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John A. Moran Eye Center
Focus 2014

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“I am button-busting proud!”

As Chairman of the John A. Moran Eye Center, I’ve always known that we employ some of the best people in the business. Over the years, it’s been rewarding and humbling to work alongside such a dedicated team of professionals and to share in their successes.

Lately, it seems the rest of the world is impressed by them, too. As you’ll see in the following pages, our work is being recognized nationally and internationally as our faculty are winning some of the most prestigious awards in ophthalmology. I am button-busting proud!

This has been a year of unprecedented honors for the Moran Eye Center. Wolfgang Baehr, PhD and Robert Marc, PhD—two visionaries who pushed the boundaries of what was thought possible in eye research—recently received two of the very highest awards in vision science, the Proctor Medal and the Paul Kayser International Award in Retina Research respectively.

Our leadership in eye research is being recognized in other ways as well. Gregory Hageman, PhD, Executive Director of the Moran Center for Translational Medicine, recently signed a collaborative agreement with Allergan, Inc. to help bring new therapies for age-related macular degeneration (AMD) to market. A partnership like this is unheard of in vision research and is a huge validation of the potential that Dr. Hageman’s work has in helping those with AMD.

This kind of recognition confirms that the Moran Eye Center is on the right track. It tells us that our peers worldwide recognize the contributions we are making to advance science and cure blindness. But we aren’t about to rest on our laurels—the incredible effort that has brought us to this level is only the beginning of our journey as we work to ensure that no person facing a blinding eye condition is without hope, understanding, or treatment.

Isaac Newton wisely said, “If I have seen further, it is by standing on the shoulders of giants.” In my 35-year tenure, the brilliance, heart, and commitment of the faculty and staff at Moran have propelled me to transform a one-person division of ophthalmology into an internationally recognized center of research, education, outreach, and patient care. I am proud to dedicate this issue of FOCUS to our faculty and staff and to thank them for all that they have achieved.

Sincerely,

Randall J Olson, MD
Professor and Chair, Department of Ophthalmology and Visual Sciences; CEO, John A. Moran Eye Center, University of Utah
"LOSS OF SIGHT is a devastating problem for so many people. If we can come up with an understanding of how an eye disease develops and then discover methods to either ameliorate the progress of that disease or finally to cure it, that would be my mission," says renowned biochemist Dr. Wolfgang B. Baehr, PhD, recipient of the prestigious 2014 Proctor Medal. The Proctor, given by the Association for Research in Vision and Ophthalmology, is an international award recognizing contributions to vision research in the basic or clinical sciences as applied to ophthalmology. The Proctor Medal honors Baehr for a lifetime of achievement for his many significant scientific discoveries regarding retina disease.

"Until we understand a process, we don’t even know what it is we don’t know. We don’t know what is really broken until we know what works. Wolfgang is one of the top researchers getting at those core processes," notes Moran CEO Dr. Randall J Olson. “I was so pleased to hear that he was given this honor, and in my mind, it was about time!”

Among his many discoveries, Baehr is known for identifying the second and third components of the phototransduction “signaling” cascade: transducin, cGMP phosphodiesterase and guanylate cyclase-activating proteins. His was the first breakthrough since the light-sensing pigment, rhodopsin, was identified 100 years earlier. “We were convinced that the signal the photoreceptors used was the ion calcium, and there were meetings on it—international meetings—and we were all wrong! Wolfgang’s work was a big piece of the core body of knowledge that is our current understanding of photoreceptor function,” says Robert E. Marc, PhD, Director of Research at the Moran Eye Center.

In 1992, Baehr generated the first transgenic mouse model based on the first rhodopsin mutation linked to dominant retinitis pigmentosa (RP). When research uncovers a disease-causing mutation, the next step is up to Baehr as he and his team think of ways to delay or cure the disease. He genetically engineers mice to simulate the human retina disease in order to study the disease’s progression. “A ‘knockout’ gene prevents the gene from expressing its protein, so you destroy the gene by deleting an essential part of it,” he explains. “This helps one to understand the function of the normal gene product.”
A Call from Robert Marc

Born in born Mannheim, Germany, Baehr studied organic chemistry at the University of Heidelberg. His retinal research career was launched in the Department of Biochemistry, Princeton University, in 1976. At the Cullen Eye Institute at Baylor College of Medicine, he was a Jules and Doris Stein Research to Prevent Blindness Professor from 1987-1994. While at Cullen, Baehr got a call from Robert Marc who said, “Wolfgang, I have a job for you—will you come?”

Baehr joined the Moran Eye Center in 1995. He is the Ralph and Mary Tuck Professor of Ophthalmology and Visual Sciences with adjunct appointments in the Department of Neurobiology and Anatomy and the Department of Biology.

Today, Baehr heads the Moran Eye Center’s lead team in discovering the mechanisms underlying incurable retinal diseases using techniques from molecular biology, biochemistry, and neurobiology. His lab is exploring the role of protein trafficking and ciliogenesis in photoreceptor function—how cargo (protein) is assembled, targeted, and transported through cilia to the destination where it performs its function. Cilia are critical in sensing developmental signals of cells. Nonfunctioning cilia cause genetic diseases, such as RP, in which the rods of the peripheral retina degenerate and may progress to blindness. Baehr is also the recipient of a 2013 ALCON Award and a 2014 Nelson Trust Award for Retinitis Pigmentosa from Research to Prevent Blindness, Inc.

Scientist with a Nurturing Nature

This soft-spoken biochemist with traces of a lyrical German accent is a dedicated researcher-professor-mentor who is also a father, gardener, biker, and mountain man. Inspired by biological systems everywhere, he often trucks his family to the nearby Uintah Mountains to picnic and chop fallen wood, “to get them away from the computer,” he says. And at his hillside home, he has tirelessly chiseled away rock and brush to create a terraced mountain garden retreat with grapevines, daffodils, iris, allium, and sage.
ROBERT MARC ON WOLFGANG BAEHR:

“Wolfgang is simply the finest, purest scientist I know. If you map out his scientific history, you'll discover that he has been at the fore of every major movement in biological science, from DNA sequencing, to protein assemblies, to gene therapies and supramolecular trafficking. I find the scope breathtaking and the depth, technical prowess, and insight simply amazing. He is also one of the finest mentors I’ve been privileged to know.”
Marc’s life work is mapping the infinitely complex circuitry of the retina, a monumental task he says is “a challenge that spans many lifetimes and many individuals, so I’ve been privileged to make some headway—with the help of a lot of mentors. The Kayser Award is a very big deal for me. So many people who I admire tremendously have won in the past, and to be put on the same list with them is pretty challenging. It also means that the body of work I’ve done impacts our understanding of vision in ways I didn’t anticipate it would.”

Marc joined the Moran Eye Center in 1993, arriving by way of the University of Texas Houston where he held an endowed chair and was widely known for his discoveries in color vision. The first of his many notable achievements was mapping the color receptors of the retina. Together with his graduate mentor, Harry Sperling, he produced the first complete color maps of retinal cone arrays. Postdoctoral work with William Stell at UCLA launched a career-long interest in tracing neural pathways with molecular markers and electron microscopy, providing the first frameworks for neurochemically defined feedback systems in the retina.

Visualizing Change

A decade ago, the Marc Lab at Moran demonstrated that diseases such as age-related macular degeneration and retinitis pigmentosa began by rewiring the neural circuits in the eye, but no one had a complete idea what that circuitry looked like or how it worked. To begin to understand those diseases, he and his team needed to create what was then a “dream” of a photo map, called a connectome. It would be the first complete interactive digital image of the network of nerves and neurons that make up the retina—a map so dense it could zoom down to the level of an individual synapse and track exactly how it sparked with the others—and then zoom out to larger patterns made by thousands of synapses together.
“Why should we focus on biological details when the need for cures is so pressing?” Marc asks. “Because the answers are in those details.”

But, given the technology available at the time, it was basically impossible. A single 3D connectome map can require more storage space than 100 desktop computers. Marc and his team began assembling the images anyway, with Marc insisting “technology will catch up with us.” Moran donor Martha Ann Healy believed in them and bought a top-of-the-line electron microscope, which they repurposed for high-speed imaging, collaborating, all the while, with the University of Utah’s Scientific Computing and Imaging Institute to write entirely new code to manage the data. A few years later, “technology caught up.” In 2011, the Marc lab unveiled a retinal map of unprecedented completeness and resolution. Today, they are the lead team in discovering the nature and scope of retinal remodeling and in searching for mechanisms to control it. “Why should we focus on biological details when the need for cures is so pressing?” Marc asks. “Because the answers are in those details.”

**Apples & Algorithms**

Wiry, silver-haired, with a deep boom of a voice, the El Paso native sometimes sports a ponytail and well-worn jeans with a Texas-sized belt buckle. More than one colleague has described him as a “renaissance” man. One of his passions is the heirloom apple orchard he and his wife, Ann Torrance, have planted in the tiny town of Torrey, in Central Utah. “Science is child’s play compared to farming,” he says. “Computers don’t lift shovels. But I am happiest outdoors.” However, once a scientist, always a scientist: “The genetics, physiology, and chemistry of apples and plant biology and animal husbandry all overlap with my interests in mapping metabolic networks. Indeed, I think many of the tools we’ve developed for studying retinal metabolism and mapping retinal degenerations have powerful applications in agronomy. To my eyes, it’s all the same problem: interacting networks of cells carrying out genetic programs in changing environments. I could talk for hours on the organization of the retina or the evolution of apples.”
“Robert works harder than most. Part of that is because of his passion for understanding how the retina is wired. He geeks out on it, digs in, and gets really excited when we discover something new. And with the connectomics project, we discover something new almost daily.”

—Bryan W. Jones, PhD, Marc Lab Researcher
Epic Travels
As Moran’s ambassador of pediatric ophthalmology, Hoffman has traveled the globe for over 14 years—often to remote areas—healing the eyes of the children of the world. He has played a pivotal role in training international doctors in pediatric surgery, including preventative and post-surgery eye care; in establishing pediatric eye-care protocol where there previously was none; and in bringing international doctors to Moran to train, spearheading our International Observer Program. As Chief of the Division of Pediatric Ophthalmology and Eye Muscle Disorders, Hoffman specializes in retinopathy of prematurity, ocular genetics, craniofacial disorders, pediatric cataracts, and complicated strabismus.

Each year, he leaves his practice at Primary Children’s Hospital and the Moran Eye Center in Salt Lake City, Utah, to travel to Bhutan, Nepal, Ghana, Trinidad, India, or Indonesia to spend a week or two to train physicians. He makes his own travel arrangements, packs his own instruments and supplies, and is often accompanied by his wife, Carolyn—“the warm-fuzzy side of the operation,” he says. On one epic trip he traveled in a pickup truck for two days, 12 hours each day, to a blind school for children in Bhutan. As the only provider of such surgery during his annual visits, Hoffman demonstrates his preferred way of taking care of patients. In turn, physicians whom he has trained travel to Salt Lake to observe his practice in Utah. Here at home, Hoffman has conducted eye surgery screenings in Monument Valley on the Navajo Nation.

Healing Children
“There are several challenges treating children,” says Hoffman. “Those issues are the same worldwide, but our ability to deal with them is particularly limited in developing countries. Most pediatric problems are due to structural abnormalities and require surgical interventions, but the same surgical procedures commonly performed on adults do not work well on children. Often, the issue of even putting kids safely to sleep for surgery and then getting them back safely to their parents is a big issue. For the best outcome, kids need an extensive period of rehabilitation. It is essential. THAT’S the problem in a nutshell.”
“Alan has been a phenomenal inspiration to me. He has a tireless approach to operating—sometimes until 8:00 to 10:00 at night. Nothing ever bothers him. He will deal with every set up and situation—he just deals with it.”
—Robert Hoffman, MD, commenting on Alan Crandall, MD

A Juggling Act
Another part of the challenge in treating children is trying to increase physician numbers and push education. “When you have a referral population of potentially over 20 million people, it’s a juggling act trying to meet the manpower needs for the sheer numbers of patients,” says Hoffman. It is an issue of getting the word out to other physicians, getting information back to physicians, getting to see patients early, and getting enough operating time to be able to take care of all those kids. It is changing, slowly, by word of mouth. You need 10 or 15 more people doing what one person is doing now—from a public health standpoint, there are issues to be addressed there.”

His Dream
While at the Komfo Anokye Teaching Hospital in Kumasi, Ghana, with Crandall, Hoffman trains doctors to do pediatric glaucoma surgery. “We see everything: kids with eye injuries; kids with head trauma; kids who had glaucoma surgery; kids who need glasses, patching, and surgery. We arrange vision support services for infants, for preschoolers, or school-age children to make sure kids get the information and education and best attention that they deserve. Early on, it became clear that we needed to have someone with additional skill and expertise,” he notes. “A wonderful Ghanaian ophthalmologist, Dr. Peter Osei-Bonsu, who studied in the USSR and trained in the UK, was the first person I brought to Moran to train. And that training has limitations because he couldn’t operate here—he came as an observer for three months, following me around the clinic and operating room, examining preemies in the NICU. Then we did hands-on training with his patients when I went back to Ghana each year. So that has evolved. We have worked together, and I’ve been there yearly ever since. Work hard, play hard, give back. If you give back, you can make a difference—what you do will matter.”

The Wilson Project
As drummer for The Wilson Project, Hoffman plays regularly for benefits around Salt Lake with other minstrel-doctors. On his international trips, he takes a travel drum called a djimbe that he got in Ghana one year and has been known to engage in impromptu street performances entertaining locals.

