particularly enjoys teaching and is actively involved in Moran’s ophthalmology resident and glaucoma fellow training programs. He is also passionate about local and international outreach with his current work focusing on the advancement of eye care delivery in Haiti, Guam, Micronesia, Ghana, and the Navajo Nation in southern Utah. His research interests include the management of cataracts and glaucoma in the developing world and glaucoma surgical techniques and devices.

**SPECIALTIES**
- Comprehensive Ophthalmology
- Cataract Surgery
- Glaucoma

---

**Susan Chortkoff, MD,** focuses on the management and treatment of glaucoma as well as comprehensive ophthalmology. Dr. Chortkoff also has a special interest in the management of dry eye syndrome.

**SPECIALTIES**
- Comprehensive Ophthalmology
- Glaucoma

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**Doctors in Alphabetical Order**

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MORAN EYE CENTER
OPHTHALMOLOGISTS

Alan S Crandall, MD, is the Senior Vice Chair of the Department of Ophthalmology and Visual Sciences, Director of Moran’s Glaucoma and Cataract Division, Co-director of Moran’s International Outreach Division, the Val A. and Edith D. Green Presidential Endowed Chair in Ophthalmology, and past president of the American Society for Cataract and Refractive Surgery. He focuses on the medical and surgical management of glaucoma and cataracts. His special interests include trabeculoplasty and laser cyclophotocoagulation. He is involved in numerous clinical research studies at the Moran Eye Center, lectures throughout the world, and was selected by Cataract and Refractive Surgery Today as one of 50 international opinion leaders.

**SPECIALTIES**
- Cataract Services
- Glaucoma

Alison Crum, MD, specializes in both oculoplastics and orbital surgery—the reconstruction of the bones around the eyes after traumas, correcting drooping eyelids, and aesthetic surgeries, such as eyelid lifts. She also practices neuro-ophthalmology, the study of how the eye connects to the brain, and providers medical and surgical treatments for visual disorders. Her interests include treatment of Graves’ disease and treatment of papilledema.

**SPECIALTIES**
- Neuro-ophthalmology
- Oculoplastics and Facial Plastic Surgery
- Ophthalmology

David Dries, MD, provides medical and surgical care for a wide range of eye diseases and visual impairments in children as well as the evaluation and management of strabismus in both children and adults. His special interests include amblyopia, esotropia, exotropia, retinopathy of prematurity, retinoblastoma, infant and childhood cataracts, and nasolacrimal duct obstruction.

**SPECIALTIES**
- Pediatric Ophthalmology
- Adult Strabismus

Joseph L Hatch, MD, provides expertise and experience in all areas of ophthalmology and has extensive experience in contact lens fitting. In 2008, Dr. Hatch was asked to serve on the Church of Jesus Christ of Latter-day Saints Vision Initiative. This program sends eye care professionals to countries throughout the world.

**SPECIALTY**
- Neuro-ophthalmology

Roger P Harrie, MD, practices comprehensive ophthalmology and ocular surgery with a subspecialty in ophthalmic ultrasound. He has been the senior instructor in the ocular ultrasound course at the annual American Academy of Ophthalmology meeting and has published numerous articles, book chapters, and two textbooks. Dr. Harrie has made more than 50 humanitarian trips, mostly training doctors in developing countries in diagnostic and therapeutic techniques. He directs the outreach program in examining and giving glasses to residents of the Salt Lake Valley Youth Detention Center.

**SPECIALTY**
- Comprehensive Ophthalmology

Mary Elizabeth Hartnett, MD, is Director of Pediatric Retina. She specializes in vitreoretinal surgery and directs a pediatric retina center, managing both pediatric and adult retinal conditions at the Moran Eye Center. She performs surgery at both the Moran Eye Center at the University of Utah and the Moran Eye Center at Primary Children’s Hospital.

**SPECIALTY**
- Pediatric and Adult Retinal Diseases and Surgery

Kathleen B Digre, MD, is a past president of the North American Neuro-ophthalmology Society. She specializes in neuro-ophthalmology and evaluates and treats complex visual complaints which can be due to optic nerve or brain disease. Her interests include gender differences in neuro-ophthalmic disorders, pseudotumor cerebri, ischemic optic neuropathy, temporal arteritis, papilledema, episodic vision loss, headaches and eye pain, diplopia, and Graves’ disease. She has worked with the North American Neuro-ophthalmology Society and the University of Utah Eccles Library to develop a Neuro-ophthalmology Virtual Educational Library (NOVEL) online at http://novel.utah.edu. She received the Rosenblatt Prize for Excellence at the University of Utah in 2012.

**SPECIALTY**
- Neuro-ophthalmology

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**SPECIALTY**
- Neuro-ophthalmology
Robert O Hoffman, MD, is Chief of the Division of Pediatric Ophthalmology and Eye Muscle Disorders. He has special interests in retinopathy of prematurity, ocular genetics, craniofacial disorders, pediatric cataracts, and complicated strabismus.

**SPECIALTIES**
- Pediatric Ophthalmology
- Adult Strabismus

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Nick Mamalis, MD, is Director of the Ophthalmic Pathology Laboratory and evaluates all specimens submitted to the laboratory. He focuses his clinical practice on comprehensive ophthalmology including cataract and other anterior ocular surgeries. Dr. Mamalis is the editor of the *Journal of Cataract and Refractive Surgery* and is the author of 190 peer-reviewed publications, one textbook, and 40 book chapters. He is also Co-director of the Intermountain Ocular Research Center and is performing research in the area of intraocular lenses and postoperative inflammation.

**SPECIALTIES**
- Cataract Services
- Neuro-ophthalmology

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Amy Lin, MD, specializes in the medical and surgical treatment of corneal and anterior segment diseases. Her interests include corneal transplantation, anterior segment reconstruction, cataract surgery, refractive surgery, and teaching residents and fellows.

**SPECIALTIES**
- Corneal Transplantation
- Cataract Surgery (Advanced Technology Intraocular Lenses and Laser-assisted Cataract Surgery)
- Vision Correction Surgery (LASIK, PKR, Phakic Intraocular Lenses)

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Bhupendra C K Patel, MD, FRCS, FRC, is an expert in the management of disorders involving eyelids, periocular tissues, the lacrimal system, and facial bones, including fractures. His clinical research interests include thyroid disease, optic nerve disorders, orbital and eyelid tumors, blepharospasm, lacrimal surgery, and facial cosmetic surgery.

**SPECIALTY**
- Oculoplastic and Facial Plastic Surgery
Jeff Pettey, MD, is Director of the John A Moran Eye Center Training and Residency Program. He is also the Chief of Ophthalmology at the Salt Lake City VA Medical Center. Dr. Pettey specializes in comprehensive ophthalmology, complex cataracts, and anterior segment surgery. He coordinates teaching and training of medical students, residents, international observers, and fellows and is actively involved in local outreach and international ophthalmology, working to develop teaching and training collaborations with programs in developing countries. He is actively involved in research to make cataract surgery safer and more efficient.

SPECIALTIES
• Comprehensive Ophthalmology
• Cataract Services

Akbar Shakoor, MD, specializes in diseases of the retina and vitreous as well as the diagnosis and treatment of uveitis and other infectious and inflammatory diseases of the eye. His primary clinical and surgical interests include retinal detachments, diabetic retinopathy, epiretinal membranes and macular holes, macular and retinal degeneration, and the medical and surgical treatment of ocular inflammatory diseases such as uveitis.

SPECIALTIES
• Retinal Diseases and Surgery
• Uveitis and Ocular Immunology

Jean Tabin, MD, provides general vision care and comprehensive ophthalmology services at the Moran Eye Center. Dr. Tabin enjoys working in Moran’s Triage Clinic treating patients and teaching medical students and residents who are interested in learning more about ophthalmology.

SPECIALTY
• Comprehensive Ophthalmology

Kim Taylor, MD, practices comprehensive ophthalmology and has extensive experience in fitting contact lenses. He has many years of experience in diagnosing and treating eye diseases of all kinds.

SPECIALTY
• Comprehensive Ophthalmology

Michael P Teske, MD, is Director of VitreoRetinal Diseases and Surgery. Dr. Teske specializes in medical and surgical diseases of the retina and vitreous. His primary surgical interests include retinal detachment, proliferative vitreoretinopathy, diabetic retinopathy, retinopathy of prematurity, epiretinal membranes, macular holes, and posterior segment trauma.

SPECIALTY
• Retinal Disease and Surgery

Aparna Ramasubramanian, MD, specializes in eye diseases in children as well as evaluating and treating strabismus in adults and children, including adjustable sutures. She is also trained in ocular oncology and has a special interest in pediatric eye tumors, especially retinoblastoma.

SPECIALTIES
• Pediatric Ophthalmology
• Ocular Oncology
• Adult and Pediatric Strabismus

Albert T Vitale, MD, is Director of Moran’s Uveitis Division. He specializes in patients with diseases of the retina and vitreous. He is one of the only ophthalmologists in the Intermountain West specializing in the diagnosis and treatment of uveitis and other infections and inflammatory diseases of the eye. His research interests include ocular manifestations of systemic diseases, novel therapeutic agents, and new drug delivery systems in the treatment of ocular inflammatory disease, retinal vascular disease, and the pharmacotherapy of age-related macular degeneration. He is one of a few people in the country with dual training in ocular immunology and inflammatory disease and vitreoretinal surgery. Dr. Vitale is co-author of the definitive text on the subject, with Dr. C. Stephen Foster, entitled, Diagnosis and Treatment of Uveitis.

SPECIALTIES
• Uveitis, Ocular Infections
• Retinal Diseases and Surgery
Barbara M Wirostko, MD, has specialized fellowship training in glaucoma, treats glaucoma and comprehensive ophthalmology patients, and specializes in clinical research and drug development for glaucoma pharmaceutical therapies. Her research interest is in sustained delivery of therapeutics for ocular pathologies and in approaching glaucoma through non-intraocular pressure mediated approaches.

**SPECIALTIES**
- Comprehensive Ophthalmology
- Glaucoma

Norm A Zabriskie, MD, is Vice Chair and Medical Director of Clinical Services and Director of Clinical Operations at the John A. Moran Eye Center. He specializes in the medical and surgical treatment of glaucoma and cataracts. He has a research interest in the genetics of glaucoma.

**SPECIALTIES**
- Cataract Services
- Glaucoma

Marielle Young, MD, provides medical and surgical care for children with eye disease as well as adults and children with strabismus. Her clinical expertise includes the evaluation and treatment of amblyopia, strabismus, infantile and developmental cataracts, and nasolacrimal duct obstruction.

**SPECIALTIES**
- Pediatric Ophthalmology
- Adult and Pediatric Strabismus

Robert M Christiansen, MD, FACS, provides comprehensive vision rehabilitation services through Moran’s ophthalmology-based Patient Support Program. A nationally recognized expert in low vision rehabilitation, he has been recognized by the American Academy of Ophthalmology with the Achievement Award and the Senior Achievement Award and by other organizations for his work with the partially sighted.

**SPECIALTY**
- Vision Rehabilitation

Donnell J Creel, PhD, is Director of the Electrophysiology Service at the John A. Moran Eye Center. The Electrophysiology Service provides examinations including visually evoked potentials, full-field electroretinograms, auditory brainstem responses, electrooculograms, multifocal electroretinograms, and multifocal visually evoked potentials. These tests quantify retinal, optic pathway, visual cortical, and brainstem auditory pathway function.

**SPECIALTY**
- Electrophysiology

Lisa Ord, PhD, LCSW, is Director of the ophthalmology-based Patient Support Program for people with visual impairment and their families. Services in this program include counseling, information and referral services, support groups, and the Orientation to Vision Loss Program.

**SPECIALTY**
- Counseling Related to Vision Loss

Derek J Sakata, MD, is Medical Director for Anesthesia Services at the John A. Moran Eye Center. Dr. Sakata provides and directs anesthesia care for ophthalmic patients before, during, and after surgery. He also has a background in engineering and has been involved in medical device design and subsequent company startups. He continues to be involved in research into new medical device designs and drug delivery.