Drummer: Robert Hoffman  |  Keyboardist: Jeff Schunk  |  Guitarist: Bob Bolte  
Vocals: Susan Etheridge  |  Bass: Jon Van Allen  |  Lead Guitar: Bill Cutting  
Lead Guitar and Mandolin: Steve Santora  |  Dobro and Banjo: Joe Sherboti, guest performer

Dr. Robert Hoffman and Carolyn Hoffman

Dr. Robert Hoffman with pediatric patient in Ghana
A Remarkable Man Honored with a Remarkable Gift

Dr. Geoff Tabin Awarded the John E. and Marva M. Warnock Presidential Endowed Chair in Ophthalmology

For most people, a bucket list like this would be plenty:

- Earn a BA from Yale
- Earn a Marshall Scholarship MA from Oxford
- Graduate with an MD from Harvard; complete an ophthalmology residency at Brown and a cornea fellowship in Melbourne, Australia
- Invent bungee jumping
- Become the fourth person in the world to scale the Seven Summits, the highest points on each of the seven continents
- Become a world-renowned ophthalmic surgeon
- Write and publish one highly acclaimed book and inspire a second one
- Personally perform surgeries that restore sight to thousands of blind individuals in emerging countries
- Strike a pose on the cover of National Geographic Adventure magazine
- Become a tenured professor at a major university
- Meet the 14th Dalai Lama and receive his highest award

Dr. Geoff Tabin has checked them all off, but he is still working on his most important lifetime goal:

Eradicate preventable and curable blindness through high-quality ophthalmic care, education, and the establishment of a world-class, worldwide eye care infrastructure.
Life’s Calling
It was in his third year at Harvard Medical School when he discovered a passion for ophthalmology—on a climb of Mt. Everest. While watching a Dutch medical team perform cataract surgery on a needlessly blind Himalayan woman, he knew he’d found his life’s calling. After completing his ophthalmology residency and cornea fellowship, Tabin went to Nepal to work with visionary ophthalmic surgeon, Dr. Sanduk Ruit. Adopting Ruit’s innovative methods of delivering high-quality cataract surgery at a very low cost, they founded the Himalayan Cataract Project and committed to eliminating preventable blindness in the region. As co-director of Moran’s International Outreach Division, Tabin says, “We perfected a six-to-seven-minute, low cost sutureless cataract operation two decades ago. Now, our vision is to work with ophthalmologists around the world to create sustainable systems that reach the most unreachable patients through teaching ophthalmic care, training local doctors in cataract surgery, educating local health care providers, and establishing self-sustaining eye care centers where they have not existed.”

Sustainable Giving
Dr. Tabin and the Moran Eye Center are receiving a remarkable boost to their outreach program from a couple with their own record of extraordinary contributions to society. John E. and Marva M. Warnock have been longtime supporters of Dr. Tabin and Moran’s outreach work. They have now provided a generous presidential endowed chair that will further this great work of restoring sight and saving lives in perpetuity.

As proud University of Utah alumni, the Warnocks have built a powerful legacy of philanthropy on campus. The flagship building of the College of Engineering bears their name, and they have endowed chairs for instructors in mathematics and computer science, for visiting artists in the College of Fine Arts—and now for the Moran Eye Center. “Marva and I are proud to support Geoff,” says John Warnock. “His work saves thousands of people each year from blindness and death. This gift was one of the easiest decisions we’ve ever made.”

In 1982, John Warnock altered the history of computers, the art and design world, and more, as co-founder of Adobe Systems, Inc. He currently co-chairs its board. Marva Warnock is an artist and designer as well. She currently serves on the University of Utah’s National Advisory Council and on the advisory boards of the Utah Museum of Fine Arts and the Springville Art Museum.

Of the 39 million blind individuals worldwide, almost half suffer from treatable cataracts.
Every year, funded solely by donations, the Outreach Division of the John A. Moran Eye Center provides eye care and conducts medical missions in over 40 countries around the world and throughout the state of Utah. Whether working at outreach medical eye camps, local hospitals, or community clinics, the Moran team focuses on teaching local physicians to perform surgeries and on training local clinicians and staff to perform basic ophthalmic procedures.

Alan S Crandall, MD
To "see" the happiness in a patient whose vision is restored brings joy to us, but it also allows that person to no longer be a burden to family and society. It returns dignity and purpose to his or her life.
Robert O Hoffman, MD
Training pediatric ophthalmologists in developing countries allows me to make a difference on an ongoing basis, helping to decrease the burden of childhood blindness. It has also allowed me to travel with family and friends, see new places, experience new cultures, and make new friends around the world!

Geoffrey Tabin, MD
There's no miracle in medicine like restoring sight to a person with cataracts. Even after 20 years, I still tingle when we go to remove the eye patches.
Balamurali K Ambati, MD, PhD, MBA

Manava Seva Madhava Seva, in Sanskrit, means “Service to man is service to God.” The gift of sight is the most precious of our senses, and offering our time, hearts, and hands to those in need around the world allows us the opportunity and privilege to make a difference by shining light into areas and lives which had been darkened by blindness. Piercing the veil indeed offers a window into the soul. It is my honor to work with Moran’s unique ensemble of physicians and staff who reach out and touch people suffering from blindness around the globe.

Paul S Bernstein, MD, PhD

Retina poses a particular problem for international ophthalmology because it requires expensive equipment and supplies, and acquiring the required technical skills can be a challenge for the local aspiring retina specialist. I enjoy such challenges, and it has been particularly gratifying to participate in the establishment of fully functioning retina services in Nepal and Bhutan. And I hope to see similar successes in Africa in the near future.

Craig J Chaya, MD

Everything that I have is a gift from God. Serving others is the best way I can say thanks and honor Him with my life.

Donnell J Creel, PhD

I find participating in the International Outreach Program the most rewarding part of working. The people are always appreciative and their feedback reflects that we are making a positive difference.

David Dries, MD

I do outreach work because I’m healthy and capable of helping. I respect the dignity of those less lucky than I am and want to set an example for my sons.

Roger Furlong, MD

It’s amazing to see what happens when somebody has their sight restored. Working and traveling with people so focused on helping others is very inspiring. There’s no better way to experience a different culture than to be immersed in it.
Here, in their own words, are the many reasons Moran doctors choose to offer their exceptional services to help those in need.

Julia Kleinschmidt, PhD, LCSW
Life has been so good to me, and I have been given much. Outreach work is my way of giving back. This passage from Anne Lamott’s book, Help Thanks Wow: Three Essential Prayers, expresses it well: “Gratitude begins in our hearts and then dovetails into behavior. It almost always makes you willing to be of service, which is where the joy resides...When you are aware of all that has been given to you, in your lifetime and in the past few days, it is hard not to be humbled, and pleased to give back.”

Bradley J Katz, MD, PhD
What I enjoy most about teaching internationally is singularity of focus: I’m there for one reason and one reason only. I can focus completely on teaching as much as possible during the time I’m allotted. There is no agenda and no paperwork—just me and other doctors who are eager to learn.

Mark D Mifflin, MD
I do outreach work because I CAN. I think being a physician is a great privilege and along with that privilege comes an inherent desire, and even an obligation, to serve people who are less fortunate and in need. As an eye physician and surgeon, I realize that I am only a very small part of a bigger team of charitable and loving individuals who make this work happen—and I would like to express my gratitude to all those who give their time, talents, and financial support.

Jeff Pettay, MD
I do outreach work because together we can return a person to participating in life.

Colleen Schubach, OD
The Moran Eye Center Outreach Program allowed me to touch the lives of others with eye care—something that we often take for granted. These people’s lives were compromised and made more difficult due to eye problems. After the eye care they received, I witnessed their joy, discovery, and new beginnings.

Albert T Vitale, MD
We do outreach work as our charge in being on the planet is to help one another daily. As Dr. Martin Luther King, Jr. said, “Life’s most persistent and urgent question is, ‘What are you doing for others?’”
Moran Launches New Fundraising Campaign

With the help of our campaign co-chairs, each a pillar of Utah’s business and philanthropic community, the Moran Eye Center has launched our first fundraising campaign in nearly 10 years.

Meet Our Campaign Chairs

These outstanding community leaders join us in our dedication to meeting ongoing challenges—from finding new treatments for macular degeneration to eradicating preventable blindness. Indeed, their leadership has already inspired over $18 million in gifts.

Thomas D. Dee III
Lawrence T. Dee and Janet T. Dee Foundation
“The research needs to continue. And one day, there will be a cure for AMD.”

A. Scott Anderson
President and CEO of Zions Bank
“I think of looking at my new granddaughter, seeing her smile, seeing her squeeze my finger, and I think, what would it be like if I couldn’t see?”

John H. Firmage III
President, Firmco Financial Inc., BMW of Murray
“I want to be involved with things that don’t take thirty years. And Moran seems to have figured that out.”

Honorary Chairs

Our honorary chairs have played major roles in building and supporting the Moran Eye Center over the years: Bill and Pat Child, Lisa Eccles, and Sharon Steele-McGee
Why Now?

Because more than six million Americans are blind from diseases like age-related macular degeneration (AMD)—which we still can’t cure—with millions more losing vision each day. At the same time, our researchers are astonishingly close to developing new therapies for treatments, and we do not want to slow them down. 

*Because hope is in sight.*

Research Holds the Key

In just 34 years, the John A. Moran Eye Center has become a global leader in ophthalmic research, care, and education. Dr. Randall J Olson has spent decades building a scientific team that has made major advances in the fight against AMD and other blinding eye diseases. The science is so promising that in 2013, Allergan, Inc., a major pharmaceutical company, signed an exclusive research and development agreement with Moran’s Center for Translational Medicine (CTM) to fast-track key discoveries into new medicines and clinical trials. And now, we are on the threshold of something revolutionary.

But while we are making significant strides, research faces its toughest funding environment to date. As other organizations are scaling back, here at the Moran, we are unwilling to “put hope on hold.” Continued, gracious philanthropic support enables our scientific team to stay intently focused on new hope, understanding, and treatment.

Three Priorities of the $22 Million Hope in Sight Campaign:

1. **Research:** Hope begins with Moran’s extraordinary research. Some of our most important breakthroughs have come from unexpected corners, and broad support allows our scientists to be bold, collaborative, and creative.

2. **Center for Translational Medicine:** The CTM’s public-private partnership model is leading to new therapies in a fraction of the usual time and cost—but the costs are still high. Donor support keeps our team focused on bringing those new treatments to clinical trials.

3. **Outreach:** Even as we pursue new cures, many still need the ones we already have. Our outreach program brings sustainable eye care to underserved communities from rural Utah to Sub-Saharan Africa, restoring sight and training local physicians to provide care long after we leave.

*We must never give up hope that we can accomplish things that were previously considered impossible."

—John A. Moran
The Art of the Eye

The Eye as Art

Every year, ophthalmic imaging technology becomes more and more sophisticated. As images of the eye—all the way down to the level of microns—help doctors and researchers in their discoveries, diagnoses, and treatments, they can also reveal patterns as exquisite as any fine lace or work of abstract art. Here are some favorite images from Moran researchers and from our Ophthalmic Imaging and Videography Department.

“Victorian Lace” In one of her favorite photos, ophthalmic imager Paula Morris shows corneal epithelial cell ingrowth following a LASIK procedure with the contrast heightened to make the cell growth more striking.

“Diaphanous Dance—A New Art Form” “As ophthalmic photographers, we are called upon to record fluorescence as a dye flows through the retinal circulation. We take pictures using a blue flash at timed intervals to catch predicted phases while the circulation carries it on a wild ride of several laps through the body. Regulated by the pulse of the heart, we photograph it going through the smallest channels in the retinal capillaries. But what if we set the dye free to flow in an unpredictable path? As it turns out, the dye disseminates in water in a diaphanous dance of swirling fluorescent color.”

—Jim Gilman, Project Administrator of Ophthalmic Imaging, Moran Eye Center.
“Lunar Landscape” This pupillary membrane by James Gilman appears almost like a lunar landscape. It was the second place winner of the slit lamp category at the Ophthalmic Photographer’s Society 2013 Scientific Exhibit and was featured on the April 2014 cover of Ophthalmology Magazine. Using a technique called “focus stacking,” Gilman merged two images—focusing one on the elevated areas of the iris and focusing the other on the lower areas of the iris.

“Ectopia Lentis” Moran ophthalmic imager Glen Jenkins shows the partial displacement of the crystalline lens. To Jenkins it “looks like a picture of a planet through a spaceship portal.”

“Confetti and Streamers” A region of retina from a goldfish is analyzed using tools called computational molecular phenotyping that reveal the metabolic state of all the cell types in tissues. Captured by National Institutes of Health-funded researchers, Robert E. Marc, PhD, and Bryan W. Jones, PhD, this image was a first place winner in the BioArt 2013 competition. Dr. Francis Collins, NIH Director, featured it on his blog, writing that “it looks like a celebration with confetti and streamers…but what such images reveal may be far more than a pretty picture…this map of neurons provides a baseline for understanding, and perhaps ultimately treating, diseases of the retina that alter the circuitry.”
Three Definitive Texts

CLINICAL OPHTHALMIC ECHOGRAPHY

Roger P. Harrie, MD, is a clinical professor of ophthalmology and practices comprehensive ophthalmology with a special interest in ocular ultrasound—a technique used to diagnose and follow the progression of disorders affecting vision, similar to how electrocardiograms (ECGs) are used to monitor heart disease. The second edition of his text, *Clinical Ophthalmic Echography (2014 Springer)*, offers a unique case-study approach that includes 308 studies and more than 370 ultrasound images. He coauthored the book with Cynthia J. Kendall, RDMS.

DIAGNOSTIC OPHTHALMOLOGY

*Diagnostic Ophthalmology (2014 Amirsys, Inc)*, by Balamurali K. Ambati, MD, PhD, MBA, and Brian C. Stagg, MD, is a comprehensive reference textbook that provides vital information about the 280-plus most common diagnoses encountered in an ophthalmologic practice. One of the book’s key features is that it provides high-quality color images for every diagnosis. Moran’s Ophthalmic Imaging Project Administrator, James P. Gilman, CRA, FOPS, was the book’s image editor.

PEDIATRIC RETINA

Vitreoretinal surgeon Mary Elizabeth Hartnett, MD, has published the second edition of her textbook, *Pediatric Retina (2014 Wolters Kluwer Lippincott Williams & Wilkins)*, the main industry reference on pediatric retina. “The text brings together collected knowledge from colleagues worldwide, which I believe pushes all of us to be challenged in our thinking and to find truths regarding science and medical treatment,” noted Hartnett. “The textbook really incorporates basic science and clinical understanding.”
Focus

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the Problem

Four bioengineering students intrigued with Dr. Olson’s patent for an anti-infective intraocular needle won the 2014 grand prize. Harjit Kaur, Annicka Carter, Jeremy Hammer, and Nick Rejali developed a product that can potentially solve the problem of introducing infection when injecting needles into the eye. “When a drug is injected into the eye, bacteria from the eye lodges inside the hollow part of the needle, where it can cause infection,” says Hammer. “The general idea is that you need a film to protect the needle,” says Olson. “They came up with poly-lactic-co-glycolic-acid (PLGA). I said, ‘Wow, if it will work and adhere, that would be great.’ They really did some innovative stuff.”

Mentorees Win Bench-to-Bedside Grand Prize

Each year, more than 200 University of Utah bioengineering, medical, and business students team up with physician-mentors to transform science and medicine in the U’s Bench-to-Bedside competition. The goal is to find creative solutions to clinical medical problems.

The Problem

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The Solution

The “innovative stuff” is to dip-coat biodegradable PLGA onto the needle tip, creating a membrane that blocks bacteria from contaminating the needle bore. Then, a stainless steel rod is pushed through the needle, which punctures the membrane after the needle is already inserted, delivering a bacteria-free drug. This process occurs by way of a hub that is attached to the tip of the syringe. The hub provides one port for puncturing and removing the rod and another port for the standard needle. The group used 3D printers to create solid prototypes of the hub.

Students were required to work with a mentor to evaluate the technical and functional issues of the problem. They created a project plan, identified user needs and marketing requirements, and created design specifications. “We encountered frustrating obstacles,” says team leader Carter, “like figuring out how to put a membrane the size of a human hair on a needle, finding a polymer that was strong enough to use, and determining the size of the rod.”

“The thing that was different about this team and why they won is that they took an actual product that looked as though it could literally be used in the clinic to solve a huge specific, clinical problem,” says Olson. “Their work ethic is amazing, and they were a pleasure to work with.”
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. Presented annually to a faculty member who displays excellence in teaching, research, and administrative efforts, it is the U’s most prestigious award. University President David W. Pershing noted that “Dr. Olson has a long, rich history with the U and is an inspired choice for this honor. His forward-thinking leadership has effectively put the Moran Eye Center on the national map, bringing life-changing research and outreach, renowned patient care, and academic excellence together in one outstanding institution.”

“We could not be more proud that Randy Olson was awarded the Rosenblatt Prize this year,” said Vivian Lee, Senior Vice President for Health Sciences at the U. “His service as ‘visionary-in-chief’ has grown a department from its humble beginnings with two faculty members, to a globally acclaimed center for research, education, and clinical excellence. As an internationally renowned scholar and charismatic leader, Randy’s contributions to the University of Utah are second to none. University of Utah Health Sciences and the Moran Eye Center are fortunate to be the beneficiaries of his stellar acumen.”

“He has created a culture of collaboration and excellence that is the envy of so many departments,” said David Chang, Clinical Professor of Ophthalmology at the University of California at San Francisco, and International Committee Chair, American Society of Cataract and Refractive Surgery. “He is one of the most influential and prominent academic chairs in ophthalmology. His selection as president of the Association of University Professors of Ophthalmology is a testament to his stature in our field.”

Additionally, Olson was honored in 2012 with the Binkhorst Medal at the American Society of Cataract and Refractive Surgery, an award dedicated to excellence in intraocular lens research.

Iqbal “Ike” K. Ahmed, MD, PhD, received the 2014 Binkhorst Medal and presented the prestigious 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 most prestigious honor three years in a row. Ahmed is currently an assistant professor at the University of Toronto and a clinical assistant professor at the University of Utah, where he completed a glaucoma and anterior segment fellowship at the Moran Eye Center.

Kathleen B. Digre, MD, broke new ground as the first Hedi Fritz-Niggli Visiting Professor at the University of Zurich. This is a great honor for Dr. Digre and for Moran, as she worked with the University of Zurich—in residence from February through July 2014—laying groundwork for future visiting professors, finding and promoting more women faculty and leaders, lecturing, and sharing Moran’s work in research, patient care, and education.
Krista Kinard, MD, Moran Neuro-ophthalmology fellow, trumped tough competition to receive the “Best Abstract by a Fellow Award” at the North American Neuro-Ophthalmology Society’s 40th Annual Meeting. Her abstract, “Chronic Migraine is Associated with Reduced Corneal Nerve Fiber Density and Length,” was entered in the “Posterior Afferent Visual Pathway (Post-Chiasmal)” category. Kinard’s additional areas of training and specialization include ultrasound of the orbit and electrophysiology techniques.

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.” Dr. Crandall is the John A. Moran Presidential Professor and Senior Vice-chair of Ophthalmology and Visual Sciences, Director of Glaucoma and Cataract at the Moran Eye Center, and Co-director of the Moran Eye Center Outreach Division.

A member of the class of ’73, Dr. Crandall was also honored as a Distinguished Alumni by the University of Utah School of Medicine Alumni Association at the School of Medicine Annual Awards Banquet and Half-Century Celebration on Oct 10, 2013. He also received the 2014 Outstanding Humanitarian Service Award from the American Academy of Ophthalmology.

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. This award is in recognition of Ambati’s contributions to the field of ophthalmology. Ludwig von Sallmann, MD, who served as Chief of the Intramural Program of the National Eye Institute, was an ARVO Proctor Medal recipient. Ambati also was invited to join the judge’s panel for the prestigious INTEL Science Talent Search. Eight winners or finalists of this competition have gone on to win Nobel prizes. This honor is one of many that highlight Dr. Ambati’s extraordinary career as a researcher and a physician and his dedication to mentoring the next generation of scientists.

John Bloomberg was named Honorary Alumnus by the University of Utah. Bloomberg, who holds a bachelor’s degree from Amherst College and a Masters of Business Administration from Harvard University, is a former Wall Street research analyst and competitive skier. After his vision began rapidly deteriorating, he was introduced to the U’s Department of Ophthalmology where he met Dr. Randall J Olson. In gratitude for surgery that Bloomberg has credited with saving his vision, he and his wife, Toni, have generously contributed to the Moran Eye Center. John Bloomberg is a long-time member of the John A. Moran Eye Center’s Advisory Board.

Dr. Clark Lowe Rich Distinguished Surgeon and Mentor Award

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Ludwig von Sallmann Clinician-Scientist Award

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Honorary Alumnus

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Ten times a year, groups of all ages gather for a Moran “Orientation to Vision Loss Seminar”— part of Moran’s groundbreaking Patient Support Program designed to address the psychosocial impacts of vision loss.

One by one, their stories unfold. A 50-something woman experiencing vision loss from a series of unsuccessful surgeries tears up as she chronicles her feelings of confusion and frustration. An 89-year-old man has to stop driving because a gradual form of age-related macular degeneration is robbing him of the ability to see clearly. As each person speaks, longtime seminar volunteer, 43-year-old Corinna Trujillo Tanner, RN, MSN, nods thoughtfully. And then she stands up, white cane in hand, and tells her story.

As a young girl in rural Colorado, Tanner was diagnosed with a rare form of Stargardt’s disease (type 3), an incurable, hereditary form of blindness. “But my family didn’t know what to do,” she says. “Out where we lived, there were zero resources for visually impaired or blind people. So I got a pair of my dad’s hunting binoculars and took them to school so that I could see the blackboard.” And that was just the beginning of her determined path. A move to California and a scholarship from the National Federation for the Blind helped change her life. Now, even as she juggles her PhD work, marriage, a new baby, and fulltime work as a rehabilitation teacher at The Blind Center, her life’s work is empowering others with vision loss.

“I want people to know that even if you are blind, you can have a great life. You can be a mom, wear makeup, go to school, and play the violin. It’s possible to reduce vision loss to the level of ‘nuisance’ instead of letting it change your life. And I can say that because my life has made me an expert on blindness.”

Learn more about Moran’s Patient Support Program http://healthcare.utah.edu/moran/outreach/patient_support_services.php
Imagine suffering from devastating headaches, blind spots, double vision, and sometimes, episodes of complete blindness. An estimated 100,000 Americans have been living with such symptoms for years.

They are victims of a disorder called idiopathic intracranial hypertension (IIH)—elevated spinal fluid pressure in the brain. Also called pseudotumor cerebri, it predominately affects overweight women of reproductive age, and when it strikes, it can take away the ability to carry out the simple tasks of daily living. Unfortunately, IIH is often difficult to diagnose, and its exact causes are unknown.

Now, relief is in sight. A recent study funded by the National Institutes of Health revealed that the use of an inexpensive glaucoma drug (acetazolamide), when added to a weight reduction plan, can improve and even restore vision for women with IIH. Moran neuro-ophthalmologists Drs. Kathleen Digre, Judith Warner, and Bradley Katz participated in the study published in April 2014 in the Journal of the American Medical Association.

Challenges and Solutions

Thanks to an alert ophthalmologist, Sarah Reed found hope as one of the study’s subjects. “I had an intense episode of headaches and neck pain that lasted for about three weeks,” she says. “I was seeing double, though I really didn’t realize it for a couple of weeks because my eyes were so sensitive I scrunched them up most of the time.” While suffering head and neck pain, she visited a chiropractor who didn’t know what to make of her symptoms. Another doctor prescribed antibiotics in case she had a sinus infection. “When the headache finally stopped, I realized I was seeing two of everything,” she remembers. She then consulted with an ophthalmologist who recognized her condition at once, was aware of the study, and called the Moran Eye Center. By the time Reed met Drs. Katz and Warner, her vision had gone back to normal, but she still had a constant “whooshing” sound in her ears—another typical indication of elevated pressure.

“Since taking the medication and losing weight—almost 30 pounds—I feel so much better, and the whooshing sound finally disappeared,” she reports. Reed is now back to doing what she loves, including hiking with her beloved English Mastiff, Leo, playing golf, and going to the movies.
One of the greatest strengths of Moran’s resident training program is our high level of supervision and teaching: residents are outnumbered approximately three to one by full-time clinical faculty who have active practices covering all subspecialty areas of ophthalmology. Because residents interact with all of our patients, they have an opportunity to learn about and treat all ophthalmic conditions. As with any vibrant program, the characteristics, qualities, dedication, and work ethic of the person bringing it to the table can either make or break its success. For Moran, ferreting out these quality individuals begins with its unique recruitment process—and that process begins with Chief of Neuro-ophthalmology and Resident Selection Committee Chair, Dr. Judith Warner—who, with the heady obligation to “shape the future ophthalmologists of our world,” has for eight years painstakingly fine-tuned the process.

The Recruitment Process
After personally reviewing nearly 400 resident applications each year, Dr. Warner and the selection committee choose 28. “Academic requirements are strict: applicants must show longitudinal academic achievement, have excellent test scores, have a sustained interest in ophthalmology, show an indication that they are socially interested, and display a research interest,” says Warner. “And just as importantly, we look for nice people who can get along with their fellow residents—people who are good team players and who help people out when there is not a direct quid pro quo. Sometimes, there is much more going on in a patient’s life that is impacting their sense of well-being. Sometimes, my job entails just telling patients that they are going to be ok—that they won’t go blind, that they are not going crazy, and that they will get through it,” states Warner. “I’m trying to find future ophthalmologists who will take good care of patients. Right now, we have the best residents in the country—they are smart, they are accomplished, and they are kind—I’m very proud.”
**Cornea Fellowship: Valli Muthappan, MD**

“We Can Have Such an Immediate Impact on Patients’ Lives”

During her cornea fellowship at the Moran Eye Center, Valli Muthappan, MD, has performed LASIK and cornea transplant surgeries, treated corneal ulcers, and assisted in a groundbreaking telescopic lens implant surgery performed by Dr. Majid Moshirfar. The surgery was the first of its kind in Utah—a telescope implant that offers new hope to some patients with end-stage age-related macular degeneration. She’s also participated in several of Moran’s local outreach programs, such as volunteering at Salt Lake’s Maliheh Free Clinic. In May, she traveled to Haiti with Dr. Craig Chaya and a Moran outreach team to perform cornea transplants made possible with donated tissue from the Utah Lions Eye Bank. Their patients were the first in the region to receive this life-changing surgery.