**SPECIALTY**
- General Anesthesiology
Robert H Corry, OD, specializes in ocular pathology, pediatric and general optometry, and contact lenses.
Redwood Health Center
South Jordan Health Center

Timothy L Gibbons, OD, specializes in contact lenses, pediatrics, sports vision, and ocular disease.
Stansbury Health Center
Westridge Health Center

Mark A McKay, OD, specializes in full-scope optometric care, including adult and pediatric care, contact lenses and job- or hobby-related visual needs.
John A. Moran Eye Center
Redwood Health Center
Westridge Health Center

Alan Morgan, OD, specializes in contact lenses and general optometry.
UUHC—Davis Vision Center

Spencer D Mortensen OD, FAAO specializes in contact lenses, sports vision, and general optometry.
Westridge Health Center

Harald E Olafsson, OD, is the Director of Contact Lens Services. He specializes in fitting contact lenses with particular interest in keratoconus, pediatrics, and fitting traumatized eyes; eyes with severe or irregular astigmatism; and he provides primary eye care for those who do or do not wear contact lenses.
John A. Moran Eye Center

Colleen S Schubach, OD, offers full-scope optometric eye care and contact lens services for all ages. She specializes in vision therapy with emphasis on children and sports vision.
Redstone Health Center

Craig M Smith, OD, specializes in children’s vision, sports vision, contact lenses, and general optometry.
Midvalley Health Center

Bryan H Vincent, OD, specializes in ocular pathology and contact lenses.
Midvalley Health Center
John A. Moran Eye Center

Clair R Palmer, OD, specializes in contact lenses.
Parkway Health Center
South Jordan Health Center
<table>
<thead>
<tr>
<th>Name</th>
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<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balamurali K Ambati, MD, PhD</td>
<td>Professor of Ophthalmology and Visual Sciences and Adjunct Associate Professor of Neurobiology and Anatomy</td>
<td>Ocular Angiogenesis and Corneal Research</td>
</tr>
<tr>
<td>Alessandra Angelucci, MD, PhD</td>
<td>Professor, Ophthalmology and Visual Sciences</td>
<td>Visual Cortex Circuitry and Function</td>
</tr>
<tr>
<td>Wolfgang B Baehr, PhD</td>
<td>Professor and Director, Michael M. Wynn Center for Inherited Retinal Diseases; Ralph and Mary Tuck Professor of Ophthalmology and Visual Sciences</td>
<td>Phototransduction, the Retinoid Cycle, and Membrane Protein Transport in Photoreceptors; Biochemistry, Molecular and Cell Biology</td>
</tr>
<tr>
<td>Paul S Bernstein, MD, PhD</td>
<td>Director of Clinical Research and Associate Director of Research; Mary H. Boesche Professor of Ophthalmology and Visual Sciences</td>
<td>Vitreoretinal Diseases and Surgery; Retinal Biochemistry; Macular and Retinal Degeneration</td>
</tr>
<tr>
<td>Paul Bressloff, PhD</td>
<td>Adjunct Professor, Ophthalmology and Visual Sciences; Professor of Mathematics</td>
<td>Modeling of Visual Cortex</td>
</tr>
<tr>
<td>Donnell J Creel, PhD</td>
<td>Research Professor, Ophthalmology and Visual Sciences; Neurobiology and Anatomy; Neuroscience</td>
<td>Electrophysiology</td>
</tr>
<tr>
<td>Karen Curtin, PhD, MStat</td>
<td>Adjunct Professor, Ophthalmology and Visual Sciences, Moran Center for Translational Medicine</td>
<td>Genetic Epidemiology; Age-related Macular Degeneration</td>
</tr>
<tr>
<td>Margaret DeAngelis, PhD</td>
<td>Associate Professor, Ophthalmology and Visual Sciences</td>
<td>Genetics, Genomics, and Systems Biology-based Approaches to Pinpoint Disease Causality in Age-related Macular Degeneration, Glaucoma, Myopia, Diabetic Retinopathy, Retinopathy of Prematurity, and Co-occurring Diseases</td>
</tr>
<tr>
<td>Jeanne M Frederick, PhD</td>
<td>Research Associate Professor, Ophthalmology and Visual Sciences</td>
<td>Retinal Cell and Molecular Biology</td>
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<tr>
<td>Yingbin Fu, PhD</td>
<td>Associate Professor, Ophthalmology and Visual Sciences</td>
<td>Macular and Retinal Degeneration; Gene Therapy; Phototransduction</td>
</tr>
<tr>
<td>Sabine Fuhrmann, PhD</td>
<td>Associate Professor, Ophthalmology and Visual Sciences</td>
<td>Ocular Development; Retinal Pigment Epithelium Cell Biology</td>
</tr>
</tbody>
</table>
### Building bridges from research to patient care

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Specialties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Werner Gellermann, PhD</strong></td>
<td>Adjunct Professor, Ophthalmology and Visual Sciences; Research Professor, Physics</td>
<td><strong>SPECIALTY</strong> Spectroscopy of Living Human Tissue</td>
</tr>
<tr>
<td><strong>Gregory S Hageman, PhD</strong></td>
<td>John A. Moran Presidential Professor, Department of Ophthalmology and Visual Sciences; Executive Director, Moran Center for Translational Medicine</td>
<td><strong>SPECIALTIES</strong> The Genetics and Assessment of Pathways Involved in the Etiology of Age-related Macular Degeneration; Retinal Cell Biology</td>
</tr>
<tr>
<td><strong>Mary Elizabeth Hartnett, MD</strong></td>
<td>Professor, Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTY</strong> Retinal Angiogenesis Relating to Retinopathy of Prematurity and Age-related Macular Degeneration</td>
</tr>
<tr>
<td><strong>Bryan W Jones, PhD</strong></td>
<td>Research Assistant Professor, Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTIES</strong> Retinal Degeneration Disorders; Retinal Neurotransmission and Neurocircuitry; Metabolomics</td>
</tr>
<tr>
<td><strong>Li Jiang, MD, PhD</strong></td>
<td>Research Assistant Professor, Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTIES</strong> Retinal Diseases; Gene Therapy; Molecular and Cell Biology</td>
</tr>
<tr>
<td><strong>Bradley J Katz, MD, PhD</strong></td>
<td>Associate Professor, Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTIES</strong> Giant Cell Arteritis; Photophobia and Migraine; Optic Neuritis; Multiple Sclerosis</td>
</tr>
<tr>
<td><strong>Julia Kleinschmidt, PhD, LSW</strong></td>
<td>Professor (Emerita), Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTY</strong> Orientation and Support Services for international ophthalmologists training under the Moran Eye Center’s Outreach Division</td>
</tr>
<tr>
<td><strong>Helga E T Kolb, PhD</strong></td>
<td>Professor (Emerita), Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTIES</strong> Retinal Anatomy; Editor, Webvision <a href="http://www.webvision.med.utah.edu">www.webvision.med.utah.edu</a></td>
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<td><strong>David Krizaj, PhD</strong></td>
<td>Professor, Ophthalmology and Visual Sciences; Deputy Director of Research</td>
<td><strong>SPECIALTIES</strong> Retinal Neurobiology; Calcium Regulation; Glaucoma</td>
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<td><strong>Edward M Levine, PhD</strong></td>
<td>Associate Professor, Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTY</strong> Retinal Neurogenesis and Regeneration</td>
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<td><strong>Nick Mamalis, MD</strong></td>
<td>Professor, Ophthalmology and Visual Sciences; Co-director, Intermountain Ocular Research Center</td>
<td><strong>SPECIALTIES</strong> Ocular Pathology; Comprehensive Ophthalmology; Intraocular Lens Research; Postoperative Inflammation</td>
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<td><strong>Robert E Marc, PhD</strong></td>
<td>Director of Research and Distinguished Professor of Ophthalmology; Cal and JeNeal Hatch Presidential Endowed Chair in Ophthalmology and Visual Sciences</td>
<td><strong>SPECIALTIES</strong> Retinal Neurotransmission and Networks; Retinal Degenerations; Metabolomics</td>
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Ning Tian, PhD  
Professor, Ophthalmology and Visual Sciences; Adjunct Professor, Neurobiology  
**SPECIALTY**  
Retinal Neurobiology

Richard A Normann, PhD  
Professor (Emeritus), Ophthalmology and Visual Sciences; Distinguished Professor of Bioengineering  
**SPECIALTY**  
Artificial Vision/Neural Prosthetics

Debra A Schaumberg, ScD, OD, MPH  
Professor of Ophthalmology and Visual Sciences; Associate Director for Clinical and Epidemiological Research, Moran Center for Translational Medicine  
**SPECIALTIES**  
Epidemiology and the Joint Influences of Genetic, Molecular, and Lifestyle Risk Factors in Causing Eye Disease; Age-related Macular Degeneration; and Dry Eye Disease

Jason Shepherd, PhD  
Assistant Professor of Neurobiology and Anatomy; Adjunct Assistant Professor of Ophthalmology and Visual Sciences  
**SPECIALTIES**  
Visual Cortex Function and Plasticity in vivo; Cellular and Molecular Mechanisms of Learning and Memory; Cell Biology of Synapse

Monica Vetter, PhD  
Adjunct Professor, Ophthalmology and Visual Sciences; George and Lorna Winder Professor of Neuroscience; and Chair, Neurobiology and Anatomy  
**SPECIALTIES**  
Retinal Development; Glaucoma

Haibo Wang, MD, PhD  
Research Assistant Professor, Ophthalmology and Visual Sciences  
**SPECIALTY**  
Vascular Biology: abnormal vessel growth implicated in pathological neovascularization in age-related macular degeneration, retinopathy of prematurity, and diabetic retinopathy

Liliana Werner, MD, PhD  
Associate Professor, Ophthalmology and Visual Sciences; Co-director, Intermountain Ocular Research Center  
**SPECIALTIES**  
Ocular Biodevices Research; Different Intraocular Lens Designs; Materials and Surface Modifications; Interactions between Ocular Implants and Ocular Tissues

Larry A Wheeler, PhD  
Research Professor, Ophthalmology and Visual Sciences  
**SPECIALTIES**  
Ophthalmic Drug Discovery and Development; Age-related Macular Degeneration; Pharmacology of Glaucoma; Dry Eye and Neuroprotection

Lloyd Williams, MD, PhD  
Adjunct Research Assistant Professor, Ophthalmology and Visual Sciences  
**SPECIALTIES**  
Genetics of Orphan Diseases; International Eye Disease and Population Studies; Cornea

Jun Yang, PhD  
Associate Professor, Ophthalmology and Visual Sciences  
**SPECIALTIES**  
Cell Biology of Photoreceptors; Retinal Diseases
From across the states and around the globe, adjunct volunteer faculty contribute as appreciated members of our Moran team. They collaborate on research projects, participate in clinical studies, attend teaching opportunities, and assist on our outreach medical missions.

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The following individuals and organizations contributed to the Moran Eye Center from January 1, 2014 through December 31, 2014

**Donors**

<table>
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<td>The Huntsman Foundation</td>
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<td>Sharon E. Steele-McGee</td>
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Ralph Ashton
Janet Bair
Kurt Bernhisel
Paul S. Bernstein, MD, PhD
Julie and Alan Crandall, MD
Brian Cull
LaVerne Diehl
The doctors and staff of Moran Eye Center International Ophthalmology
John and Carol Firmage
John A. and Robbin Yee
Michael H. Ye and Jill A. Miller
Ronald J. and Kay K. Yengich
Edward and Karen S. Yenne
Myrna and Steven R. Young, MD
Gerard and Dominique Yvernault
Charles R. Zottnick

IN HONOR OF

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Paul S. Bernstein, MD, PhD
Julie and Alan Crandall, MD
Brian Cull
LaVerne Diehl
The doctors and staff of Moran Eye Center International Ophthalmology
John and Carol Firmage
**IN MEMORY OF**

*Those in whose memory gifts were made to the Moran Eye Center from January 1, 2014 through December 31, 2014*

Rex Charles Ahlstrom  
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Arlin Anderson  
Gerald Anderson  
Noreen Arko  
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Lois Horne  
Jo Ellen Huston  
In memory of the person whose corneas I received  
Norman C. Jensen  
Joan Judelson  
Russell J. Kelson  

Sylvia Kirkland  
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# Industry Leadership and Service