On the final stretch of her fellowship, she says one of the most rewarding aspects of her experience is “having such an immediate impact on people’s lives. People who couldn’t see their clock in the morning without their glasses come in for LASIK or cataract surgery, and as soon as we take the patches off their eyes, there’s a huge grin—instant gratification!”

After completing her residency at the Wilmer Eye Institute at Johns Hopkins University in Baltimore, Muthappan knew she wanted to come to Moran “because everyone knows it by reputation; it’s one of the best cornea fellowships in the country.” She chose to specialize in ophthalmology and corneal surgery in particular, “because in addition to being able to deliver immediate results, you can establish long-term relationships with patients as you take care of their changing vision needs over time.”

Born and raised in Pittsburgh, Pennsylvania, Muthappan will return to her home city where she has accepted a position as a cornea specialist in private practice. “Happily,” she notes, “my childhood eye doctor said he can’t wait to start referring patients to me!”

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**The Moran Eye Center offers ophthalmology fellowship programs in cornea and refractive (LASIK) surgery; glaucoma; neuro-ophthalmology, and retina. We also offer an international fellowship for US citizens who work with Dr. Geoffrey Tabin at the Moran Eye Center as well as in several developing countries. For more information, please contact the Department of Ophthalmology and Visual Sciences Academic Office at 801-585-6701.**

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*Examining a patient prior to surgery in Haiti*
*Photo credit: OneMoreGeneration.org*
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

RETINA

Nikhil Batra, MD
Jim Bell, MD

GLAUCOMA

Dan Bettis, MD
Hari Bodhireddy, MD

MORAN INTERNATIONAL FELLOWSHIP

ANYA GUSHCHIN, MD
A superb overall experience
With 12 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.

The Moran Eye Center offers ophthalmology fellowship programs in cornea and refractive surgery, glaucoma, neuro-ophthalmology, retina, and Moran international. For more information, please contact the Department of Ophthalmology and Visual Sciences Academic Office at 801-585-6701.
CEO of the John A. Moran Eye Center

Randall J Olson, MD, is the Chair of the Department of Ophthalmology and Visual Sciences and CEO of the John A. Moran Eye Center. Dr. Olson is the author of more than 300 professional publications and a worldwide lecturer. He specializes in research dealing with intraocular lens and cataract surgery. He was selected as the Binkhorst Medal recipient in 2012 by the American Society of Cataract and Refractive Surgery, has given many named lectures all over the country, and was selected in 2014 by the University of Utah for the Rosenblatt Prize for Excellence. 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

Doctors in Alphabetical Order

Balamurali K Ambati, MD, PhD, MBA, specializes in cornea transplants, cataract extraction, keratopros thesis (artificial corneas), 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

William Barlow, MD, specializes in comprehensive ophthalmology with a focus on the surgical management of routine and complex cataracts, anterior segment surgery, and vision correction surgery using laser and intraocular lenses. His current research interest is focused on cataract surgical outcomes.

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

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

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. Dr. Crandall has experience with 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
Focus

MORAN EYE CENTER | OPHTHALMOLOGISTS

David C Dries, MD, provides medical and surgical care for a wide range of eye diseases and visual impairments in children as well as 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

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 provides 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

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

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 20 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

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
• Comprehensive Ophthalmology

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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 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 giant cell arteritis, photophobia and migraine, optic neuritis, and multiple sclerosis.

**SPECIALTIES**
- Cataract Services
- Neuro-ophtalmology

Mark D Mifflin, MD, is Moran’s Director of Surgical Services and the Medical Director of the Utah Lions Eye Bank. He specializes in the medical and surgical treatment of corneal and anterior segment eye diseases. His expertise includes all types of corneal transplantation, cataract surgery, and refractive surgery.

**SPECIALTIES**
- Cornea Transplant Surgery (Penetrating Keratoplasty, Lamellar Keratoplasty, Stem Cell Transplantation, and Eye Banking)
- Cataract Surgery (Premium Intraocular Lenses, Monovision)
- Vision Correction Surgery (LASIK, PRK, Phakic Intraocular Lenses)

Majid Moshirfar, MD, FACS, is the Director of Moran’s Cornea and Refractive Surgery Division, Director of the Cornea Educational Fellowship, and Co-medical Director of the Utah Lions Eye Bank. He specializes in corneal transplantation, keratoprosthesis (artificial cornea), management of difficult corneal disorders, complicated cataract extraction, LASIK, infectious eye diseases, and other complex procedures of the cornea and anterior segment of the eye. Dr. Moshirfar lectures extensively around the country on a variety of vision correction procedures and has become a community spokesperson on the benefits and risks of vision correction surgery. He has appeared in the last three editions of Best Doctors in America. Dr. Moshirfar has authored more than 150 peer-reviewed scientific publications and five books and is on the editorial board of numerous ophthalmology journals.

**SPECIALTIES**
- Cornea Transplant (Penetrating Keratoplasty, DSAEK, DALK, Stem-cell Transplantation)
- Vision Correction Surgery (LASIK, PRK, LASEK, Phakic IOL, Intacs, CK, Collagen Cross-linking)
- Cataract Surgery and Intraocular Implants (Premium Intraocular Lenses, Monovision)
- Dry Eye Disease (LipiFlow Treatment)
- Corneal Infectious and Inflammatory Eye Diseases
- Artificial Cornea
- Implantable Miniature Telescope for Age-related Macular Degeneration
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. His clinical research interests include thyroid disease, optic nerve disorders, orbital and eyelid tumors, blepharospasm, lacrimal surgery, and facial cosmetic surgery.

**Specialty**
- Comprehensive Ophthalmology
- Cataract Services
- Vision Correction Surgery (LASIK, Laser, and Non-laser)

Geoffrey Tabin, MD, is the John E. and Marva M. Warmock Presidential Endowed Chair in Ophthalmology and Co-director of Moran’s International Outreach Division. He specializes in corneal transplantation, keratoprosthesis (artificial cornea), management of corneal disorders, cataract extraction, LASIK, inflammatory eye diseases, and other complex procedures of the cornea and anterior segment of the eye. In addition to his work in Utah, Dr. Tabin is working to develop eye care delivery in developing countries, including improving cataract and corneal surgery.

**Specialties**
- Cataract Services
- Vision Correction Surgery (LASIK, Laser, and Non-laser)

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

Bhupendra C K Patel, MD, FRCS, FRC, is an expert in the management of disorders involving eyelids, periorbital 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

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

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

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

Judith E A Warner, MD, is chief of neuro-ophthalmology. She evaluates complex visual complaints, which can be due to optic nerve or brain disease, and provides treatment for these disorders. Her interests include diplopia, giant cell arteritis, papilledema, optic neuritis, episodic vision loss, idiopathic intracranial hypertension, ischemic optic neuropathy, and unexplained vision loss.

**Specialty**
- Neuro-ophthalmology
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

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

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

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

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 electoretinograms, auditory brainstem responses, electrocogulograms, multifocal electoretinograms, and multifocal visually evoked potentials. These tests quantitate 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
Moran Vision Center at Old Mill
Redwood Health Center
Westridge Health Center

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

Clair R Palmer, OD, specializes in contact lenses.
Parkway Health Center
South Jordan Health Center

Colleen S Schubach, OD, specializes in contact lens services for all ages and vision therapy with a special emphasis on children.
Redstone Health Center

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

Bryan H Vincent, OD, specializes in ocular pathology and contact lenses.
Greenwood Health Center
John A. Moran Eye Center
Building bridges from research to patient care

Werner Gellermann, PhD
Adjunct Professor, Ophthalmology and Visual Sciences; Research Professor, Physics
SPECIALTY Spectroscopy of Living Human Tissue

Gregory S Hageman, PhD
John A. Moran Presidential Professor, Department of Ophthalmology and Visual Sciences; Executive Director, Moran Center for Translational Medicine
SPECIALTIES The Genetics and Assessment of Pathways Involved in the Etiology of Age-related Macular Degeneration; Retinal Cell Biology

Mary Elizabeth Hartnett, MD
Professor, Ophthalmology and Visual Sciences
SPECIALTY Retinal Angiogenesis Relating to Retinopathy of Prematurity and Age-related Macular Degeneration

Bryan W Jones, PhD
Research Assistant Professor, Ophthalmology and Visual Sciences
SPECIALTIES Retinal Degeneration Disorders; Retinal Neurotransmission and Neurocircuitry; Metabolomics

Bradley J Katz, MD, PhD
Associate Professor, Ophthalmology and Visual Sciences
SPECIALTIES Giant Cell Arteritis; Photophobia and Migraine; Optic Neuritis; Multiple Sclerosis

Julia Kleinschmidt, PhD, LCSW
Professor (Emerita), Ophthalmology and Visual Sciences
SPECIALTY Orientation and Support Services for international ophthalmologists training under the Moran Eye Center’s Outreach Division

Helga E T Kolb, PhD
Professor (Emerita), Ophthalmology and Visual Sciences
SPECIALTIES Retinal Anatomy; Editor, Webvision www.webvision.med.utah.edu

David Krizaj, PhD
Professor, Ophthalmology and Visual Sciences
SPECIALTIES Retinal Neurobiology; Calcium Regulation; Glaucoma

Edward M Levine, PhD
Associate Professor, Ophthalmology and Visual Sciences
SPECIALTY Retinal Neurogenesis and Regeneration

Nick Mamalis, MD
Professor, Ophthalmology and Visual Sciences; Co-director, Intermountain Ocular Research Center
SPECIALTIES Ocular Pathology; Comprehensive Ophthalmology; Intraocular Lens Research; Postoperative Inflammation
Robert E Marc, PhD
Director of Research and Distinguished Professor of Ophthalmology; Cal and JeNeal Hatch Presidential Endowed Chair in Ophthalmology and Visual Sciences

Ning Tian, PhD
Professor, Ophthalmology and Visual Sciences
SPECIALTY: Retinal Neurobiology

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

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

Barbara M Wirostko, MD
Clinical Adjunct Associate Professor, Ophthalmology and Visual Sciences
SPECIALTIES: Glaucoma; Drug and Device Development

Jun Yang, PhD
Associate Professor, Ophthalmology and Visual Sciences
SPECIALTIES: Cell Biology of Photoreceptors; Retinal Diseases

Debra A Schaumberg, ScD, OD, MPH
Professor of Ophthalmology and Visual Sciences; Associate Director for Clinical and Epidemiological Research, University of Utah Moran Eye Center for Translational Medicine; Adjunct Professor of Epidemiology, Harvard School of Public Health
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
Moran Eye Center in Your Community
The Moran Eye Center provides comprehensive eye exams, fashion eyewear, and the latest contact lenses to meet all of your eye care needs. We have 13 locations along the Wasatch Front. Moran Community Clinics are typically located with a University of Utah Health Care Clinic, which provides a full range of world-class medical services.

* We’re excited to announce the opening of the NEW Midvalley Health Center in spring, 2015. At that time, Moran’s Rocky Mountain Ophthalmology, Old Mill Medical Center, and Moran optometry and optical services at Greenwood Health Center will be incorporated into one convenient location at 243 East 6100 South, north of Fashion Place Mall.
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Paul F. Sargent
Tomako T. Schlag
Paul E. and Diana F. Schmied
Kim Schoenbrunn
John F. Schroll
Susan B. Schulman
Steven and Shelley Schwartz
David M. and Debra R. Scott
Jeffrey K. and Sarah S. Scott
Michael R. Scott and Loretta G. Falvo-Scott
Trude Micheline Sedlar
William and Amanda Self
Taymour Semnani
Sephora—Downtown Salt Lake
Shaun Shafer, MD
Brad and Mary L. Shepherd
Martin A. and Pat Sherman
Alan Shimizu
Gar Shurtleff
David K. Sias
Cory and Mimi Sinclair
Nancy A. Sinykin
Jonathan P. and Elizabeth M. Slager
Albert H. Small
Quentin R. Smelzer, Jr.
Marcie Snell
Pierre and Susan B. Sokolsky
Donna A. Sonntag
Donald A. and Hope R. Spitz
Ira E. and Patricia C. Steele
Ronald E. and Julie Steele
Stella and Dot
Marvin and Mary Stille
Wilna Swain
Edward Harris Sweet
Ronald and Kathleen H. Switzer
Lary J. and Judy W. Talbot
Mary M. Talboys
Barbara Talisman
Earl Tarver
Mark Taylor
R. Burke Teichert
Teleperformance USA Group
David B. Theobald
Dave Thomas
Mary E. Thompson
Barbara Tingey
Berdine Tingey
Jim and Candy Turnbull
Jon Tweeten
United Concerts
Utah Golf Association
V Chocolates
James H. and Rolande K. Vaughn
D. Jesse and Ann T. Wagstaff
Giles Wallace
Dennis B. Walsh
W. Jeffrey and Mona Walters
Matthew and Lynn Ward
James C. Warenski
Washington Lions Club
Charles Weber, MD
Jeanne A. Weber
IN MEMORY OF

Those in whose memory gifts were made to the Moran Eye Center from January 1, 2013 through December 31, 2013

All Eye Donors
Lois Isabella Allred
Marvin Arent
William Armstrong
Frances Balling
Gaylon Bean
Dick Bennon
Annette Benzaquen
Ted Bernhisel
Lee Bronson
Laree Page Brown
Barbara Callahan
Marcela Caloca
Brian A. Christensen
Beth Wilde Clements
Lois Crane
William K. Crane
William C. Crockatt
Jill Curtis
Colby Edwards
Keith Allen Fillmore
Dorothy Hadden
Charles B. Hamner
Clark Hardy
Thomas Harrison
Steven R. Hohnke
Lois Horne
David Huber
Norman C. Jensen
John Kennedy
Ann Zauhar Lucero
M. Jack MacFarland
Jay G. Macfarlane
Casey Marble
Lloyd Marble
Phillip McCollam
Margene McFarland
Edith L. Means
R.W. “Web” Means
Robb Morris

IN HONOR OF

Those in whose honor gifts were made to the Moran Eye Center from January 1, 2013 through December 31, 2013

Marilyn Austin
Paul Bernstein, MD, PhD
Brad
Julie and Alan Crandall, MD
Becky Chapman
Thomas Clinch, MD
Norris Cook
Carol Firmage
Cathleen Frome
Donna Ann Hall
Mary Elizabeth Hartnett, MD
Kate Harvey and Bob Kemme
Alan E. Huish
Kim Corbin-Lewis and
David R. Lewis
Kirsten Mallik
Nick Mamalis, MD
Ernie and Bonnie Messerly
Mark D. Mifflin, MD
Randall J Olson, MD
Matthew Parsons, MD
Charlie Pieper
Geoffrey Tabin, MD
Michael Teske, MD
Michael Yei
Norm Zabriskie, MD

ZAGG, Inc.

The Moran Eye Center is grateful for the contributions made to support our mission and goals. We have made every effort to ensure that this 2013 Donor Report is as accurate as possible. Should you find an error or wish to change your listing, please contact us at 801-585-9700.
# Industry Leadership and Service

This is a partial list of Moran Industry Leadership and Service for 2013

<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
<th>Position and Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>2008-Present</td>
<td>Section Editor, Basic and Clinical Science Course in Ophthalmology, American Academy of Ophthalmology</td>
</tr>
</tbody>
</table>
| Alessandra Angelucci, MD, PhD | 2008-Present Review Editor, *Frontiers in Neuroanatomy*  
2007-Present Member, Editorial Board, *Visual Neuroscience*  
Review Editor, *Frontiers in Systems Neuroscience* |
2004-Present Senior Editor, *Vision Research, Elsevier Science*, San Diego, CA |
| Margaret DeAngelis, PhD       | 2013 Member, Admissions Committee, School of Medicine, University of Utah  
2011-Present Member, Board of Trustees, Fourth Street Clinic |
| Kathleen B Digre, MD          | 2004-Present Chairman, Board of Directors, North American Neuro-Ophthalmologic Society  
Chair, Publications Committee, American Headache Society |
|                               | 2002-Present Member, Review Board, American Headache Society |
|                               | 1998-Present Member, Board of Directors, North American Neuro-Ophthalmology Society |
|                               | 1995-Present Member, Editorial Board, *Journal of Neuro-Ophthalmology* |
| Gregory S Hageman, PhD        | 2013 Member, Advisory Board, Merck Sharp and Dohme Corp. |
|                               | 2013-Present Member, Ophthalmology Scientific Advisory Board, Applied Genetic Technologies Corporation |
|                               | 2012-Present Scientific Founder, Voyant Biotherapeutics LLC, Salt Lake City, UT  
Member, Ophthalmology Clinical Advisory Board, Sequenom, Inc. |
|                               | 2009-Present Member, Board of Directors, AMD Alliance International |
| Mary Elizabeth Hartnett, MD   | 2012-Present Editor, American Academy of Pediatric Ophthalmology and Strabismus  
Member, Editorial Board, *Scientific World Journal* |
|                               | 2011-Present Editor, *Molecular Vision and Molecular Vision Scientific Review*  
Board Member, Women’s Eye Health.org |
<p>|                               | 2009-Present Member, Editorial Board, <em>Clinical Ophthalmology</em> |
| Robert O Hoffman, MD          | 2011-Present Member, Medical Executive Committee, Primary Children’s Medical Center |
|                               | 2007-Present Member, Legislative Committee, American Association for Pediatric Ophthalmology and Strabismus |
|                               | 2003-Present Member, Alumni Board and Executive Committee, Ophthalmology and Visual Sciences, School of Medicine |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Year(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachael S Jacoby, MD</td>
<td>2012-Present Member, Institutional Review Board, University of Utah</td>
</tr>
<tr>
<td>Bryan W Jones, PhD</td>
<td>2002-Present Editor/Webmaster, Webvision [webvision.med.utah.edu]</td>
</tr>
<tr>
<td>Bradley J Katz, MD, PhD</td>
<td>2003-Present Committee Chair, Convention Management Committee, North American Neuro-Ophthalmology Society</td>
</tr>
<tr>
<td>Edward M Levine, PhD</td>
<td>2007-Present Editor, <em>Journal of Ocular Biology, Diseases, and Informatics</em></td>
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<tr>
<td></td>
<td>2004-Present Member, Editorial Board, <em>Developmental Dynamics</em></td>
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<tr>
<td>Nick Mamalis, MD</td>
<td>2007-Present Editor, <em>Journal of Cataract and Refractive Surgery</em></td>
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<tr>
<td></td>
<td>1998-Present Member, Editorial Board, <em>Review of Ophthalmology</em></td>
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<tr>
<td>Robert E Marc, PhD</td>
<td>2013-Present Member, Editorial Board, <em>Journal of Comparative Neurology, Society for Neuroscience</em></td>
</tr>
<tr>
<td>Mark D Mifflin, MD</td>
<td>2005-Present Member, Faculty Executive Committee, Ophthalmology and Visual Sciences</td>
</tr>
<tr>
<td>Majid Moshirfar, MD, FACS</td>
<td>2012-Present Member, Editorial Board, <em>Oman Journal of Ophthalmology</em></td>
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<td></td>
<td>2011-Present Member, Editorial Board, <em>Journal of Cataract and Refractive Surgeons Consultation Section</em></td>
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<tr>
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<td>2009-Present Member, Editorial Board, <em>Scientific World Journal</em></td>
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<td>2002-Present Member, Editorial Board, <em>ORBIT</em></td>
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<td></td>
<td>2000-Present Member, Editorial Board, <em>Abstracts from the Literature for Ophthalmic, Plastic, and Reconstructive Surgery</em></td>
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<tr>
<td>Randall J Olson, MD</td>
<td>2012-Present Executive Editor, <em>American Journal of Ophthalmology</em></td>
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<td></td>
<td>2002-Present Member, Advisory Boards, Advanced Medical Optics, Inc., Surgical Global, and Healon V</td>
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<td></td>
<td>1983-Present Member, Executive Committee, Department Chairs' Collateral Group and Sciences Council, School of Medicine</td>
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<tr>
<td>Bhupendra C K Patel, MD, FRCS, FRC</td>
<td>2007-Present Chief Section Editor, <em>Plastic Surgery, British Journal of Ophthalmology</em></td>
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<td>2006-Present Chief Section Editor, <em>EYE</em></td>
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<tr>
<td></td>
<td>2005-Present Chief Coeditor, <em>ORB</em></td>
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<td></td>
<td>2003-Present Member, Editorial Board, <em>Evidence Based Eye Care</em></td>
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<tr>
<td></td>
<td>2002-Present Editor, <em>USA ORBIT</em></td>
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<td></td>
<td>2000-Present Member, Editorial Board, <em>Aesthetique</em></td>
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<td></td>
<td>1999-Present Member, Editorial Board, <em>Journal of Cranio-Maxillofacial Trauma</em></td>
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<tr>
<td></td>
<td>1996-Present Member, Medical Advisory Board, American Society of Oculists</td>
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<tr>
<td></td>
<td>1991-Present Member, Editorial Board, <em>Abstracts from the Literature for Ophthalmic, Plastic, and Reconstructive Surgery</em></td>
</tr>
</tbody>
</table>
### Debra Schaumberg, ScD, OD, MPH
- **2013-Present**: Member, Scientific Advisory Board, SARcode Bioscience Inc.
- **2008-Present**: Member, Board of Directors, Tear Film and Ocular Surface Society
- **2002-Present**: Founding Member, Executive Committee, Women’s Eye Health.org

### Geoffrey Tabin, MD
- **2006-Present**: Editor, *Stedman’s Medical Dictionary*

### Monica Vetter, PhD
- **2011-present**: Member, Scientific Advisory Board, “Catalyst for a Cure 2,” Glaucoma Research Foundation

### Albert T Vitale, MD
- **2006-Present**: Member, Faculty Executive Committee, Ophthalmology and Visual Sciences
- **2004-Present**: Member, Advisory Boards, Genentech, Inc. and Lucentis
- **2003-Present**: Member, Uveitis Advisory Board, Aciont Inc.

### Judith E A Warner, MD
- **2004-Present**: Member, Editorial Board, *Neuro-Ophthalmology*

### Liliana Werner, MD, PhD
- **2013-present**: Coeditor, Quarterly Column, “Cataract/IOL Complications: Moran CPC Reports,” *EyeWorld International*
- **2009-present**: Member of the Scientific Advisory Board of Powervision Inc., USA

### Barbara M Wirostko, MD
- **2011-Present**: Chief Medical Officer Retained Consultant, Altheos, Inc.
- **2009-Present**: America Top Ophthalmologist, *Journal of Consumer Research*
- **2007-Present**: Associate Editor and Peer Reviewer, *Acta Ophthalmologica*

### Norm A Zabriskie, MD
- **1999-Present**: Member, Faculty Executive Committee, Ophthalmology and Visual Sciences
Awards, Honors, and Appointments

2013-2014

Other awards, honors, and appointments are highlighted in FOCUS content

Awards and Appointments

Balamurali K Ambati, MD, PhD, MBA, received the Troutman-Veronneau Prize, Pan-American Association of Ophthalmology, for his paper *Raver2Preserves Cornea Avascularity by Inhibiting Splicing of the VEGF Decoy Receptor sFlt*, 2013; he was also appointed to the Judge’s panel, INTEL Science Talent Search, 2013-2014

Margaret DeAngelis, PhD, was appointed to the editorial board of the *Journal of Biophysical Chemistry*

James Gilman, CRA, FOPS, was awarded First Place in the “Cross Category” section, Second Place in “Slit Lamp Photography” and in the “Eye as Art Category” during the Ophthalmic Photographers’ Society Annual Scientific Exhibit at the American Academy of Ophthalmology, New Orleans, 2013

Gregory S Hageman, PhD, received the 2014 Achievement Award, American Association of Ophthalmology

Mary Elizabeth Hartnett, MD, received the Women in Ophthalmology Scientific Contribution Award and Honorary Lecture Award, 2104; she was also appointed Chairperson to the Diseases and Pathophysiology of the Visual System Study Section at the Center for Scientific Review at the National Institutes of Health

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

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

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

Best Paper of Session, Session 3-G: *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*

Best Paper of Session, Session 3-Q: *Joshua Ford, MD; Justin Kohl, MD; Scott Cole, MD; 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*
Moran Faculty Featured at American Academy of Ophthalmology (AAO), New Orleans, November 19, 2013

**PRESENTATIONS, PAPERS, POSTERS, & PANELS**

### Alan S Crandall, MD

### Gregory S Hageman, PhD
- Gene Markers and Prevention—Over the Horizon or Here Today? Presentation, Novartis Evolutions in Ophthalmology meeting.

### Bryan W Jones, PhD

### Nick Mamalis, MD

### Randall J Olson, MD
- The Affordable Care Act and Health Care Reform 2013: How Will the AAC Affect Ongoing and Future Ophthalmic Research? Spotlight on Cataract Complications, panel member.

### Geoffrey Tabin, MD

### Liliana Werner, MD, PHD; Nick Mamalis, MD
- Localized Opacification of Hydrophilic Acrylic IOLs after Procedures Using Intracameral Injections of Air/Gas. Dr. Werner presented the paper, which was awarded “Best-Paper-of-Session” out of 300 entries in Cataract Original Papers category.