*This is a partial list of Moran Industry Leadership and Service for 2014*

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<tr>
<th>Name</th>
<th>Position</th>
<th>Year(s)</th>
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<tbody>
<tr>
<td><strong>Alessandra Angelucci, MD, PhD</strong></td>
<td>Lead Guest Editor, Special Issue for Vision Research, “The Function of Contextual Modulation”</td>
<td>2014</td>
<td>Lead Guest Editor, Special Issue for Visual Neuroscience, “Controversies in Extrastriate Cortex Mapping”</td>
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<td></td>
<td>Review Editor, Frontiers in Neuroanatomy</td>
<td>2008-Present</td>
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<td>Editor Board, Visual Neuroscience</td>
<td>2007-Present</td>
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<td>Review Editor, Frontiers in Systems Neuroscience</td>
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<td><strong>Wolfgang B Baehr, PhD</strong></td>
<td>Editor, Journal of Ocular Biology, Diseases, and Informatics</td>
<td>2013-Present</td>
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<td></td>
<td>Senior Editor, Vision Research, Elsevier Science</td>
<td>2004-Present</td>
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<tr>
<td><strong>Paul S Bernstein, MD, PhD</strong></td>
<td>Editor, Special Issue, “Carotinoids,” Archives of Biochemistry and Biophysics</td>
<td>2014</td>
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<td><strong>Karen Curtin, PhD</strong></td>
<td>Associate Editor, BMC Gastroenterology</td>
<td>2011-Present</td>
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<td>Editorial Board, Frontiers in Applied Genetic Epidemiology</td>
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<tr>
<td><strong>Margaret DeAngelis, PhD</strong></td>
<td>Guest Editor, Journal of Clinical Medicine-Special Issue, Age-related Macular Degeneration</td>
<td>2014-Present</td>
<td>Chair, Seminar Series Committee, Moran Eye Center, Department of Ophthalmology, School of Medicine</td>
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<td>Chair, Seminar Series Committee, Moran Eye Center, Department of Ophthalmology, School of Medicine</td>
<td>2013-Present</td>
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<td>Co-chair, Development, Women’s Eye Health Organization, International; Chapter Head, Utah</td>
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<td>Board of Trustees, Fourth Street Clinic</td>
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<td></td>
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<td>Utah School of Medicine</td>
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<tr>
<td><strong>Kathleen B Digre, MD</strong></td>
<td>Chairman, Board of Directors, North American Neuro-Ophtalmologic Society</td>
<td>2004-Present</td>
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<td></td>
<td>Chair, Publications Committee, American Headache Society</td>
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<td>Review Board, American Headache Society</td>
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<td>Name</td>
<td>Position</td>
<td>Years (Present)</td>
<td>Role/Position</td>
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<tr>
<td>Sabine Fuhrmann, PhD</td>
<td>Co-chair, Recruitment Committee, Molecular Biology Graduate Program</td>
<td>2014-Present</td>
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<td></td>
<td>Editorial Board, Developmental Dynamics</td>
<td>2004-Present</td>
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<tr>
<td>Gregory S Hageman, PhD</td>
<td>Advisory Board, Merck Sharp and Dohme Corporation</td>
<td>2013-Present</td>
<td>Scientific Advisory Board, Applied Genetic Technologies Corporation</td>
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<td></td>
<td>Chief Scientific Officer, Co-founder, Voyant Biotherapeutics LLC</td>
<td>2012-Present</td>
<td>Clinical Advisory Board, Sequenom, Inc.</td>
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<td></td>
<td>Board of Directors, AMD Alliance International</td>
<td>2009-Present</td>
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<tr>
<td>Mary Elizabeth Hartnett, MD</td>
<td>Editor, American Academy of Pediatric Ophthalmology and Strabismus</td>
<td>2012-Present</td>
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<td></td>
<td>Editor, Molecular Vision and Molecular Vision Scientific Review</td>
<td>2011-Present</td>
<td>Board, Women's Eye Health.org</td>
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<td>Honorary Editorial Board, Patient Related Outcome Measures, Dove Press</td>
<td>2009-Present</td>
<td>Honorary Editorial Board, Eye and Brain</td>
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<td>Honorary Editorial Board, Clinical Ophthalmology</td>
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<tr>
<td>Robert O Hoffman, MD</td>
<td>Medical Executive Committee, Primary Children’s Medical Center</td>
<td>2011-Present</td>
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<td>Legislative Committee, American Association for Pediatric Ophthalmology and Strabismus</td>
<td>2007-Present</td>
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<td>Alumni Board and Executive Committee, Ophthalmology and Visual Sciences, School of Medicine</td>
<td>2003-Present</td>
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<tr>
<td>Rachael S Jacoby, MD</td>
<td>Board, Institutional Review Board, University of Utah</td>
<td>2012-Present</td>
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<tr>
<td>Bryan W Jones, PhD</td>
<td>Editor/Webmaster, Webvision <a href="http://webvision.med.utah.edu">http://webvision.med.utah.edu</a></td>
<td>2002-Present</td>
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<tr>
<td>Bradley J Katz, MD, PhD</td>
<td>Medical Director, Utah Eye Care Initiative, University of Utah</td>
<td>2007-Present</td>
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<td>Chair, Department of Ophthalmology Committee for Indigent Care</td>
<td>2006-Present</td>
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<td>David Krizaj, PhD</td>
<td>Editorial Board, Journal of Open Access Animal Physiology</td>
<td>2009-Present</td>
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<td>Edward M Levine, PhD</td>
<td>Editor, Journal of Ocular Biology, Diseases, and Informatics</td>
<td>2007-Present</td>
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<td>Editorial Board, Developmental Dynamics</td>
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<td>Nick Mamalis, MD</td>
<td>Editor, Journal of Cataract and Refractive Surgery</td>
<td>2007-Present</td>
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<td>Editorial Board, Review of Ophthalmology</td>
<td>1998-Present</td>
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<td>Robert E Marc, PhD</td>
<td>Editorial Board, Journal of Comparative Neurology, Society for Neuroscience</td>
<td>2013-Present</td>
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<td>Mark D Mifflin, MD</td>
<td>Faculty Executive Committee, Ophthalmology and Visual Sciences</td>
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<td>Randall J Olson, MD</td>
<td>2014: Advisory Board, American Academy of Ophthalmology</td>
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<td>2012-Present: Executive Editor, <em>American Journal of Ophthalmology</em></td>
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<td>2002-Present: Advisory Boards, Advanced Medical Optics, Inc., Surgical Global,</td>
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<td>2001-Present: Chair, Advisory Board, Calhoun Vision</td>
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<td>1983-Present: Executive Committee, Department Chairs’ Collateral Group and</td>
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<td>Bhupendra C K Patel, MD, FRCS, FRC</td>
<td>2007-Present: Chief Section Editor, *Plastic Surgery, British Journal of</td>
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<td>Ophthalmology*</td>
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<td>2006-Present: Chief Section Editor, Plastic Surgery, <em>EYE</em></td>
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<td>2005-Present: Chief Coeditor, <em>ORBIT</em></td>
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<td>2003-Present: Editorial Board, <em>Evidence Based Eye Care</em></td>
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<td>2002-Present: Editor, <em>USA ORBIT</em></td>
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<td>2000-Present: Editorial Board, <em>Aesthetique</em></td>
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<td>1999-Present: Editorial Board, <em>Journal of Cranio-Maxillofacial Trauma</em></td>
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<td>1996-Present: Medical Advisory Board, American Society of Ocularists</td>
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<td>Jeff Pettey, MD</td>
<td>2014-Present: Associate Editor, <em>American Academy of Ophthalmology</em></td>
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<td>Ophthalmology Guide</td>
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<td>Debra Schaumberg, ScD, OD, MPH</td>
<td>2013-2014: Treasurer, Board of Directors, Tear, Film, and Ocular Surface</td>
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<td>2008-Present: Editorial Board Guest Member, <em>Optometry and Vision Science</em></td>
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<td>1999-Present: Editorial Board Guest Member, <em>Investigative Ophthalmology and Vision Science</em></td>
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<td>Jason D Shepherd, PhD</td>
<td>2014-Present: Editorial Board, <em>Frontiers in Molecular Neuroscience</em></td>
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<td>Geoffrey Tabin, MD</td>
<td>2006-Present: Editor, <em>Stedman's Medical Dictionary</em></td>
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<td>Monica Vetter, PhD</td>
<td>2014-Present: Chair, Executive Board, University of Utah Neuroscience Initiative</td>
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<td>2013-Present: Chair, Neuroscience Strategic Planning Committee, University</td>
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<td>2011-Present: Scientific Advisory Board, “Catalyst for a Cure 2,” Glaucoma</td>
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<td>Research Foundation</td>
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</table>
Albert T Vitale, MD

2014  President-elect, American Uveitis Society, 2015
      Co-director, American Academy of Ophthalmology, Uveitis Sub-specialty Day,
      AAO Annual Meeting
2006-Present  Faculty Executive Committee, Ophthalmology and Visual Sciences
      Editorial Board, Editorial and Writing Committee for Practicing Ophthalmologists,
      American Academy of Ophthalmology
      Editor, Basic Science Course: *Intraocular Inflammation, Uveitis, and Tumors for Focal
      Points*, American Academy of Ophthalmology
      Faculty Executive Committee, John A. Moran Eye Center
2004-Present  Advisory Boards, Genentech, Inc. and Lucentis
      Uveitis Advisory Board, Aciot Inc.
2003-Present  Uveitis Advisory Board, Bausch & Lomb

Judith E A Warner, MD

2004-Present  Editorial Board, *Neuro-Ophtalmology*

Liliana Werner, MD, PhD

2013-present  Coeditor, Quarterly Column, “Cataract/IOL Complications: Moran CPC Reports,“
       *EyeWorld International*
      Editorial Board, *Brazilian Journal of Ophthalmology*
2011-present  Chair, Continuing Medical Education Advisory Committee, American Society of Cataract
      and Refractive Surgery
2009-present  Scientific Advisory Board of Powervision Inc., USA
2004-present  Editorial Board, *Journal of Cataract and Refractive Surgery*
      Editorial Board, *EyeWorld Magazine*

Barbara M Wirostko, MD

2011-Present  Chief Medical Officer Retained Consultant, Altheos, Inc.
      Executive Team, Lead Clinical Development Program and Glaucoma Strategy,
      Novel Rho Kinase Inhibitor, Currently in Phase 2
      Medical Advisory Board, Ophthalmology Consultant, Premier Research LTD
2010-Present  Editorial Board, *Acta Ophthalmologica*
2007-Present  Associate Editor and Peer Reviewer, *Acta Ophthalmologica*
### Awards and Appointments

**Iqbal “Ike” K Ahmed, MD, PhD**, received the Binkhorst Medal and presented the Binkhorst Lecture during the American Society of Cataract and Refractive Surgery Symposium and Congress in Boston on April 26, 2014. With this announcement, a Moran physician or alumni has received this honor three years in a row.

**Balamurali K Ambati, MD, PhD, MBA**, was honored with the 2014 Ludwig von Sallmann Clinician-Scientist Award by the Association for Research in Vision and Ophthalmology (ARVO) Foundation for Eye Research. Ambati was also honored with the 2014 Arnold P. Gold Humanism in Medicine Award by the student body of the University of Utah School of Medicine.

**Wolfgang B Baehr, PhD**, was honored with the international 2014 Proctor Medal, awarded by the Association for Research in Vision and Ophthalmology (ARVO), for his lifetime achievement and many significant discoveries regarding retina disease.

**Alan S Crandall, MD**, was honored with the 2014 Dr. Clark Lowe Rich Distinguished Surgeon and Mentor Award recognizing an outstanding surgeon who has demonstrated exceptional skill and dedication in the fields of surgery, including teaching, advising, and mentoring medical students, interns, residents, or fellows at the University of Utah.

**Margaret DeAngelis, PhD**, was appointed to the editorial board of the *Journal of Biophysical Chemistry*. And DeAngelis published a study in the journal *Investigative Ophthalmology and Visual Science* that ranked fourth among the ten most read research studies in 2014. DeAngelis led a team that included her staff and Drs. Owen, Baehr, and Ambati. The study titled “FLT1 Genetic Variation Predisposes to Neovascular AMD in Ethnically Diverse Populations and Alters Systemic FLT1 Expression” was funded by the ALSAM Foundation.

**Kathleen B Digre, MD**, broke new ground as the first Hedi Fritz-Niggli Visiting Professor at the University of Zurich.

**Gregory S Hageman, PhD**, received the 2014 Achievement Award, American Association of Ophthalmology (AAO).

**Robert E Marc, PhD**, received the Retina Research Foundation’s 2014 Paul Kayser International Award in Retina Research for his lifetime achievement and significant contributions to the understanding of vitreoretinal diseases or disorders.

**Randall J Olson, MD**, Professor and Chair, Department of Ophthalmology and Visual Sciences; CEO, John A. Moran Eye Center, was named the 2014 recipient of the Rosenblatt Prize for Excellence, the University of Utah’s most prestigious award for a faculty member who displays excellence in teaching, research, and administrative efforts. Olson was also appointed to the Board of Directors of Jade Therapeutics, Inc.

**Geoffrey Tabin, MD**, was celebrated as the first John E. and Marva M. Warnock Presidential Endowed Chair in Ophthalmology, May 30, 2014.

**Monica Vetter, PhD**, was appointed member of the National Advisory Eye Council for the National Eye Institute, National Institutes of Health, January 2014.