### COURSES

### Alan S Crandall, MD

### Nick Mamalis, MD

### Randall J Olson, MD

### Geoffrey Tabin, MD

### Albert T Vitale, MD
- Medical and Surgical Therapy and Diagnosis of Uveitis. How to Interpret Fundus Fluorescein Angiography and Autofluorescence.
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</td>
<td>Observational Study Assessing Various Novel Vascular and Diagnostic Parameters and their Relationship to Glaucoma</td>
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<tr>
<td><strong>Principal Investigator:</strong> James Bell, MD</td>
<td><strong>Principal Investigator:</strong> Barbara M Wirostko, MD</td>
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<tr>
<td>Clinical Study of the ARTISAN Aphakia Lens for the Correction of Aphakia in Adults</td>
<td><strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<tr>
<td><strong>Principal Investigator:</strong> Alan S Crandall, MD</td>
<td>Evaluation of Optic Neuropathies with Imaging</td>
</tr>
<tr>
<td>Clinical Study of the ARTISAN Aphakia Lens for the Correction of Aphakia in Children</td>
<td><strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<tr>
<td><strong>Principal Investigator:</strong> Alan S Crandall, MD</td>
<td>Long-term Follow up of the Cohort from the Idiopathic Intracranial Hypertension Treatment Trial (IIHTT)</td>
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<tr>
<td>Refractive Index and Pseudophakic Dysphotopsia</td>
<td><strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<tr>
<td><strong>Principal Investigator:</strong> Randall J Olson, MD</td>
<td>Retrospective Review of Primary and Secondary Causes of Pseudotumor Cerebri</td>
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<tr>
<td>Quality-of-Life Assessment in an Indigent Population Following Cataract Surgery</td>
<td><strong>Principal Investigator:</strong> Kathleen B Digre, MD</td>
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<tr>
<td><strong>Principal Investigator:</strong> Jeff Pettey, MD</td>
<td>Measurement of Critical Flicker Fusion Frequency</td>
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<td>CORNEA</td>
<td><strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<tr>
<td>Subconjunctival Aflibercept Injection for Corneal Neovascularization</td>
<td>Proteomics and Genomics of Giant Cell Arteritis</td>
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<tr>
<td><strong>Principal Investigator:</strong> Balamurali K Ambati, MD, PhD, MBA</td>
<td><strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<tr>
<td>Collagenase-assisted Deep Anterior Lamellar Keratoplasty</td>
<td>Optic Nerve Drusen: Clinical Characterization and Genetic Mapping</td>
</tr>
<tr>
<td><strong>Principal Investigator:</strong> Balamurali K Ambati, MD, PhD, MBA</td>
<td><strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
</tr>
<tr>
<td>Study Evaluating the Safety, Tolerability, and Efficacy of RU-101 Ophthalmic Solution in Patients with Severe Dry Eye</td>
<td>Treatment of Giant Cell Arteritis with Antibiotics</td>
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<tr>
<td><strong>Principal Investigator:</strong> Nick Mamalis, MD</td>
<td><strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
</tr>
<tr>
<td>Effect of Corneal Preservation Time on Long-term Graft Success (CPTS)</td>
<td>Prospective Study to Evaluate the Possible Association between the Use of PDES Inhibitors and the Risk of Acute Nonarteritic Anterior Ischemic Optic Neuropathy</td>
</tr>
<tr>
<td><strong>Principal Investigator:</strong> Mark D Mifflin, MD</td>
<td><strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<tr>
<td>Retrospective Study of Descemet’s Stripping Automated Endothelial Keratoplasty Outcomes</td>
<td>Predictive Value of Optic Nerve MRI Measurements at Onset of Optic Neuritis for two-year MS Outcomes</td>
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<td><strong>Principal Investigator:</strong> Mark D Mifflin, MD</td>
<td><strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<td>Evaluation of the Safety and Efficacy of Corneal Collagen Crosslinking in Eye with Keratoconus or Corneal Ectasia after Refractive Surgery</td>
<td>Thin Film Spectacle Coatings to Reduce Light Sensitivity and Headaches in Patients with Migraine</td>
</tr>
<tr>
<td><strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
<td><strong>Principal Investigator:</strong> Bradley J Katz, MD, PhD</td>
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<tr>
<td>Biomechanical Changes in the Cornea after Laser Assisted in situ Keratomileusis (LASIK) and Photorefractive Keratectomy (PRK)</td>
<td>Benign Essential Blepharospasm in Children</td>
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<tr>
<td><strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
<td><strong>Principal Investigator:</strong> Judith E A Warner, MD</td>
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<tr>
<td>Topical Proparacaine versus Tetracaine in Photorefractive Keratectomy (PRK)</td>
<td>Posterior Cortical Atrophy</td>
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<td><strong>Principal Investigator:</strong> Majid Moshirfar, MD, FACS</td>
<td><strong>Principal Investigator:</strong> Judith E A Warner, MD</td>
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<tr>
<td>GENERAL</td>
<td>PEDIATRIC</td>
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<tr>
<td>Experience in an Ophthalmology Clinic for Homeless Patients</td>
<td>Genetics of Pediatric Retinal Disorders</td>
</tr>
<tr>
<td><strong>Principal Investigator:</strong> Brian Stagg, MD</td>
<td><strong>Principal Investigator:</strong> Mary Elizabeth Hartnett, MD</td>
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<tr>
<td>Preeclampsia and Retinopathy of Prematurity</td>
<td>Genetic Associations in Preterm Infants at Risk of Retinopathy of Prematurity</td>
</tr>
<tr>
<td><strong>Principal Investigator:</strong> Mary Elizabeth Hartnett, MD</td>
<td><strong>Principal Investigator:</strong> Mary Elizabeth Hartnett, MD</td>
</tr>
</tbody>
</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

Home Vision Monitoring in AREDS2 for Progression to Neovascular AMD Using the ForeseeHome Device
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

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

Efficacy of Pars Plana Vitrectomy and Subretinal Tissue Plasminogen Inhibitor for the Treatment of Submacular Hemorrhage
Principal Investigator: Michael P Teske, MD

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 as Maintenance Therapy in Subjects requiring High-dose Corticosteroids for Active Uveitis
Principal Investigator: Albert T Vitale, MD

Utility of Lyme Antibody Testing in the Uveitis Workup
Principal Investigator: Albert T Vitale, MD

Standardization of Uveitis Nomenclature Working Group
Principal Investigator: Albert T Vitale, MD
### Technology Commercialization and Intellectual Property/Patents

**Balamurali K Ambati, MD, PhD, MBA**

- **7/25/13**
  - **Patent Filed/Secured:** “The Schlemm’s Stent-Sieve,” Balamurali Ambati, Alan S Crandall, Bruce Gale, Christopher Lambert.

- **9/5/13**
  - **Patent Licensed/Exclusive:** “Ocular Drug Delivery Using Lipids to Achieve Sustained Release,” Balamurali K Ambati, Michael Burr.

- **9/18/13**
  - **Patent Hold for More Data from Inventors:** “COMP-Ang1 Mediated Retinal Neuronal Regeneration,” Balamurali K Ambati, Judd Cahoon.

**Greg S Hageman, PhD**

- **4/9/13**
  - **Patent Published:** “RCA Locus Analysis to Assess Susceptibility to AMD and MPGNII,” Australian patent application 2013203231.

- **4/12/13**
  - **Patent Granted:** “Methods and Reagents for Treatment and Diagnosis of Vascular Disorders and Age-related Macular Degeneration,” Hong Kong patent 1168360.

- **6/14/13**
  - **Patent Granted:** “Variants in Complement Regulatory Genes Predict Age-related Macular Degeneration,” Japanese patent 5290772.

- **6/25/13**
  - **Patent Granted:** “Variants in Complement Regulatory Genes Predict Age-related Macular Degeneration,” Israeli patent 193396.

- **7/30/13**
  - **Patent Granted:** “Methods and Reagents for Treatment and Diagnosis of Vascular Disorders and Age-related Macular Degeneration,” Singapore patent 134720.

- **10/1/13**
  - **Patent Granted:** “Methods and Reagents for Treatment and Diagnosis of Vascular Disorders and Age-related Macular Degeneration,” New Zealand patent application 595305.

- **12/10/13**
  - **Patent Allowed:** “Protective Complement Proteins and Age-related Macular Degeneration,” Canadian patent application 2,638,759.

**Bryan W Jones, PhD; Robert E Marc, PhD**

- **2012 – Present**
  - **Patent Pending:** “Oncological Application of Computational Molecular Phenotyping.”
<table>
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<tr>
<th>Name</th>
<th>Date</th>
<th>Action/Invention</th>
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</table>
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 | 2013 – Present |  
Salcantay Vision Solutions, LLC, CEO.  
Asha Vision, LLC, Founder and CEO.  
Entrepreneurial Faculty Scholars, University of Utah, member.  
Center for Translational Medicine, University of Utah, member.  
3/14/12 – 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-US5301, 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 they are currently no treatments that regulate intraocular pressure and protect retinal ganglion neurons in glaucoma.  
10/16/12 – Present  
2012 – Present  
**Patent Submitted:** “A Vision Correction System to Minimize Intraocular Lens Rotation.”  
**Patent Pending:** “A Vision Correction System,” patent 5087, International.  
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.  
2013 – present  
**Patent Filed:** “HGH for Ocular Diseases,” PCT/US serial no. is 61/956,070, provisional.  
2012 – Present  
2011 – Present  
2011 – Present  
Co-founder/Chief Scientific Officer of Jade Therapeutics, Inc, Drug Development Company focusing on developing sustained delivery drugs and products via a novel propriety cross-linked hyaluronic acid polymer for ophthalmic areas of high unmet need. Recently received two Utah State Technology Commercialization and Innovation (TCIP) grants through USTAR, for $40,000 each, a Phase 1 NSF SBIR and a Phase 1 DOD SBIR grant. |
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<th>Date</th>
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<tbody>
<tr>
<td>January 16</td>
<td>Mary Elizabeth Hartnett, MD</td>
<td>Insights into Recurrent Neovascularization Anti-VEGF Treatment in ROP</td>
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| January 23 | William Barlow, MD                 | 1. Wound Burn & the Ultrachopper  
2. Endophthalmitis Prophylaxis                                                  |
| January 30 | Joseph L Hatch, MD                 | Orson W White, MD, First Chairman, Division of Ophthalmology, University of Utah |
| February 6 | Russell Swan, MD, Intern           | Future Advancements in Refractive Surgery                                       |
|            | Kevin Meier, MD, Neurology Resident, University of Utah | A Patient with Alternating Skew Deviation & Down-beat Nystagmus                   |
| February 13| Nikko Ronquillo, Graduate Research Assistant  
Beatrice Des Marchais, MD, Quebec City, Quebec | Senior-Loken Syndrome: From Human Genetics to an Animal Model                   |
<p>| March 20   | Adam Gess, MD                      | A Patient with Fungal Keratitis                                                  |
| March 27   | Ore-Ofe Adesina, MD                | What I’ve Been Up To                                                            |
| April 10   | Randall J Olson, MD; Alan S Crandall, MD; Jeff Pettey; MD, and Wayne Imbrescia | Health Care Policy &amp; Affordable Care Act                                        |
| April 17   | Ronald Hobbs, MD, Retina Fellow     | What to Present, It Is So Hard to Pic                                            |
| April 24   | Akbar Shakoor, MD, Retina Fellow    | Diagnostic Challenges in Sarcoidosis                                             |
|            | Ligia Viorela Onofrei, MD, Neurology Resident, University of Utah | Ophthalmic Manifestations of NF-1                                               |
| May 1      | Charles Weber, MD, Cornea Fellow    | OCT in the Assessment of Glaucoma                                               |
|            | Rachel Epstein, MSIV, Chicago Medical School | Rapidly Progressive Proptosis in a Child                                       |
| May 22     | Derek Holt, MD, PhD, Chief Resident | Neuroplasticity &amp; Amblyopia                                                     |
|            | Kevin Kirk, MSII, University of Utah | Pathology of 1-Piece &amp; 3-Piece Intraocular Lenses Fixed in the Ciliary Sulcus   |
| May 29     | Caleb Morris, MSIII, Duke University (Research with Mamalis/Werner Lab) | Case Report on Fulminant Intracranial Hypertension                              |
| June 12    | Zachary Joos, MD, Intern           | You’ll Shoot Your Eye Out!: BB Gun Injuries &amp; Intraocular Foreign Bodies         |
| June 19    | Adam Jorgensen, MD, Intern         | Lateral Rectus Mass in a 67-Year-Old Male                                         |
|            | Derek Holt, MD, Chief Resident      | 18-Year-Old Patient with Optic-neuropathy                                        |
| July 17    | Christine Lippe, MSIV, Penn State  | Bilateral Acute Angle Closure Glaucoma due to Oral Acetazolamide                |
|            | Ryan Constantine, MSIV, University of Utah | UNC119 is Required for G-Protein Trafficking in Sensory Neurons                |
|            | Max Padilla, MSIV, University of Utah | Intralase-Astigmatic Keratotomy Concurrent with Phacoemulsification               |
|            | Lauren Imbornoni, MSIV, University of Arizona COM | A Case Report of Recurrent Epithelial Irregularity                              |
| July 31    | Lori Myers, MSIV, Indiana University SOM | July &amp; the OPEN GLOBE: To Wait, Eviscerate, or Enucleate?                     |</p>
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<tr>
<td>August 7</td>
<td>Dane Stewart, MSIV, Virginia Commonwealth University</td>
<td>Infrared Imaging as a Tool to Detect Glaucomatous Changes of the Optic Nerve Neuronal Regeneration A Case of Optic Neuropathy in a Patient with Atrial Fibrillation</td>
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<td>August 14</td>
<td>Devin West, MSIV, St. Louis University SOM Erik Ostler, MSIV, University of Utah Paul Selid, MSIV, University of North Dakota</td>
<td>CPEO: A Family Affair Statistical Methods of Ophthalmology: Unlocking the Black Box Avastin vs Eylea in Exudative ARMD: More than Anecdotal Evidence</td>
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<td>August 28</td>
<td>Randall J Olson, MD Elizabeth Doll, MD, Neurology Resident, University of Utah Pediatrics</td>
<td>What Resulteth from a Minor Tip Change Ocular Manifestations of Bariatric Surgery</td>
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<td>September 4</td>
<td>Ana Kesler, MD, Sackler SOM, Ophthalmology, Tel Aviv Medical Center, Israel, Neuro-Ophthalmology</td>
<td>Pseudotumor Cerebri</td>
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<td>September 11</td>
<td>Joshua Ford, MD, Pathology Fellow, University of Utah SOM</td>
<td>Light Adjustable Lens &amp; Other Intraocular Power Adjustable Technologies</td>
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<td>September 18</td>
<td>Tyson Olson, MSIV, University of Rochester, SOM Aabid Farukhi, MSIV, University of Utah</td>
<td>Orbitalfacial Neurofibromatosis &amp; Vision Loss Does Phaco Tip Diameter Impact Efficiency &amp; Chatter</td>
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<td>September 25</td>
<td>Kevin Kirk, MSIV, University of Utah Sean Hansen, MSIV, Medical College of Wisconsin Matt Miller, MSIV, University of Utah</td>
<td>Uveitis Nomenclature Assessing Photoreceptor Structure Following Macular Hole Closure Pseudotumor Cerebri Secondary to Tetracycline Antibiotics</td>
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<td>October 2</td>
<td>Eileen Hwang, MD, PhD, Intern Ashlie Bernhisel, MSIV, University of Utah, Neuro-Ophthalmology</td>
<td>Do Patients with Hollenhorst Plaques Really Need Carotid Ultrasounds &amp; Echocardiograms? Ocular Manifestations of Plaquenil Toxicity</td>
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<td>October 16</td>
<td>R Michael Duffin, MD, and Mark D Mifflin, MD</td>
<td>Bolivia 2013: Second Cornea Transplant Campaign</td>
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<td>October 23</td>
<td>Nick Mamalis, MD</td>
<td>Binkhorst IOLS</td>
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<td>October 30</td>
<td>Jim Bell, MD, Intern</td>
<td>A Bump in the Iris</td>
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<td>November 6</td>
<td>Balamurali K Ambati, MD, PhD, MBA</td>
<td>Front &amp; Back: Clinical Course &amp; Retina Research</td>
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<td>November 13</td>
<td>Dan Bettis, MD, Intern Faiz Rehmani, MD, Neurology Resident, University of Utah</td>
<td>Seven-Year-Old with Recurrent Exotropi Homonymous Hemianopia</td>
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<td>November 20</td>
<td>Leah Owen, MD, PhD, Intern</td>
<td>NAION in a Patient with Posner-Syndrome International Outreach to the Navajo Reservation</td>
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<td>December 4</td>
<td>Alan S Crandall, MD</td>
<td>New Cataract Surgical Techniques</td>
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<tr>
<td>December 11</td>
<td>Barbara M Wirostko, MD</td>
<td>Pseudoxefoliation: What is Known and What is New</td>
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</table>
A sample of more than 200 published and presented materials by Moran faculty members between January 1 and December 31, 2013
Eye Contact Lens
Adesina OO, Vickery JA, Ferguson CL, Stone DU. Stromal melting associated with a cosmetic contact lens over a Boston keratoprosthesis: Treatment with a conjunctival flap. Eye Contact Lens. 2013; 39(3), e4-6