**Barbara M Wirostko, MD**, was appointed to the Scientific Advisory Board of the Glaucoma Foundation.

**Liliana Werner, MD, PhD; Nick Mamalis, MD; and Alan S Crandall, MD**, were awarded first prize in the category “Cataract,” for their video “Watch Out for the Zonules!” at the XIII International Congress of Cataract and Refractive Surgery Video Festival, Rio de Janeiro, Brazil, April 2014.

**American Society of Cataract and Refractive Surgery (ASCRS) Awards, 2014**

**BEST PAPER OF SESSIONS AWARDS**

Brian E Zaug, MD; Cecinio Ronquillo Jr., PhD; Kevin Kirk; Brian C Stagg, MD; Jeff H Pettey, MD; William R Barlow, MD; Mohammed A. Farukhi MD; Isha Gupta; Randall J Olson, MD. Determining Optimal Longitudinal Power Setting for Torsional Phacoemulsification Using Ex Vivo Porcine Lens Model.

Jeff H Pettey, MD; Randall J Olson, MD; William R Barlow, MD; Brian E Zaug, MD; Brian C Stagg, MD; Kevin Kirk; Cecinio Ronquillo Jr., PhD; Jason D Jensen; Mohammed A Farukhi, MD; Isha Gupta. Efficiency of Micropulse On-time Duty Cycle Settings.

Justin C Kohl, MD; Joshua Ford, MD; Scott Cole, MD; Shail Vasavada, DO, DNB, FICO; Gareth Gardiner; Liliana Werner, MD, PhD; Nick Mamalis, MD. Long-term Uveal and Capsular Biocompatibility of a New Accommodating Intraocular Lens.

Joshua Ford, MD; Justin Kohl, MD; Scott Cole, MD; Gareth Gardiner; Shail Vasavada, DO, DNB, FICO; Liliana Werner, MD, PhD; Nick Mamalis, MD. Long-term Uveal and Capsular Biocompatibility and Stability after Nd:YAG Laser Posterior Capsulotomy of a New Disc-shaped Intraocular Lens.

**SCIENTIFIC POSTER, HONORABLE MENTION, INTRAOCULAR SURGERY**:

Liliana Werner, MD, PhD; Caleb Morris; Erica Liu, MD; Shannon Stallings, MD; Anne Floyd, MD. Light Transmittance of Cadaver-eye Explanted Single-piece Hydrophobic Acrylic IOLs with Surface Light Scattering.

**BEST OF SHOW, THE EYE AS ART**:  
James Gilman, CRA, FOPS. Retinal Canopy.
Currently, more than 70 clinical research trials are being carried out at the Moran Eye Center

<table>
<thead>
<tr>
<th>CATARACT</th>
<th>GLAUCOMA</th>
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<tr>
<td>Accuracy of the Holladay 2 Formula Using Lenstar Biometry <strong>Principal Investigator:</strong> James Bell, MD</td>
<td>Safety and Effectiveness of the Hydrus Aqueous Implant for Lowering Intraocular Pressure in Glaucoma Patients Undergoing Cataract Surgery; A Prospective, Multicenter, Randomized, Controlled Clinical Trial (Hydrus 4 Study) <strong>Principal Investigator:</strong> Alan S Crandall, MD</td>
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<tr>
<td>Clinical Study of the ARTISAN Aphakia Lens for the Correction of Aphakia in Adults <strong>Principal Investigator:</strong> Alan S Crandall, MD</td>
<td>Clinical Study of the ARTISAN Aphakia Lens for the Correction of Aphakia in Children <strong>Principal Investigator:</strong> Alan S Crandall, MD</td>
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<tr>
<td>Impact of AcrySof Glistenings on Visual Quality <strong>Principal Investigator:</strong> Randall J Olson, MD</td>
<td>Driving with Pseudophakia <strong>Principal Investigator:</strong> Randall J Olson, MD</td>
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<td>CORNEA</td>
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<tr>
<td>Subconjunctival Aflibercept Injection for Corneal Neovascularization <strong>Principal Investigator:</strong> Balamurali K Ambati, MD, PhD, MBA</td>
<td>Subconjunctival Infusion of the Hydrus Aqueous Implant for Lowering Intraocular Pressure in Glaucoma Patients Undergoing Cataract Surgery; A Prospective, Multicenter, Randomized, Controlled Clinical Trial (Hydrus 4 Study) <strong>Principal Investigator:</strong> Alan S Crandall, MD</td>
</tr>
<tr>
<td>Subconjunctival IVIg (Gamunex-C) Injection for Corneal Neovascularization and Inflammatory Conditions <strong>Principal Investigator:</strong> Balamurali K Ambati, MD, PhD, MBA</td>
<td>Biomechanical Changes in the Cornea after Laser Assisted in situ Keratomileusis (LASIK) and Photorefractive Keratectomy (PRK) <strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
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<td>Effect of Corneal Preservation Time on Long-term Graft Success (CPTS) <strong>Principal Investigator:</strong> Mark D Mifflin, MD</td>
<td>Topical Propracaine vs Tetracaine in Photorefractive Keratectomy (PRK) <strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
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<tr>
<td>Efficacy and Safety of Loteprednol 0.5% Gel for Routine Prophylaxis after Photorefractive Keratectomy Compared to Prednisolone Acetate 1% Suspension and Fluorometholone 0.1% Suspension <strong>Principal Investigator:</strong> Mark D Mifflin, MD</td>
<td>70 versus 110 Degrees Side-cut Angles in Femtosecond Laser-assisted in situ Keratomileusis <strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
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<tr>
<td>Retrospective Study of Descemet’s Stripping Automated Endothelial Keratoplasty Outcomes <strong>Principal Investigator:</strong> Mark D Mifflin, MD</td>
<td>GENERAL</td>
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<tr>
<td>Evaluation of the Safety and Efficacy of Corneal Collagen Crosslinking in Eye with Keratoconus or Corneal Ectasia after Refractive Surgery <strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
<td>Potential for Vision Loss Following Blast Exposure <strong>Principal Investigator:</strong> Jason Goldsmith, MD</td>
</tr>
<tr>
<td>Biomechanical Changes in the Cornea after Laser Assisted in situ Keratomileusis (LASIK) and Photorefractive Keratectomy (PRK) <strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
<td>Experience in an Ophthalmology Clinic for Homeless Patients <strong>Principal Investigator:</strong> Brian Stagg, MD</td>
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<tr>
<td>Topical Propracaine vs Tetracaine in Photorefractive Keratectomy (PRK) <strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
<td>NEURO-OPHTHALMOLOGY</td>
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<tr>
<td>Thin Film Spectacle Coatings to Reduce Light Sensitivity and Headaches in Patients with Migraine <strong>Principal Investigator:</strong> Judith E A Warner, MD</td>
<td>Prospective Assessment of Photophobia in Moran Eye Center Patients <strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<tr>
<td>BENIGN ESSENTIAL BLEPHAROSPASM IN CHILDREN</td>
<td>Evaluation of Optic Neuropathies with Imaging <strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<td>POSTERIOR CORTICAL ATROPHY</td>
<td>Long-term Follow-up of the Cohort from the Idiopathic Intracranial Hypertension Treatment Trial (IIHTT) <strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<td>OBSERVATIONAL STUDY ASSESSING VARIOUS NOVEL VASCULAR AND DIAGNOSTIC PARAMETERS AND THEIR RELATIONSHIP TO GLAUCOMA</td>
<td>Retrospective Review of Primary and Secondary Causes of Pseudotumor Cerebri <strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<td>GENETIC ASSOCIATIONS IN PRETERM INFANTS AT RISK OF RETINOPATHY OF PREMATURE</td>
<td>Measurement of Critical Flicker Fusion Frequency <strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<td>PEDIATRIC</td>
<td>Proteomics and Genomics of Giant Cell Arteritis <strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<td>GENETICS OF PEDIATRIC RETINAL DISORDERS</td>
<td>Prospective Study to Evaluate the Possible Association Between the Use of PDE5 Inhibitors and the Risk of Acute Nonarteritic Anterior Ischemic Optic Neuropathy <strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<tr>
<td>PREECLAMPSIA AND RETINOPIA OF PREMATURITY</td>
<td>Predictive Value of Optic Nerve MRI Measurements at Onset of Optic Neuritis for Two-year MS Outcomes <strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<td>Benign Essential Blepharospasm in Children <strong>Principal Investigator:</strong> Judith E A Warner, MD</td>
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<td>PREECLAMPSIA AND RETINOPIA OF PREMATURITY <strong>Principal Investigator:</strong> Mary Elizabeth Hartnett, MD</td>
<td>Posterior Cortical Atrophy <strong>Principal Investigator:</strong> Judith E A Warner, MD</td>
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<td>GENETIC ASSOCIATIONS IN PRETERM INFANTS AT RISK OF RETINOPATHY OF PREMATURE <strong>Principal Investigator:</strong> Mary Elizabeth Hartnett, MD</td>
<td>Observational Study Assessing Various Novel Vascular and Diagnostic Parameters and Their Relationship to Glaucoma <strong>Principal Investigator:</strong> Barbara M Wirostko, MD</td>
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</table>
Spectral Domain OCT Imaging of Eyes: a Practical Diagnostic Tool and Methodology

Principal Investigator: Mary Elizabeth Hartnett, MD

Postnatal Growth and Retinopathy of Prematurity Study (G-ROP)

Principal Investigator: Robert O Hoffman, MD

Retrospective Analysis of Neurofibromatosis Type 1-associated Optic Glioma Outcome after Treatment

Principal Investigator: Robert O Hoffman, MD

Telemedicine Approaches to Evaluating Acute-phase Retinopathy of Prematurity (eROP)

Principal Investigator: Robert O Hoffman, MD

Prevalence of Autism Spectrum Disorders in Patients with Oculocutaneous Albinism

Principal Investigator: Marielle Young, MD

Pediatric Cataract Surgery Outcomes Registry

Principal Investigator: Marielle Young, MD

Clinical Phenotypes of Inherited Retinal Disease

Principal Investigator: Marielle Young, MD

RETINA

Subretinal Versus Intravitreal TPA for Subretinal Hemorrhage

Principal Investigator: James Bell, MD

Macular Pigment Imaging in Infants Using the RetCam

Principal Investigator: Paul S Bernstein, MD, PhD

Clinical Interventions Against Stargardt Macular Dystrophy: DHA Supplementation in Patients with STGD3

Principal Investigator: Paul S Bernstein, MD, PhD

Phase 3 Trial to Establish the Safety and Efficacy of Intravitreous Administration of Fovista Administered in Combination with Lucentis

Principal Investigator: Paul S Bernstein, MD, PhD

National Ophthalmic Genotyping Network (eyeGENE)

Principal Investigator: Paul S Bernstein, MD, PhD

Utah Center for the Collaborative Study of the Role of Macular Pigment Carotenoids in the Pathogenesis and Treatment of MacTel

Principal Investigator: Paul S Bernstein, MD, PhD

Phase 2 Study to Investigate the Safety, Tolerability, Efficacy, Pharmacokinetics, and Pharmacodynamics of GSK 933775 in Patients with Geographic Atrophy

Principal Investigator: Paul S Bernstein, MD, PhD

Phase 2 Multiple-site Randomized, Placebo-controlled Trial of Oral Valproic Acid for Retinitis Pigmentosa

Principal Investigator: Paul S Bernstein, MD, PhD

Utah Center for MacTel Genetics

Principal Investigator: Paul S Bernstein, MD, PhD

Efficacy and Safety of Emixustat Hydrochloride (ACU-4429) with Placebo for the Treatment of Geographic Atrophy Associated with Dry Age-related Macular Degeneration

Principal Investigator: Paul S Bernstein, MD, PhD

Natural History of the Progression of Atrophy Secondary to Stargardt Disease: a Prospective Longitudinal Study (ProgSTAR)

Principal Investigator: Paul S Bernstein, MD, PhD

Phase 3 Randomized, Double-masked, Controlled Trial to Establish the Safety and Efficacy of Intravitreous Administration of FovistaTM (anti-PDGF-B pegylated aptamer) Administered in Combination with Lucentis® Compared to Lucentis® Monotherapy in Subjects with Neovascular Age-related Macular Degeneration

Principal Investigator: Paul S Bernstein, MD, PhD

Natural History Observation and Registry Study of Macular Telangiectasia Type 2: the MacTel Study

Principal Investigator: Paul S Bernstein, MD, PhD

Effects of Maternal Nutrition and Intrauterine Growth Restriction on Infant Carotenoid Status

Principal Investigator: Paul S Bernstein, MD, PhD

Genetic and Epidemiological Study of Diseases of the Posterior Eye

Principal Investigator: Margaret DeAngelis, PhD

Genetic Analysis of Coats’ Disease Patients and Correlation of Phenotypic and Imaging Data

Principal Investigator: Mary Elizabeth Hartnett, MD

Post-approval Study of VisionCare’s Implantable Miniature Telescope in Patients with End-stage Age-related Macular Degeneration

Principal Investigator: Majid Moshirfar, MD, FACS

Value of Genetic Counseling and Testing for Patients Who Would Like to Know More About Their Personal Risk of AMD

Principal Investigator: Briana Sawyer, CCGC

Birdshot Chorioretinopathy OCT Study

Principal Investigator: Albert T Vitale, MD

UVEITIS

Multicenter Study of the Efficacy and Safety of the Human anti-TNF Monoclonal Antibody Adalimumab in Subjects with Inactive Uveitis

Principal Investigator: Albert T Vitale, MD

Long-term Follow-up of Patients Participating in the Multicenter Uveitis Steroid Treatment (MUST) Trial

Principal Investigator: Albert T Vitale, MD

Multicenter Study of the Long-term Safety and Efficacy of the Human anti-TNF Monoclonal Antibody Adalimumab in Subjects with Noninfectious Uveitis

Principal Investigator: Albert T Vitale, MD

Multicenter Study of the Efficacy and Safety of the Human anti-TNF Monoclonal Antibody Adalimumab as Maintenance Therapy in Subjects Requiring High-dose Corticosteroids for Active Uveitis

Principal Investigator: Albert T Vitale, MD
| 3/12/14 | Patent Application Published: “Methods of Predicting the Development of Complement-mediated Disease,” | Europe application 12776262.3; publication 2704800 (19398). |
3/20/14  
**Patent Application Published:** “Methods of Predicting Survival in a Subject Based on the Presence of Single Nucleotide Polymorphisms,” US application 2013/59778; publication WO2014/043550 (19472).

4/28/14  

5/15/14  
**Patent Application Submitted/Pending:** “Methods and Reagents for Treatment and Diagnosis of Vascular Disorders and Age-related Macular Degeneration,” US application 14/279,235 (2150US).

5/15/14  
**Patent Application Submitted/Pending:** “Genes and Polymorphisms Associated with AMD,” US application 14/279,228 (2250US).

5/28/14  
**Patent Issued:** “Use of Complement Factor H Polymorphisms in Treatment and Diagnosis of Age-related Macular Degeneration,” Canada patent 2,597,411 (1220CA).

6/4/14  
**Patent Issued:** “Methods and Reagents for Treatment and Diagnosis of Age-related Macular Degeneration,” Mexico patent 320809 (1221MX).

6/4/14  
**Patent Application Published:** “Methods of Diagnosing and Treating Vascular Associated Maculopathy and Symptoms Thereof,” China application 2012800236687; publication 103841991 (19399).

6/16/14  
**Patent Application Submitted/Pending:** “Methods and Reagents for Treatment and Diagnosis of Age-related Macular Degeneration,” Japan application 2012-123102 (1223JP).

6/18/14  
**Patent Application Published:** “Methods of Predicting the Development of Complement-mediated Disease,” China application 2012800312356; publication 103874526 (19398).

7/8/14  
**Patent Issued:** “Protective Complement Proteins and Age-related Macular Degeneration,” Canada patent 2,638,759 (2430CA).

7/13/14  
**Patent Claims Allowed/Not Yet Issued:** “Methods and Reagents for Treatment and Diagnosis of Vascular Disorders and Age-related Macular Degeneration,” Australia application 2007272335 (2120AU).

7/14/14  

7/22/14  
**Patent Application Submitted/Pending:** “RCA Locus Analysis to Assess Susceptibility to AMD and MPGNII,” US application 14/493080 (2211US).

7/28/14  
**Patent Issued:** “Methods and Reagents for Treatment and Diagnosis of Age-related Macular Degeneration,” Mexico patent MX/a/2011/013528 (1222MX).

8/19/14  
**Patent Granted/Not Yet Issued:** “A Method of Screening for Susceptibility to Developing Age-related Macular Degeneration,” Israel application 185219 (1220IL).

9/19/14  
**Patent Allowed/Not Yet Issued:** “Predicting AMD with SNPs within or near C2, FACTOR B, PLEAKHA1, HETRA1, PRELP, or LOC387715,” Canada application 2,704,447 (2220CA).

10/9/14  
**Patent Application Published:** “Methods of Diagnosing and Treating Vascular Associated Maculopathy and Symptoms Thereof,” US application 14/005,226; publication 2014030313 (19400).

10/16/14  
**Patent Granted/Not Yet Issued:** “Methods and Reagents for Treatment and Diagnosis of Age-related Macular Degeneration,” New Zealand application 608860 (1223NZ).

10/24/14  
**Patent Application Published:** “Methods of Diagnosing and Treating Vascular Associated Maculopathy and Symptoms Thereof,” Hong Kong application 14108008.7; publication 1194770A (19400).
Gregory S Hageman, PhD

10/30/14  
**Patent Granted/Not Yet Issued:** “Compositions for Treatment of Age-related Macular Degeneration,” Israel application 225204 (1221IL).

10/30/14  
**Patent Application Published:** “Methods of Diagnosing and Treating Vascular Associated Maculopathy and Symptoms Thereof,” US application 14/005,231; publication 20140323413 (19399).

11/10/14  
**Patent Allowed/Not Yet Issued:** “Methods and Reagents for Treatment and Diagnosis of Age-related Macular Degeneration,” Israel application 225203 (1222IL).

11/18/14  
**Patent Allowed/Not Yet Issued:** “Methods and Reagents for Treatment and Diagnosis of Vascular Disorders and Age-related Macular Degeneration,” European application 12152172.8 (2121EP).

12/4/14  

12/4/14  
**Patent Application Published:** “Methods of Predicting the Development of Completion-mediated Disease,” US application 14/114,751; publication 20140357732 (19398).

Mary Elizabeth Hartnett, MD

2014  
**Patent Pending:** “Methods and Compositions for Inhibiting Retinopathy of Prematurity,” US patent.

Bryan W Jones, PhD; Robert E Marc, PhD

2012 – Present  
**Patent Pending:** “Oncological Application of Computational Molecular Phenotyping.”

Bradley J Katz, MD, PhD

2013 – Present  
**Patent Incorporated into Another Tech:** “Methods, Systems, and Apparatus for Reducing the Frequency and/or Severity of Photophobic Response,” Bradley J Katz, Steven Blair.

Founder and CEO of Axon Optics, www.axonoptics.com. Joined with Tecport Optics to develop a ground-breaking optical interference filter coating process for plastic spectacle lenses. The process blocks the specific wavelengths of light that have been implicated as the cause of photophobic symptoms, particularly those associated with triggering and exacerbating debilitating migraine headaches. The University of Utah has registered the existing proprietary property.

David Krizaj, PhD

6/18/14 – Present  
**Hold For More Data From Inventor(s):** “Epilepsy Treatment Using Novel Ion Channel Targets.”

2013 – Present  
Salcantay Vision Solutions, LLC, CEO. Asha Vision, LLC, Founder and CEO. Entrepreneurial Faculty Scholars, University of Utah. Center for Translational Medicine, University of Utah.

3/14/13 – Present  
**Patent Filed:** “Compounds with TRPV4 Activity, Compositions and Associated Methods Thereof,” Priority date May 10, 2012.

5/10/12 – Present  
**Patent Pending:** “Role of TRPV4 Antagonists in Ocular Disease,” docket no. 00846-US01, Krizaj D, Ryskamp DA, Barabas P. Inventor of a novel method for treatment of glaucoma and other ocular diseases associated with abnormal mechanical environment within the eye. The method has been validated in animal models and has the potential for a wide impact on clinical care, as there are currently no treatments that regulate intraocular pressure and protect retinal ganglion neurons in glaucoma.