EyeWorld
Daly R, Moshirfar M. Expanding options for phakic lenses. EyeWorld. 2013; (10), 1-2

The FASEB Journal


Headache
Friedman DI, Digre KB. Headache medicine meets neuro-ophthalmology: Exam techniques and challenging cases. Headache. 2013 Apr;53(4):703-16

Human Gene Therapy

Human Molecular Genetics

Image Processing, IEEE Transactions

International Journal of Environmental Research and Public Health

International Ophthalmology Clinics

Investigative Ophthalmology and Visual Sciences


Journal of APOS
Hartnett ME, Lane R. Effects of oxygen on the development and severity of retinopathy of prematurity. J APOS. 2013; 17(3), 229-34


JAMA
Age-Related Eye Disease Study 2 Research Group (06/18/2013). Bernstein PS, Lutein + zeaxanthin and omega-3 fatty acids for age-related macular degeneration: The Age-Related Eye Disease Study 2 (AREDS2) randomized clinical trial. JAMA, 309 (May 15, 2013), 2005-2015

JAMA Ophthalmology


Journal of Biological Chemistry

Journal of Biomedical Optics
Journal of Cataract and Refractive Surgery


The Journal of Clinical Neuroscience


Journal of Comparative Neurology


Journal of Controlled Release


Journal of Glaucoma


Journal of Neuro-Ophthalmology

Katz BJ, Crum AV, Digre KB, Warner JE. Optic disc edema and optic nerve head drusen. *J Neuroophthalmo.* 2103; 33(2), 204-5

Journal of the Peripheral Nerve System


Journal of Refractive Surgery


Nature Genetics


Heggsen H, ..., Bernstein PS, et al. A rare nonsynonymous sequence variant in C3 is associated with high risk of age-related macular degeneration. *Nat Genet.* 2013; 45(11), 1371-4


Nepalese Journal of Ophthalmology


Journal of Ocular Pharmacology


Journal of Pediatric Gastroenterology and Nutrition


Journal of the Peripheral Nerve System


Journal of Refractive Surgery


Journal of Cell Science


Journal of Chromatography A


Journal of Controlled Release

Lai CW, Kolesnikov AV, Frederick JM, Blake DR, Jiang L, Stewart JS, Chen CK, Barrow JR, Baehr W, Kefalov VJ, Willardson BM. Phosducin-like protein 1 is essential for G-Protein assembly and signaling in retinal rod photoreceptors. *J Neurosci.* 2013; 33(18), 7941-7951


Research Grants and Contracts 2013-2014

RESEARCH GRANTS

Balamurali K Ambati, MD, PhD, MBA

**Effects of Comp-ang1 on Vascular Permeability and Neovascularization**
$2,100
Fight for Sight
Duration: 6/1/13–9/1/13

**Defining the Mechanism of Comp-angiopoietin-1 Activity in the Diabetic Retina**
$18,000
PhRMA Foundation
Duration: 7/1/13–6/30/14

**Endoshield: Making Cataract Surgery Safer and Easier**
$40,000
Utah Governor’s Office of Economic Development
Duration: 5/1/12–5/31/13

**The Role of sFlt in Corneal Avascularity**
$250,000
National Eye Institute
Duration: 8/1/13–7/31/17

**Endo-contact Lens for Corneal Protection in Cataract Surgery**
$35,000
University of Utah Research Foundation
Duration: 6/1/12–5/31/13

**Intraceptor Interference of VEGF Pathways**
$278,187
National Eye Institute
Duration: 2/1/08–4/30/13

**Retinal Health Analyzer for Novel Therapy and Early Diagnostics for AMD**
$20,000
Carl Marshall & Mildred Almen Reeves Foundation
Duration: 12/1/12–8/31/14

**The Role of Soluble Flt-1 and Raver2 in Ocular Vascular Demarcations**
$372,500
National Eye Institute
Duration: 8/1/13–7/31/17

Pre-mRNA Interference of VEGF, VA Merit Award
$650,000
VA Salt Lake City Health Care System
Duration: 10/1/09–9/13/13

**SFLT**
$2,568,557
National Institutes of Health
Duration: 4/1/08–4/30/13

**The Role of SFLT in Corneal Avascularity**
$250,000
National Eye Institute
Duration: 2/1/08–1/31/13

Alessandra Angelucci, MD, PhD

**A Novel Approach for Mapping Single-cell Long-range Connections in the Cerebral Cortex**
$293,329
National Eye Institute
Duration: 5/1/12–7/31/14

**Parallel Pathways in Visual Cortex: Functional Connectivity of Output Pathways From Area V1 to Area V2**
$372,500
National Eye Institute
Duration: 8/1/13–7/31/16

Wolfgang B Baehr, PhD

**Therapies for Retinal Degeneration Caused by NPHP5 Mutations**
$75,000
Foundation for Retinal Research
Duration: 11/1/13–10/31/14

**The Role of Nephrocystin-5 in Retinal Degeneration**
$34,366
National Eye Institute
Duration: 8/1/12–7/31/14

**Photoreceptor Ciliopathies: RP2, KIF17, and NPHP5**
$354,073
National Eye Institute
Duration: 5/1/12–4/30/16

**Membrane Protein Trafficking**
$335,239
National Eye Institute
Duration: 12/1/08–11/30/13

**Core Vision Research Grant (Baehr & Bernstein)**
$173,129
National Eye Institute
Duration: 7/1/10–6/30/15

**Study of Retinal Degeneration**
$57,000
Foundation Fighting Blindness
Duration: 08/1/10–7/31/13
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<td><strong>Margaret DeAngelis, PhD</strong></td>
<td><strong>Human Eye Repository for Studies of Age-related Macular Degeneration</strong></td>
<td>$20,000</td>
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<td><strong>Carl Marshall &amp; Mildred Almen Reeves Foundation</strong></td>
<td><strong>Research to Understand the Genetic Epidemiology of Blinding Diseases of the Posterior Eye among Federally Recognized Native Americans</strong></td>
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<td><strong>Edward N &amp; Della L Thome Memorial</strong></td>
<td><strong>Identifying Underlying Mechanisms of Age-related Macular Degeneration</strong></td>
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<td><strong>Kathleen B Digre, MD</strong></td>
<td><strong>Coalition for a Healthier Community for Utah Women and Girls</strong></td>
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<td><strong>Yingbin Fu, PhD</strong></td>
<td><strong>A New Treatment Strategy for Age-related Macular Degeneration</strong></td>
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<td><strong>Alan S Crandall, MD</strong></td>
<td><strong>Nanosized Carotenoid Complexes with Plant Metabolites and Potential Delivery System for Treatment of Ocular Disorders</strong></td>
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<td><strong>Biochemical Studies in Support of the Next Generation AREDS Supplementation for AMD</strong></td>
<td><strong>Biochemistry and Pharmacology of Macular Carotenoids</strong></td>
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<td><strong>Vpa Protocol</strong></td>
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<td><strong>Transcend Medical, Inc.</strong></td>
<td><strong>Cypass Glaucoma Implant</strong></td>
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<td>Gregory S Hageman, PhD</td>
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<td>Improved Characterization of High-risk Phenotypes in Early AMD, Employing</td>
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<td>Robyn Guymer; Gregory S Hageman</td>
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<td>Macular Degeneration Foundation of Australia</td>
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<td>Mary Elizabeth Hartnett, MD</td>
<td>Studies on Angiogenic Mechanisms and Safety Regarding Erythropoietin in</td>
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<td>Retinopathy of Prematurity: Seeking a Safe Treatment</td>
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<td>Bradley J Katz, MD, PhD</td>
<td>Blast Ocular Injury</td>
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<td>Duration: 7/1/12–6/30/13</td>
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<td>Characterization of Molecular Mechanisms of Ocular Blast Trauma</td>
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<td>Duration: 8/15/12–8/14/16</td>
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<td>Role of Mechanosensation in the Retina</td>
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<td>Regulation of Neurotransmission in the Retina</td>
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<td>Duration: 9/1/07–8/31/13</td>
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<td>Ocular Blast Mechanisms</td>
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<td>Vlc-Pufas as in Dominant Stargardan</td>
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<td></td>
<td>Principle Investigators: Paul S Bernstein; David Krizaj</td>
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<td>Foundation Fighting Blindness</td>
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<td>Edward M Levine, PhD</td>
<td>Core Vision Research Grant</td>
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<td><strong>Nick Mamalis, MD</strong></td>
<td><strong>Mark D Mifflin, MD</strong></td>
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<td><strong>Power Adjustment and Biocompatibility, Amend #21</strong></td>
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<td><strong>AquaLase for Removal of Residual Lens Epithelial Cells During Cataract Extraction</strong></td>
<td><strong>Evaluation of Topical Antibiotics/Risk of Endophthalmitis with Intravitreal Injection</strong></td>
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<td>Duration: 1/1/07–Present</td>
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<td><strong>Gross and Histopathologic Evaluation of Explanted Rabbit Eyes that had been Implanted with a New Intraocular Lens</strong></td>
<td><strong>Cornea Donor Study: National Multicenter Investigation to Study the Effect of Age on Cornea Transplant Outcome</strong></td>
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<td>Duration: 8/1/99–7/31/13</td>
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<td><strong>Evaluation of Removal of Lens Epithelial Cells in a Pig Eye</strong></td>
<td><strong>ACOS Kxl-001</strong></td>
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<td>Duration: 02/01/05–Present</td>
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<td><strong>Assessment of Capsular Bag Opacification after Implantation of Piggy Back IOL's and a Dual-optic IOL</strong></td>
<td><strong>Randall J Olson, MD</strong></td>
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<td>Visiogen, Inc.</td>
<td><strong>A Prospective Multi-centered Study of AcrySof Glistenings</strong></td>
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<td><strong>Robert E Marc, PhD</strong></td>
<td>Duration: 6/1/08–Present</td>
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<td><strong>Challenges in Imaging (ARRA)-UCSB Subcontract</strong></td>
<td><strong>Assessing Post-occlusion Surge in Vacuum Flow Systems</strong></td>
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<td>National Science Foundation</td>
<td>Bausch &amp; Lomb</td>
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<td>Duration: 05/1/08–Present</td>
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<td><strong>Core Vision Research Grant (Supplement)</strong></td>
<td><strong>Visualizing MRSA Response to BAK +/- Gatifloxacin</strong></td>
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<td>Duration: 7/1/12–6/30/13</td>
<td>Duration: 5/1/08–Present</td>
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<tr>
<td><strong>Core Vision Research Grant (Main)</strong></td>
<td><strong>An Eyebank Comparison of Corneal Endothelial Damage with Dispersive OVDs</strong></td>
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<td>Duration: 7/1/10–6/30/15</td>
<td>Duration: 4/1/08–Present</td>
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<td><strong>Core Vision Research Grant</strong></td>
<td><strong>Recovery of Bacteria from Intraocular Injection in Cadaver Eyes</strong></td>
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<td>Duration: 7/1/10–6/30/15</td>
<td>Duration: 8/1/07–Present</td>
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<td><strong>Retinal Remodeling</strong></td>
<td><strong>Differentiating the Effect of BAK and 4th Generation Fluoroquinolones against MRSA</strong></td>
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<td>Duration: 4/1/12–3/31/13</td>
<td>Duration: 4/1/07–Present</td>
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<tr>
<td><strong>Structural Neurochemistry of Retinal Circuits</strong></td>
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</table>
Debra A Schaumberg, ScD, OD, MPH