10/16/12 – Present  
Randall J Olson, MD

7/7/2014

**Patent Licensed, Exclusive:** “A Safer Knife Blade.”

2012 – Present

**Patent Submitted:** “A Vision Correction System to Minimize Intraocular Lens Rotation.”

**Patent Pending:** “A Vision Correction System,” patent 5087, International.


2011 – Present


Ning Tian, PhD

04/21/2014

**Patent Released to Inventor:** “Dual Imaging Chamber,” Ning Tian, PhD, and Brent Young.

Liliana Werner, MD, PhD

1996-Present


Barbara M Wirostko, MD

2014 – Present


2013 – Present


An ocular drug delivery system including a composition in which a formulation having an active agent (e.g., HGH, rHGH or an HGH mimic) that increases insulin growth factor (IGF) or that alters insulin growth factor binding protein (IGFBP) in a subject is dispersed in a pharmaceutical carrier. The composition is configured for placement in, around, or on an eye of the subject, and the composition provides controlled release of an amount of the active agent to the eye effective to promote ocular surface and corneal neural regeneration and wound healing.
<table>
<thead>
<tr>
<th>Date</th>
<th>Presenter</th>
<th>Topic or Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 15</td>
<td>Meg DeAngelis, PhD, Faculty</td>
<td>Integrated Analysis of Gene Expression, Genetics, and Epigenetics Suggest a Role for Lipid Metabolism is Involved in Age-related Macular Degeneration</td>
</tr>
<tr>
<td>January 22</td>
<td>Bloomberg Library Committee: Kathleen B. Digre, MD; Bryan Jones, PhD; Christy Jarvis, MLIS</td>
<td>Library Update</td>
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<tr>
<td>January 29</td>
<td>R. Rand Allingham, MD, Professor of Ophthalmology, Chief Glaucoma Services, Duke University</td>
<td>Exfoliation Glaucoma: Common, Inherited, and Curable</td>
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<tr>
<td>February 5</td>
<td>Marilyn McKasson, MD, Neurology Resident; Alicia Bennet, MD, Neurology Resident</td>
<td>Chronic Relapsing Inflammatory Optic Neuropathy</td>
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<tr>
<td>February 12</td>
<td>Julia Byrd, MD, Ophthalmology Intern</td>
<td>Ocular Manifestations of Arthropod Vector-borne Diseases</td>
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<tr>
<td>February 19</td>
<td>Albert T. Vitale, MD, Faculty</td>
<td>Infectious and Neoplastic Masquerades in Uveitis</td>
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<tr>
<td>February 26</td>
<td>Paul S. Bernstein, MD, PhD, Faculty</td>
<td>Update on AREDS2 and the MacTel Genetics Project</td>
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<tr>
<td>March 5</td>
<td>M.E. Hartnett, MD, Faculty</td>
<td>Update of VEGF Neuroprotection in ROP</td>
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<td>March 12</td>
<td>Joseph L. Hatch, MD, Faculty</td>
<td>Thermal Wedge Resection</td>
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<td>March 19</td>
<td>Luis Santiago-Caban, MD, Cornea Fellow</td>
<td>LASIK Enhancement: PRK on the Flap vs. Flap Re-lift. Case Presentation: The Patient with Bilateral Corneal Edema</td>
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<tr>
<td>March 26</td>
<td>Ronald Hobbs, MD, Retina Fellow</td>
<td>Crystalline Retinopathy</td>
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<tr>
<td>April 9</td>
<td>Brian Zaugg, MD, Resident</td>
<td>Intracameral Antibiotics for Endophthalmitis Prophylaxis</td>
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<td>April 16</td>
<td>Jian-zing Ma, MD, PhD, Laureate Professor and Chairman, Department of Physiology, University of Oklahoma Krista Kinard, MD, Neuro-ophthalmology Fellow</td>
<td>Fenofibrate Effect on Diabetic Retinopathy: Its Target and Mechanism of Action Corneal Nerves in Migraine</td>
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<tr>
<td>May 7</td>
<td>Jeff H. Petrey, MD, Faculty</td>
<td>Residency Training Just Got Better</td>
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<tr>
<td>May 21</td>
<td>Brian Stagg, MD, Resident</td>
<td>Paraneoplastic Syndromes in the Eye</td>
</tr>
<tr>
<td>May 28</td>
<td>Jay Jacobson, MD, Intermountain Medical Center, Salt Lake City, Utah</td>
<td>Ethics Conference: Off-label Use of Medications and Devices</td>
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<tr>
<td>June 4</td>
<td>Russell Swan, MD, Resident</td>
<td>This Looks Fishy</td>
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<td></td>
<td>Adam Jorgensen, MD, Resident</td>
<td>Bilateral Optic Nerve Edema</td>
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<td></td>
<td>Leah Owen, MD, PhD, Resident</td>
<td>Central Retinal Artery Occlusion and Branch Retinal Vein Occlusion in a Patient with CNS Vasculitis</td>
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<tr>
<td>June 11</td>
<td>Craig J. Chaya, MD, Faculty</td>
<td>SICS is to Cataract as ??? is to Glaucoma?</td>
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<tr>
<td>July 16</td>
<td>Randy “Chris” Bowen, MSIV, University of Utah Isha Gupta, MSIV, University of Utah Matthew Kliethermes, MSIV, University of Missouri</td>
<td>Bench to Bedside: Ocular Drug Delivery Optimizing Phaco Emulsification Acute Onset Esotropia</td>
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<td>July 23</td>
<td>Majid Moshirfar, MD, FACS, ABES, Faculty</td>
<td>Refractive Surgical Complications</td>
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<tr>
<td>July 30</td>
<td>Kimberly Lavin, MSIV, Creighton University, SOM-Phoenix Regional Campus Samuel Passi, MSIV, University of Utah SOM Zhan Li, MSIV, University of Nevada SOM</td>
<td>Advantages and Disadvantages of Small-gauge Vitrectomy Band Keratopathy and Interstitial Keratitis Differentiating Retinopathy from Optic Neuropathy in Acute Vision Loss</td>
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<tr>
<td>Date</td>
<td>Presenter</td>
<td>Topic or Title</td>
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<tr>
<td>August 13</td>
<td>Kevin Garff, MSIV, University of Utah, Michael Jordan, MSIV, University of North Dakota, Tara Tae, MSIV, University of Tennessee</td>
<td>Measuring Ocular Blood Flow in Glaucoma, Two-year Old with Leukocoria, Shallow Anterior Chamber in a Post-operative Patient</td>
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<tr>
<td>August 20</td>
<td>Nikko Ronquillo, PhD, University of Utah, Nigel Stippa, MSIV, Stony Brook University, Michael Taggart, University of Utah SOM</td>
<td>A New Animal Model of Senior-Løken Syndrome: Insights to Disease Mechanism, The Role of Optical Coherence Tomography of the Optic Nerve in the Evaluation of Central Retinal Vein Occlusions, The Use of Serum Biomarkers in NVAMD</td>
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<tr>
<td>August 27</td>
<td>Alan S. Crandall, MD, Faculty</td>
<td>Case Presentation: Complex Cataract</td>
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<tr>
<td>September 3</td>
<td>Aabid Farukhi, MD, University of Utah, Gregory Kramer, MD, University of Utah, Kyle MacLean, MD, University of Utah</td>
<td>Mastering TASS: An Updated Review of the Common Causes, Evaluation, and Treatment of a Post-operative Complication, Prevention of Post-operative Capsular Bag Opacification by Intraocular Lenses and Endocapsular Devices Maintaining the Capsular Bag Open or Expanded, Multicomponent Lens Technology</td>
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<tr>
<td>September 10</td>
<td>Wyatt Messenger, MD, Research Fellow, Rujai Rai, MD, Research Fellow</td>
<td>Comp-Ang1: A Novel Treatment for CRAO, Case Presentation: Neuro-ophthalmology</td>
</tr>
<tr>
<td>September 17</td>
<td>Joshua Atkinson, MSIV, UT Medical School Houston, Bradley Henricksen, MSIV, University of Utah SOM, Christopher Ricks, MSIV, UT Medical School Houston</td>
<td>Back to Basics: Illumination Techniques, Examining the Effects of Maternal Nutrition on Macular Development. Case Presentation: Neuro-ophthalmology Visual Distortions, A Brief Review of Oculocutaneous Albinism</td>
</tr>
<tr>
<td>September 24</td>
<td>Aaron Barnett, MSIV, University of Arkansas COM, Cullen Ryburn, MSIV, Texas Tech University HSC, Daniel Tervee MSIV, University of South Dakota, Stanford SOM</td>
<td>High IOP after Intravitreal Anti-VEGF, Case Presentation: Headache, Four-point Scleral Fixation of a Hydrophilic Acrylic PC IOL</td>
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<tr>
<td>October 1</td>
<td>Maria Grant, MD, FARVO, Eugene &amp; Marilyn Glick Eye Institute, Department of Ophthalmology, Indiana University SOM</td>
<td>Stem/Progenitor Cells: Do They Have a Future in Retinal Vascular Repair?</td>
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<tr>
<td>October 8</td>
<td>Christopher Conrady, MD, PhD, Intern</td>
<td>Innate Recognition of HSV-1: A View from within the Cornea</td>
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<tr>
<td>October 15</td>
<td>Rene Choi, MD, PhD, Resident, Carey Wilson, MD, Pediatric Neuro-ophthalmology Resident</td>
<td>Seeing is Believing in Retinal Regeneration, Case Presentation: Double Blind</td>
</tr>
<tr>
<td>October 22</td>
<td>Ty Dickerson, MD, MPH, FFAP, Assistant Dean of Global Health Ed, University of Utah</td>
<td>Global Health Governance: The Players, the Process, and the Problem</td>
</tr>
<tr>
<td>October 29</td>
<td>Jay Jacobson, MD, Intermountain Medical Center, Salt Lake City, Utah</td>
<td>Ethics Conference: International Teaching</td>
</tr>
<tr>
<td>November 12</td>
<td>Majid Moshirfar, MD, FACS, ABES, Faculty; Carlton Fenzl, MD, Cornea Fellow</td>
<td>Cornea</td>
</tr>
<tr>
<td>November 19</td>
<td>Brian Zaugg, MD; Rene Choi, MD, PhD, Residents</td>
<td>A Case of Unilateral Optic Nerve Swelling</td>
</tr>
</tbody>
</table>
A sample of more than 130 published and presented materials by Moran faculty members between January 1 and December 31, 2014

ACS Chemical Neuroscience

Acta Biomaterialia

Advanced Ocular Care


Advances in Experimental Medical Biology


American Journal of Human Genetics

American Journal of Medical Genetics

American Journal of Ophthalmology


American Journal of Pathology

Annals of Pharmacotherapy

Biomedical Papers of the Medical Faculty of the University Palacky

Brain

Cancers (Basel)


Case Reports in Ophthalmological Medicine


Cells

Clinical Ophthalmology


Moshifar M, Pierson K, Hanamaikai Km Santiago-Caban I, Muthappan V, Passi SF. Artificial tears potpourri: A literature review.

Clinics in Mother Child Health

Clinics in Perinatology

Cold Spring Harbor Perspectives in Medicine

Cornea


Current Eye Research

Current Neuropharmacology

Environmental Research

European Journal of Neuroscience

Experimental Eye Research


Eye (London)

The FASEB Journal

Focal Points

Frontiers in Cellular Neuroscience

Frontiers in Molecular Neuroscience

Frontiers in Neural Circuits

Gastroenterology


Glucoma Today

Graeaves Archive for Clinical and Experimental Ophthalmology

Health Communication

Human Molecular Genetics


Human Mutation

IEEE
Loizos K, Lazzi G, Lauritzen JS, Anderson J, Jones BW, Marc R. A multi-scale computational model for the study of retinal prosthetic

**Investigative Ophthalmology and Visual Sciences**


**Iranian Journal of Medical Sciences**


**JAMA Internal Medicine**


**JAMA Ophthalmology**


**JAMA Otolaryngology—Head & Neck Surgery**


**Journal of AAOPOS**


**Journal of Biological Chemistry**

Chen Q, Zou J, Shen Z, Zhang W, Yang J, Whirlin and PDZ domain containing 7 (PDZD7) proteins are both required to form the quaternary protein complex associated with Usher syndrome type 2. *J Biol Chem*. 2014; 289(52), 36070-36088.

**Journal of Cataract and Refractive Surgery**


Journal of Comparative Neurology


Journal of Craniofacial Surgery


Journal of Molecular Cell Biology


Journal of Neuro-Ophthalmology


Journal of Neuroscience


Journal of Ophthalmology


Journal of Visual Experiments


Middle East African Journal of Ophthalmology


Molecular Therapy


Molecular Vision


Nature Genetics

Fritsche LG, Hageman GS, DeAngelis MM,


Neurobiology of Aging

Neurology

Pharmacology Research & Perspectives

PLOS ONE


Proceedings of the National Academy of Sciences of the United States of America


Optometry and Vision Science Journal

Pattern Recognition Letters

Ocular Immunology and Inflammation

Open Journal of Ophthalmology

Open Ophthalmology Journal

Ophthalmic Surgery, Lasers, and Imaging Retina

Ophthalmology


Vision Research

Visual Neuroscience

World Journal of Clinical Cases
# Research Grants and Contracts 2014

## Research Grants

<table>
<thead>
<tr>
<th>Grant Title</th>
<th>PI Name</th>
<th>Institution</th>
<th>Start Date</th>
<th>End Date</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td><strong>Biocompatible Novel Ocular Drug</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>National Institutes of Health</td>
<td>07/01/12</td>
<td>05/01/14</td>
<td>NA</td>
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<tr>
<td><strong>Comp-Ang1 in Diabetic Retinopathy</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>National Institutes of Health</td>
<td>07/01/12</td>
<td>06/30/16</td>
<td>NA</td>
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<tr>
<td><strong>The Role of Solvable Flt-1 and Raver2 in Ocular Vascular Demarcations</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>National Eye Institute</td>
<td>08/01/13</td>
<td>07/31/17</td>
<td>$94,000</td>
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<td><strong>Intraceptor Interference of VEGF in Ocular Angiogenesis</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>National Eye Institute</td>
<td>08/01/13</td>
<td>07/31/17</td>
<td>$392,028</td>
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<td><strong>Role of sFlt in Corneal Avascularity</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>National Eye Institute</td>
<td>08/01/13</td>
<td>07/31/17</td>
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<td><strong>Vascular Normalization</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>Juvenile Diabetes Research Foundation</td>
<td>03/01/13</td>
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<td><strong>Interference of VEGF</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>National Eye Institute</td>
<td>04/01/13</td>
<td>03/31/18</td>
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<td><strong>Caltech Wound Healing</strong></td>
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<td>National Institutes of Health</td>
<td>04/01/13</td>
<td>03/31/18</td>
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<td><strong>Defining the Mechanism of Ang1</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>National Institutes of Health</td>
<td>07/01/13</td>
<td>06/30/14</td>
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<td><strong>AHAF-Glaucoma</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>American Health Assistance Foundation</td>
<td>07/01/13</td>
<td>06/30/15</td>
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<td><strong>Eyelea for Corneal Neo</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>Regeneron Pharmaceuticals Inc.</td>
<td>08/29/13</td>
<td>03/31/15</td>
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<td><strong>Epcs in Diabetic Retinopathy</strong></td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>American Heart Association Western States Affiliate</td>
<td>01/01/14–12/31/14</td>
<td>$365,050</td>
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<td>Project Title</td>
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<td>ProgStar Prospective Study</td>
<td>$174,800</td>
<td>Foundation Fighting Blindness</td>
<td>01/01/13–02/29/16</td>
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<td>ProgStar Prospective Study</td>
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<td>Intuitive Retinal System (Abbott; Bernstein)</td>
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<td>Intuitive Surgical, Inc.</td>
<td>01/01/13–01/31/14</td>
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<td>Bam114341</td>
<td>$234,887</td>
<td>GlaxoSmithKline</td>
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<td>VPA Protocol</td>
<td>$628,276</td>
<td>National Neurovision Research Institute</td>
<td>06/01/10–Present</td>
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<td>Age-related Eye Disease (AREDS) Study II</td>
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<td>Emmes Corporation/National Eye Institute</td>
<td>6/01/06–Present</td>
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<td>Biochemistry and Pharmacology of Macular Cartenoids</td>
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<td>Photoreceptor Ciliopathies: RP2, KIF17 and NPHPS (Baehr; Frederick)</td>
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<td>National Eye Institute</td>
<td>05/01/12–04/30/16</td>
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<td>Therapy for a Mouse Model SLS</td>
<td>$30,000</td>
<td>Retina Research Foundation</td>
<td>01/01/14–12/31/14</td>
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<td>Therapies for Retinal Degeneration Caused by NPHP5 Mutations</td>
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<td>Foundation for Retinal Research</td>
<td>11/01/13–10/31/14</td>
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<td>Gene Therapy for Retinitis Pigmentosa Animal Models</td>
<td>$100,000</td>
<td>Research to Prevent Blindness</td>
<td>07/01/14–06/30/19</td>
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Wolfgang B Baehr, PhD

Nephrocystin-5 in Retinal Degeneration (Baehr; Ronquillo) $33,695
National Institutes of Health
08/01/12–07/31/14

Core Vision Research Grant (Baehr; Bernstein) $173,129
National Eye Institute
07/01/10–06/30/15

Membrane Protein Transport in Photoreceptors $372,500
National Eye Institute
08/01/14–07/31/19

Photoreceptor Ciliopathies: RP2, KIF17 and NPHPS (Baehr; Frederick) $365,050
National Eye Institute
05/01/12–04/30/16

Therapy for a Mouse Model SLS $30,000
Retina Research Foundation
01/01/14–12/31/14

Therapies for Retinal Degeneration Caused by NPHP5 Mutations $75,000
Foundation for Retinal Research
11/01/13–10/31/14

Gene Therapy for Retinitis Pigmentosa Animal Models $100,000
Research to Prevent Blindness
07/01/14–06/30/19

William Barlow, MD

A Comparative Study of Venturi vs. Peristaltic Vacuum Regarding Efficiency and Chatter NA
Abbott Medical Optics
02/05/13–02/05/14

Paul S Bernstein, MD, PhD

Roche Bp28935 $1,696
Roche Translational and Clinical Research Center
04/01/14–05/30/14

Oph1002 $110,417
Ophthotech Corporation
09/01/13–12/31/15

Acu-4429 $254,842
Acucela, Inc.
03/01/13–12/31/16
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<td>Human Eye Repository for Studies of Age-related Macular Degeneration</td>
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<td>Nick Mamalis, MD and Liliana Werner, MD</td>
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<td>Evaluation of the Surgical Technique to Implant the Harmoni IOL in a Research Eye Model (TO#3)</td>
<td>$2,603</td>
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<tr>
<td>Clarvista Medical</td>
<td>06/25/14–9/30/14</td>
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<td>Evaluation of the Surgical Technique to Implant the Omega 3D IOL in a Research Eye Model (TO#1)</td>
<td>$4,647</td>
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<td>OMEGA Ophthalmics</td>
<td>07/15/14–11/30/14</td>
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<tr>
<td>Power Adjustment and Biocompatibility, Amend #21</td>
<td>NA</td>
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<td>Calhoun Vision, Inc.</td>
<td>05/04/07–07/31/17</td>
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<td>Evaluation of a New Solution for Prevention of Capsular Bag Opacification in a Research Eye Model (TO#1)</td>
<td>$27,985</td>
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<td>Genisphere LLC</td>
<td>01/15/14–5/31/14</td>
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<tr>
<td>Name</td>
<td>Title</td>
<td>Institution</td>
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<tr>
<td>Nick Mamalis, MD and Liliana Werner, MD, PhD</td>
<td>Evaluation of a New Solution for Prevention of Capsular Bag Opacification in a Research Eye Model (TO#2)</td>
<td>Genisphere LLC 08/01/14–12/31/14</td>
<td>$22,603</td>
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<td>Evaluation of Biocompatibility of a Silicone Fluid in a Research Eye Model (TO#1)</td>
<td>Lensgen Inc. 02/11/14–05/31/14</td>
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<td>Evaluation of Biocompatibility of a Silicone Fluid in a Research Eye Model (TO#2)</td>
<td>Lensgen Inc. 06/03/14–11/30/14</td>
<td>$3,506</td>
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<td>Evaluation of Biocompatibility of a Silicone Fluid in a Research Eye Model (TO#3)</td>
<td>Lensgen Inc. 10/15/14–Current</td>
<td>$32,756</td>
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<td>Evaluation of an Automated Capsulorhexis Technique for Phacoemulsification and Intraocular Lens Implantation in a Research Eye Model (TO#1)</td>
<td>MYNOSYS 09/01/14–Current</td>
<td>$3,101</td>
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<tr>
<td>Robert E Marc, PhD</td>
<td>Structural Neurochemistry of Retinal Circuits</td>
<td>National Eye Institute 12/01/11–11/30/16</td>
<td>$509,797</td>
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<td>Retinal Remodeling</td>
<td>National Eye Institute 4/01/12–03/16</td>
<td>$498,849</td>
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<td>Core Vision Research Grant</td>
<td>National Eye Institute 07/01/10–06/30/15</td>
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<td>Core Vision Research Grant (Main)</td>
<td>National Eye Institute 07/01/10–6/30/15</td>
<td>$29,743</td>
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<td>Vision Research Training Grant at the University of Utah (Marc; Krizaj)</td>
<td>National Eye Institute 07/01/10–06/30/15</td>
<td>$214,991</td>
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<td>Mark D Mifflin, MD</td>
<td>CPTS</td>
<td>Jaeb Center for Health Research 07/01/12–06/30/17</td>
<td>$51,800</td>
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<td>Evaluation of Topical Antibiotics/Risk of Endophthalmitis with Intravitreal Injection</td>
<td>Allergan, Inc. 01/01/09–Present</td>
<td>$20,000</td>
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<td>Evaluation of Topical Antibiotics/Risk of Endophthalmitis with Intravitreal Injection</td>
<td>Allergan, Inc. 04/01/07–Present</td>
<td>$20,000</td>
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<tr>
<td>Debra A Schaumberg, ScD, OD, MPH</td>
<td>Randomized Trial of Vit D &amp; Omega-3 Fatty Acids for Diabetic Kidney Disease</td>
<td>National Eye Institute-Subaward from University of Washington 04/01/13–08/31/15</td>
<td>$19,144</td>
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<td></td>
<td>Effects of Vitamin D and Omega-3 Fatty Acids on Infectious Diseases and hCAP18</td>
<td>National Eye Institute-Subaward from Brigham &amp; Womens Hospital 04/01/13–05/31/17</td>
<td>$31,644</td>
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<td>Jason Shepherd, PhD</td>
<td>Role of Arc in Synaptic/Experience-dependent Plasticity in Mouse Visual Cortex</td>
<td>National Institutes of Health 04/01/11–04/01/16</td>
<td>$166,450</td>
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<td>Investigating the Causal Role of Arc in Angelman Syndrome</td>
<td>$80,101</td>
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<td>Angelman Syndrome Foundation</td>
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<tr>
<th>Michael P Teske, MD</th>
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<tr>
<td>Utah Women's Health Information Network (Digre; LaCoursiere; Teske)</td>
<td>$500,000</td>
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<tr>
<td>Utah Department of Health</td>
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<th>Ning Tian, PhD</th>
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<tr>
<td>Development of Synaptic Pathways in Retina (Supplement)</td>
<td>$365,050</td>
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<td>National Eye Institute</td>
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<tr>
<th>Monica Vetter, PhD</th>
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<tr>
<td>Role of Microglia During Retinal Neurogenesis</td>
<td>NA</td>
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<td>National Institutes of Health</td>
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<tr>
<td>12/01/14–11/30/16</td>
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</table>

| The Role of Microglia in Experimental Glaucoma             | NA     |
| National Institutes of Health                             |        |
| 07/01/10–06/30/15                                         |        |

| Inhibitory Regulation of Microglia in Glaucoma             | NA     |
| National Institutes of Health                             |        |
| 07/01/13–06/30/18                                         |        |

| Regulation of Axon Degeneration in Glaucoma                | NA     |
| Research to Prevent Blindness, Innovative Ophthalmic Research Award |        |
| 01/13–12/31/15                                             |        |

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<tr>
<th>Albert T Vitale, MD</th>
<th>NA</th>
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<tr>
<td>Dsp-Visulex</td>
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<tr>
<td>Aciont Inc.</td>
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<td>12/01/14–12/31/15</td>
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</table>

| Centre for Eye Research Australia                         | NA     |
| 01/01/13–12/31/16                                         |        |

| Stop-Uveitis Study                                        | NA     |
| Genentech Inc.                                            |        |
| 12/01/12–12/31/14                                         |        |

| 2U10EY014660: Multicenter Uveitis Steroid Treatment (MUST) Trial | NA     |
| Genentech Inc.                                              |        |
| 06/01/12–04/30/14                                           |        |

| Must Follow Up Study                                       | $68,811 |
| Johns Hopkins University                                   |        |
| 05/01/12–04/30/15                                          |        |

| Double-mass, Placebo-controlled, Multi-centered, Dose-ranging Study to Assess the Efficacy and Safety of LX211 as Therapy Clinically Quiescent Sight Threatening, Noninfectious Uveitis | NA     |
| Lux Biosciences, Inc.                                      |        |
| 04/01/07–Present                                           |        |

| A Multicenter Randomized Controlled Study to Evaluate the Safety and Efficacy of an Intravitreal Flu cinolone Acetonide (0.5mg) Implant Compared to Standard Therapy in Patients with Noninfectious Uveitis Affecting the Posterior Segment of the Eye | NA     |
| Bausch & Lomb                                              |        |
| 01/01/03–Present                                           |        |

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<tr>
<th>Jun Yang, PhD</th>
<th>$328,545</th>
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<td>Formation and Function(s) of the Usher 2 Protein Complex in Photoreceptors</td>
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<td>National Eye Institute</td>
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<tr>
<td>04/01/11–03/31/16</td>
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| Research to Prevent Blindness Special Scholar Award       | $100,000 |
| Research to Prevent Blindness                             |        |
| 07/01/13–12/31/14                                         |        |

| Pdzd7 Function                                            | $27,273 |
| Hearing Health Foundation                                 |        |
| 07/01/14–06/30/15                                         |        |

| Function of Pdzd7                                          | $22,727 |
| Hearing Health Foundation                                 |        |
| 07/01/13–06/30/14                                         |        |

| Involvement of C8orf37 in Inherited Retinal Degenerations and Ciliopathies | $28,000 |
| University of Utah Research Foundation Seed Grant         |        |
| 07/01/13–06/30/14                                         |        |

| Analysis of Interactions-Qian Chen                        | $60,000 |
| Knights Templar Eye Foundation                            |        |
| 07/01/13–06/30/14                                         |        |

<p>| Ush2 Complex in Cochlear Hair                             | $20,000 |
| National Organization for Hearing Research                |        |
| 07/01/13–06/30/14                                         |        |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Presentation</th>
<th>Location</th>
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<tbody>
<tr>
<td>Balamurali K Ambati, MD, PhD</td>
<td>Talks at Kyoto Cornea Club, Nagoya and Tokyo University</td>
<td>Nagoya and Tokyo, Japan</td>
</tr>
<tr>
<td>Alessandra Angelucci, MD, PhD</td>
<td>Keynote Speaker, Corticocortical Connections in the Primate Visual Cortex: Structure and Function. Brazilian Society for Neuroscience, 2013.</td>
<td>Belo Horizonte, Brazil</td>
</tr>
<tr>
<td></td>
<td>Invited Speaker, Department of Morphology, Autonoma University Medical School, 2013.</td>
<td>Madrid, Spain</td>
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<tr>
<td></td>
<td>Invited Speaker, Department of Neuroscience, University of Pennsylvania, 2013.</td>
<td>Philadelphia, PA</td>
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<tr>
<td></td>
<td>Department of Physiology, University of Rome.</td>
<td>La Sapienza, Italy</td>
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<tr>
<td>Wolfgang B Baehr, PhD</td>
<td>Proctor Medal Lecture. Membrane Protein Transport in Photoreceptors: the Function of PDE-Delta. Poster and Platform Presentations. ARVO.</td>
<td>Orlando, FL</td>
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<tr>
<td></td>
<td>Invited Presentation, The Function of PDE-Delta in Photoreceptors. UC Davis.</td>
<td>Davis, CA</td>
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<tr>
<td>Paul S Bernstein, MD, PhD</td>
<td>Inter-relationships of Human Retinal VLD-PUFAS with Biomarkers of Dietary Lipid Intake. ISER.</td>
<td>San Francisco, CA</td>
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<tr>
<td></td>
<td>Invited Speaker, University of Sao Paulo, Brazil.</td>
<td>Sao Paulo, Brazil</td>
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<td></td>
<td>The Management of Exfoliative Glaucoma. Pseudoexfoliation Cataract Technique to Reduce Zonule Stress. Use of Capsule Devices in Different Stages of Complex Cataracts. 27th APACRS.</td>
<td>Jaipur, India</td>
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<td></td>
<td>Empowering Women to Be Involved and Create Charitable Organizations. Women in Ophthalmology.</td>
<td>Washington, DC</td>
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<td></td>
<td>Secondary and Sutured IOLs. Complicated Cataracts. Nebraska Academy of Eye Physicians and Surgeons Annual Fall Meeting.</td>
<td>Omaha, NE</td>
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<td></td>
<td>Prevent Blindness. Women in Ophthalmology.</td>
<td>Leesburg, VA</td>
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<td></td>
<td>IOL Solutions for Posterior Capsular Tears. Surgical Skill Development Through the Perfect Balance: Practice and ‘Just in Time’ Education. World Ophthalmology Congress.</td>
<td>Tokyo, Japan</td>
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<tr>
<td>Name</td>
<td>Presentation</td>
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<tr>
<td>Margaret M DeAngelis, PhD</td>
<td>Genetic and Epigenetic Evidence for a Pathway Involving Lipid Metabolism and HTRA1 in AMD Pathophysiology. ARVO.</td>
<td>Orlando, FL</td>
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<tr>
<td>Sabine Fuhrmann, PhD</td>
<td>Requirement of the Rho GTPase Cdc42 during Optic Cup Morphogenesis in Mouse. ARVO.</td>
<td>Denver, CO</td>
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<tr>
<td>Gregory S Hageman, PhD</td>
<td>Keynote Speaker, Genotype-phenotype Correlation in AMD. Coimbra Ophthalmology International Congress. Keynote Speaker, Are There More Forms of AMD than Wet and Dry? International Congress of German Ophthalmic Surgeons. Keynote Speaker, Toward a Deeper Understanding of Wet AMD Therapy: Optimizing Benefits, Managing Risks, and Individualizing Care. Novartis-sponsored Symposium, World Ophthalmology Congress.</td>
<td>Coimbra, Portugal; Nuremberg, Germany; Tokyo, Japan</td>
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<tr>
<th>Name</th>
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<tr>
<td>Invited Speaker, Genetics, Pharmacogenomics, and Histology. Applied Genetic Technologies, Corp.</td>
<td>Chicago, IL</td>
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<tr>
<td>Invited Speaker, New Insights into the Causes of AMD. Blinded Veterans Association Convention.</td>
<td>Reno, NV</td>
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<tr>
<td>Invited Speaker, Toward a Refined Understanding of the Genetics and Biology of AMD. Macula Vision Research Foundation.</td>
<td>Atlanta, GA</td>
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<tr>
<td>Invited Speaker, Partnership to Identify Pathways and Targets Associated with Diabetic Retinopathy.</td>
<td>Novo Nordisk, Copenhagen</td>
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<tr>
<td>Invited Speaker, Can Genetics Provide the Answer to Optimal Wet AMD Treatment? Towards a Deeper Understanding of Wet AMD Therapy: Optimizing Benefits, Managing Risks, and Individualizing Care. World Ophthalmology Congress.</td>
<td>Tokyo, Japan</td>
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<tr>
<td>Invited Speaker, Research and Early Development Projects, Academic and Industry Perspectives. Vision Research Day.</td>
<td>Zurich, Switzerland</td>
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<tr>
<td>Invited Speaker, New Insights into the Causes of AMD. Blinded Veterans Association Convention.</td>
<td>Reno, NV</td>
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<tr>
<td>Mary Elizabeth Hartnett, MD</td>
<td>Genetic Variants Associated with ROP in Extremely Low Birth Weight Infants. Duke University Department of Ophthalmology.</td>
<td>Durham, NC</td>
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<td></td>
<td>Update on Oxygenation and Risk of Retinopathy of Prematurity. Jules Stein Eye Institute Leonard Apt Meeting: Advanced Topics in Pediatric Ophthalmology and Strabismus. UCLA.</td>
<td>Los Angeles, CA</td>
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<td></td>
<td>Retinopathy of Prematurity: The Role of VEGF in Pathogenesis and Health. WIO Summer Symposium.</td>
<td>Leesburg, VA</td>
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<td></td>
<td>Genetic Variants Associated with Severe Retinopathy of Prematurity in Extremely Low Birth Weight Infants, Poster. Pediatric Retina Disease. Retina Subspeciality Day, AAO.</td>
<td>Chicago, IL</td>
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<td></td>
<td>Inhibition of Vascular Endothelial Growth Factor Splice Variant Inhibits Pathologic Neovascularization Safely in Model of Retinopathy of Prematurity, Poster. AAO.</td>
<td>New York, NY</td>
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<td>Overview of Utilization of Bevacizumab (Avastin) for ROP. Orange County Convention Center. AAO.</td>
<td>Orlando, FL</td>
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<tr>
<td>Bryan W Jones, PhD</td>
<td>Adult Neural Plasticity Revealed in Retinal Degenerative Disease. University of Tennessee, Memphis.</td>
<td>Memphis, TN</td>
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<td></td>
<td>Plasticity in the Adult Degenerate Retina, Implications for Retinal Rescue. University of Tübingen.</td>
<td>Tübingen, Germany</td>
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<td>Retinal Remodeling. University of Louisville.</td>
<td>Louisville, KY</td>
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<td>Vision Rescue Strategies in the Context of Retinal Disease. HHMI Janelia Farm.</td>
<td>Ashburn, VA</td>
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<tr>
<td>David Krizaj, PhD</td>
<td>fMRI Study of Architecturally-induced Contemplative States. ANFA.</td>
<td>La Jolla, CA</td>
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<td>Calcium Signaling from Basic to Bedside, TRP Channels and Neuroprotection in the Retina.</td>
<td>Stockholm, Sweden</td>
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<td></td>
<td>TRPV Channels Regulate Neuronal and Glial Physiology in the Mammalian Retina. The Role of TRPC1 and TRPV1 Channels in Retinal Calcium Homeostasis and Visual Signaling. Role of Mechanosensitive TRP Channels in Retinal Pathology. ISER.</td>
<td>San Francisco, CA</td>
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</tbody>
</table>

**Mary Elizabeth Hartnett, MD**

**Bryan W Jones, PhD**

**Bradley J Katz, MD, PhD**

**David Krizaj, PhD**

**Nick Mamalis, MD**

**Nonretrograde Endocannabinoid Signaling Modulates Retinal Ganglion Cell Calcium Homeostasis through the Trpv1 Cation Channel. ARVO.**


**Long-term Uveal and Capsular Biocompatibility and Stability after Nd:YAG Laser Posterior Capsulotomy of a New Disc-shaped IOL. Pathological Evidence of Pseudoexfoliation in Cases of In-the-Bag IOL Subluxation/Dislocation. Update on Adjustable IOL Power Technologies. XXII Congress, ESCRS.**


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<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Location</th>
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<tbody>
<tr>
<td>Robert E Marc, PhD</td>
<td>Plenary Lecture, Mapping Retinal Cells and Networks. Retina Research Foundation’s 2014 Paul Kayser International Award in Retina Research. ISER.</td>
<td>San Francisco, CA</td>
</tr>
<tr>
<td>Majid Moshirfar, MD, FACS</td>
<td>Infectious and Noninfectious Keratitis after Refractive Surgery. Academy of American Ophthalmologists.</td>
<td>Chicago, IL</td>
</tr>
<tr>
<td></td>
<td>Infectious and Noninfectious Keratitis after Refractive Surgery: Diagnosis, Management, and Treatment. Incidence Rate and Occurrence of Cataract/or Corneal Decompensation after Implantation of Anterior Chamber pIOL: 14 Year Review. ASCRS.</td>
<td>Boston, MA</td>
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<td></td>
<td>Current Concepts in Post-LASIK Ectasia. UCSF.</td>
<td>San Francisco, CA</td>
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<tr>
<td>Randall J Olson, MD</td>
<td>Entrepreneurship in Clinical Research, Charles D. Kelman Fund Lecture. AAO Courses: Learning Phaco Chop: Pearls and Pitfalls; Toxic Anterior Segment Syndrome; Advanced Phaco Technique. AAO.</td>
<td>Chicago, IL</td>
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<tr>
<td></td>
<td>Moderator, Intraocular Surgery: Phaco Techniques and Technology; Learning Phaco Chop: Pearls and Pitfalls; Toxic Anterior Segment Syndrome Following Cataract Surgery. ASCRS.</td>
<td>Boston, MA</td>
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<td></td>
<td>How to Manage the Transition from Service to Risk-based Contracting. AUPO.</td>
<td>Miami, FL</td>
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<td></td>
<td>Panel Discussion, Surgical Complications: Cataract/IOL: Advances in Techniques and Technology to Improve Patient Outcomes; What’s More Important in Phaco: Fluidics or Ultrasound Modulation? Hawaiian Eye.</td>
<td>Kauai, HI</td>
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<td></td>
<td>Understanding Wound Burn. Ultrasound Modulation: Does it Make a Difference? UW.</td>
<td>Seattle, WA</td>
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<td>Pseudophakic Dysphotopsia: More than an Annoyance? Understanding Wound Burn. UNC.</td>
<td>Chapel Hill, NC</td>
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<tr>
<td>Jason Shepherd, PhD</td>
<td>Hospital for Sick Children, Neuromedicine, Mental Health Program.</td>
<td>Toronto, Canada</td>
</tr>
<tr>
<td>Albert T Vitale, MD</td>
<td>Diagnostic Vitreoretinal Surgery in Management of Infectious and Uveitis Masquerades. Foster Ocular Immunology Society Dinner, AAO.</td>
<td>Chicago, IL</td>
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<tr>
<td></td>
<td>Fluorescein Angiography Imaging in Uveitis. Noninfectious Posterior Uveitis: Birdshot Chorioretinopathy. 12th International Ocular Inflammation Society Congress.</td>
<td>Valencia, Spain</td>
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<td></td>
<td>Pediatric Uveitis. Washington University, SOM.</td>
<td>St. Louis, MO</td>
</tr>
<tr>
<td></td>
<td>How to Interpret Fundus Fluorescein Angiography and Autofluorescence. Medical and Surgical Therapy and Diagnosis of Uveitis. Puzzling White Dots: What’s a Doctor to Do? AAO.</td>
<td>Chicago, IL</td>
</tr>
<tr>
<td>Haibo Wang, MD, PhD</td>
<td>Thy-1 Regulates VEGF-induced Choroidal Endothelial Cell Migration. ARVO.</td>
<td>Orlando, FL</td>
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<tr>
<td>Liliana Werner, MD, PhD</td>
<td>XIII International Congress on Cataract and Refractive Surgery.</td>
<td>Rio de Janeiro, Brazil</td>
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<td></td>
<td>Journée Annuelle de la Recherche en Ophtalmologie. JARO.</td>
<td>Québec City, Canada</td>
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<td>International Course on Refractive Cataract Surgery and Intraocular Implants. FACOFEST, Puerto de Veracruz.</td>
<td>Boca del Rio, Mexico</td>
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<td>Guest Lecture. Department of Ophthalmology, Wakayama Medical University.</td>
<td>Wakayama, Japan</td>
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<td>Barbara M Wirostko, MD</td>
<td>Invited Panelist/Speaker, Education Course: Early-stage Startup Companies—Strategies for Entrepreneurship in Ophthalmology. ARVO.</td>
<td>Orlando, FL</td>
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<tr>
<td>Jun Yang, PhD</td>
<td>The Usher Syndrome Type 2 Protein Complex in Hair Cells and Photoreceptors. International Symposium of Usher Syndrome.</td>
<td>Boston, MA</td>
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<td>Deletion of PDZD7 Disrupts the Usher Syndrome Type 2 Protein Complex in Cochlear Hair Cells and Causes Hearing Loss in Mice. ARVO.</td>
<td>San Diego, CA</td>
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<tr>
<td>Norm A Zabriskie, MD</td>
<td>Cataract and Glaucoma Cases and Open Discussion, IOLs: Present and Future Considerations. Alyson E. Braley Lecture, Iowa Eye Association.</td>
<td>Iowa City, IA</td>
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“It was the end of a surgery day and we had wandered into the village of Duk Payuel to check on a few patients. The children would always run to us to play or have their picture taken. This little one walked up to me and just took hold of my hand. No words...we just walked.” —Alan S. Crandall

"From Darkness to Light," an oil and acrylic painting by Brazilian artist Nilma Pacini Werner, is an inspired tribute to the volunteer work Moran’s Dr. Alan Crandall and his wife, Julie, have done to cure blindness in Africa and around the world. Nilma lives in the state of Minas Gerais, Brazil, and is the mother of our own Dr. Liliana Werner. Last year, when Nilma saw a photograph of Dr. Crandall with a beautiful African boy in South Sudan, she was quite moved and felt compelled to create the painting. In addition to applications of shimmering gold leaf, the painting contains text fragments from the Book of Genesis, written in a language spoken in Ghana (Asante Twi). The painting was presented to the Crandalls by Dr. Werner at the Moran Eye Center in October, 2014, before Dr. Crandall was awarded the “Outstanding Humanitarian Service Award” by the American Academy of Ophthalmology in Chicago.

Dr. Liliana Werner, center, presenting the painting to Dr. Alan Crandall and Julie Crandall.
The John A. Moran Eye Center is an integral part of University of Utah Health Care, which for five years running has won the University Health System Consortium’s Quality Leadership Award and continues to rank among the nation’s top academic medical centers. This winning streak is matched by only one other health system in the US.