**Omega-3 Fatty Acids for Prevention of Dry Eye Disease: Vital AMD**
National Eye Institute
Duration: 4/1/13–8/31/17

**Vital AMD: Prevention of AMD in the Vitamin D and Omega-3 Trial**
National Eye Institute-Subaward from Brigham & Womens Hospital
Duration: 4/1/13–8/31/17

**Effects of Vitamin D and Omega-3 Fatty Acids on Infectious Diseases and hCAP18**
National Eye Institute-Subaward from Brigham & Womens Hospital
Duration: 4/1/13–8/31/17

**Randomized Trial of Vitamin D & Omega-3 Fatty Acids for Diabetic Kidney Disease**
National Eye Institute-Subaward from University of Washington
Duration: 4/1/13–8/31/15

**R01 EY017362 Genetic Epidemiology of Age-related Macular Degeneration**
National Eye Institute
Duration: 1/1/07–12/31/13

Michael P Teske, MD

**CLEAR-IT 3**
Regeneron Pharmaceuticals, Inc.
Duration: 4/1/07–Present

**The Natural History of Geographic Atrophy Progression (GAP) Study**
Alcon Research Ltd
Duration: 1/31/08–Present

Ning Tian, PhD

**Development of Synaptic Pathways in Retina (Supplement)**
National Eye Institute
Duration: 4/1/12–3/31/13

**Development of Synaptic Pathways in Retina**
National Eye Institute
Duration: 4/1/11–3/31/16

Albert T Vitale, MD

**Must Follow Up Study**
Johns Hopkins University
Duration: 05/1/12–4/30/14

**Phase II/III Study of Encapsulated Human NTC-201 Cell Implants Releasing Ciliary Neurotrophic Factor (CNTF) for Participants with Retinitis Pigmentosa Using Visual Acuity as Primary Outcome**
Neurotech USA, Inc.
Duration: 4/1/07–Present

**Multicenter Uveitis Steroid Treatment (MUST) Trial**
Johns Hopkins University
Duration: 12/1/05–Present

**A 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 Non-infectious Intermediate-, Posterior-or Pan-uveitis**
Abbott Laboratories
Duration: 11/30/10–Present

**Comparison of AMD Treatment Trial (CATT)-Lucentis-Avastin Trial**
Emmes Corporation/National Eye Institute
Duration: 04/1/07–Present

**Phase II- Clinical Trial: A Multicenter Randomized Double-masked Controlled Study to Evaluate the Safety and Efficacy of an Intravitreal Fluocinolone Acetonide (0.5 or 2 mg) Implant in Patients with Noninfectious Uveitis Affecting the Posterior Segment of the Eye, American Study**
Bausch & Lomb
Duration: 1/1/03–Present
<table>
<thead>
<tr>
<th><strong>Judith E A Warner, MD</strong></th>
<th><strong>Jun Yang, PhD</strong></th>
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<tbody>
<tr>
<td><strong>A Multicenter, Double-blind, Randomized, Placebo-controlled Study of Weight-reduction and/or Low-sodium Diet plus Acetazolamide vs Diet plus Placebo in Subjects with Idiopathic Intracranial Hypertension with Mild Visual Loss (IIHTT)</strong></td>
<td><strong>Formation and Function(s) of the Usher 2 Protein Complex in Photoreceptors</strong></td>
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<td>Neuro-ophthalmology Research Disease Investigator Consortium Sub Investigator</td>
<td>E Matilda Ziegler Foundation</td>
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<td>Duration: 11/30/09–11/30/15</td>
<td>Duration: 1/1/11–12/31/13</td>
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<td><strong>Liliana Werner, MD, PhD</strong></td>
<td><strong>Gene Therapy for Retinitis Pigmentosa in Usher Syndrome Type 2</strong></td>
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<td><strong>Evaluation of a New IOL</strong></td>
<td>Foundation Fighting Blindness</td>
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<td>Principal Investigators: Nick Mamalis, Liliana Werner</td>
<td>Duration: 8/1/10–7/31/13</td>
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<td>PhysIOL SA</td>
<td><strong>Analysis of the Interaction Between a Novel Serine/Threonine Protein Phosphatase and the Usher Syndrome Type2 Protein Complex</strong></td>
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<td>Duration: 11/1/12–4/30/13</td>
<td>Knights Templar Eye Foundation</td>
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<td><strong>Evaluation of a New IOL</strong></td>
<td>Duration: 7/1/13–6/30/14</td>
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<td>Principal Investigators: Nick Mamalis, Liliana Werner</td>
<td><strong>The Function of PDZD7 in the Cochlear Hair Cells</strong></td>
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<td>Abbott Medical Optics</td>
<td>Hearing Health Foundation</td>
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<td><strong>Evaluation of a New IOL</strong></td>
<td><strong>Understanding and Restoring the USH2 Complex in Cochlear Hair Cells</strong></td>
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<td>Principal Investigators: Nick Mamalis, Liliana Werner</td>
<td>National Organization for Hearing Research</td>
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<td>Advanced Vision Science, Inc.</td>
<td>Duration: 7/1/13–6/30/14</td>
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<td><strong>Involvement of C8ORF37 in the Inherited Retinal Degenerations and Ciliopathies</strong></td>
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<td><strong>Evaluation of a New IOL</strong></td>
<td>University of Utah Research Foundation</td>
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<td>Principal Investigators: Nick Mamalis, Liliana Werner</td>
<td>Duration: 7/1/13–6/30/14</td>
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<td>Anew Optics, Inc.</td>
<td><strong>Research to Prevent Blindness Special Scholar Award</strong></td>
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<td>Duration: 5/1/10–9/30/14</td>
<td>Research to Prevent Blindness</td>
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<td><strong>Silicone Oil in the Eye</strong></td>
<td>Duration: 7/1/13–12/31/14</td>
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<td>Principal Investigators: Nick Mamalis, Liliana Werner</td>
<td><strong>Formation and New Components of the Usher 2 Protein Complex in Photoreceptors</strong></td>
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<td>PowerVision, Inc.</td>
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<td>Duration: 3/30/09–Present</td>
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### Balamurali K Ambati, MD, PhD, MBA

<table>
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<tr>
<th>Presentation</th>
<th>Location</th>
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<tbody>
<tr>
<td>COMP-ang1 Improves Diabetic Vascular Hyperpermeability. Washington University Diabetes Research Center</td>
<td>St. Louis, MO</td>
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<tr>
<td>Raver-2 Controls Flt-1 Alternative Splicing. Troutman-Veronneau Lecture, Pan-American Association of Ophthalmology</td>
<td>Rio de Janeiro, Brazil</td>
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<tr>
<td>From Training to Clinician-science Careers. Vision Health Summit</td>
<td>Lexington, KY</td>
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<tr>
<td>Targeted Nanoparticles Inhibit and Regress CNV. International Society of Ocular Pharmaceutics and Therapy</td>
<td>Paris, France</td>
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<td>Complex Cornea Cases. Black Hills Regional Eye Conference</td>
<td>Rapid City, SD</td>
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### Alessandra Angelucci, MD, PhD

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<tr>
<td>Keynote Speaker, Corticocortical Connections in the Primate Visual Cortex: Structure and Function. Brazilian Society for Neuroscience Meeting</td>
<td>Rio de Janeiro, Brazil</td>
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<tr>
<td>Invited Speaker, Department of Morphology, Autonoma University Medical School</td>
<td>Madrid, Spain</td>
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<tr>
<td>Invited Speaker, Department of Neuroscience, University of Pennsylvania</td>
<td>Philadelphia, PA</td>
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<td>Honorary Lectureship, Department of Optometry and Neuroscience, UMIST, 2001-Present</td>
<td>Manchester, England</td>
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<tr>
<td>Seminar, The Spatial Logic of Intra-areal and Inter-areal Connections within and between Areas V1, V2, V3, and V5/MT of the Macaque Visual Cortex. Computational Neuroscience Seminar Series, Department of Mathematics, University of Chicago, 1999-Present</td>
<td>Chicago, IL</td>
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<tr>
<td>Invited Speaker Seminar, Circuits for Spatial Integration of Information in the Primate Visual Cerebral Cortex. Math Biology Seminar Series, Department of Mathematics, University of Utah, 2002-Present</td>
<td>Salt Lake City, UT</td>
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### Invited Speaker Seminar, Rewiring the Brain: Role of Afferents and Targets in the Generation of Specific and Patterned Connections. Departmental Lecture, University Laboratory of Physiology, Oxford University, 1998-Present | Oxford, England |

### Invited Speaker Seminar, Rewiring the Brain: Role of Afferents and Targets in the Generation of Specific and Patterned Connections. Department of Physiology, Consiglio Nazionale Delle Ricerche | Pisa, Italy |

### Wolfgang B Baehr, PhD

<table>
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<tr>
<td>Curing Dominant Retinitis Pigmentosa and Cone Dystrophy in Animal Models. Foundation Fighting Blindness, Moran Eye Center</td>
<td>Salt Lake City, UT</td>
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### William R Barlow, MD

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<tr>
<td>Evaluating Heat Production of Modified Phacoemulsification Handpiece, Barlow WR. American Society of Cataract and Refractive Surgery/ ASOA Symposium and Congress</td>
<td>San Francisco, CA</td>
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<tr>
<td>Innovations in Glaucoma Surgery: In Search of a New “Gold” Standard. Vincent B, Chaya C. North Star Optometry Seminars, John A. Moran Eye Center, University of Utah</td>
<td>Salt Lake City, UT</td>
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<tr>
<td>Corneal Surgery and Eye Banking in Sub-Saharan Africa. First Scientific Congress of the College of Ophthalmology of Eastern, Central, and Southern Africa</td>
<td>Kigali, Rwanda</td>
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<tr>
<td>International Outreach in Tibet. The Jorge Rodriguez, MD, MPH, Memorial Lectureship</td>
<td>Tucson, AZ</td>
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### Paul S Bernstein, MD, PhD

<table>
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<tr>
<td>Plenary Lecturer, Royal College of Ophthalmology Meeting</td>
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<td>Plenary Lecturer, International Blue Light Society Meeting</td>
<td>Tokyo, Japan</td>
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<tr>
<td>Plenary Lecturer, Macular Carotenoid Conference, Downing College</td>
<td>Cambridge, England</td>
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<tr>
<td>Keynote Lecturer, Iranian Ophthalmological Society</td>
<td>Tehran, Iran</td>
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<td>Plenary Lecturer, Gordon Conference on Carotenoids</td>
<td>Ventura, CA</td>
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<tr>
<td>Moderator, Speaker, and Poster Presenter, International Society for Ophthalmic Pharmacology and Therapeutics Meeting</td>
<td>Paris, France</td>
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<td>Macula Society Meeting, 2010-Present</td>
<td>Tucson, AZ</td>
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<td>One Platform Presentation and 4 Posters, Association for Research in Vision and Ophthalmology, 2010-Present</td>
<td>Fort Lauderdale, FL</td>
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<td>Platform Presentation, Retina Summit, 2010-Present</td>
<td>New York, NY</td>
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<td>Poster and Platform Presentation, Association for Research in Vision and Ophthalmology</td>
<td>Seattle, WA</td>
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<tr>
<td>Poster Presentation, American Society of Retina Specialists</td>
<td>Toronto, Canada</td>
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<tr>
<td>Platform Speaker, RD2010 Meeting, 2010-Present</td>
<td>Montreal, Canada</td>
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<tr>
<td>Invited Speaker and Moderator, International Symposium on Ocular Pharmacology and Therapeutics, 2009-Present</td>
<td>Rome, Italy</td>
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<td>Invited Speaker and Panelist, Hohenheim Consensus Conference, 2010-Present</td>
<td>Stuttgart, Germany</td>
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<td>Invited Speaker to Educate Russian Ophthalmologists on the Value of Nutritional Supplements for Age-related Macular Degeneration. Saint Petersburg, 2010-Present</td>
<td>Moscow, Russia</td>
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<td>Invited Speaker, Royal Ophthalmological Society, Elizabeth Thomas Age-related Macular Degeneration Symposium, 2011-Present</td>
<td>Nottingham, England</td>
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<td>Invited Speaker, Mette Warburg Annual Lecture, University of Copenhagen, Denmark</td>
<td>Copenhagen, Denmark</td>
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<td>Invited Lecturer, Institute for Chemical Catalysis and Combustion, Russian Academy of Sciences, Siberian Branch</td>
<td>Novosibirsk, Russia</td>
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<td>Invited Speaker, American Academy of Ophthalmology Retina Sub-specialty Day, 2009-Present</td>
<td>San Francisco, CA</td>
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<tr>
<td>Invited Lecturer, Ophthalmic Photographers Society, 2009-present</td>
<td>San Francisco, CA</td>
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<tr>
<td>Invited Speaker, Bascom Palmer Eye Institute, 2010-Present</td>
<td>Miami, FL</td>
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<tr>
<td>Invited Speaker, Florida International University, 2010-Present</td>
<td>Miami, FL</td>
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**Craig J Chaya, MD**

Healthy Eyes, Chaya C. Wellness Lecture Series, SDA Guam Clinic

Tamuning, Guam

**Alan S Crandall, MD**


Ayr, Scotland

Restoring Sight and Opening Eyes Towards Peace in Sudan. Alta Club; Town Club

Salt Lake City, UT

Hard Lenses with Loose Zonules in PXE Case. The ABCs of CTRs. American Society of Cataract and Refractive Surgery 2010 Winter Update, 2010-Present

Vienna, Austria


Amsterdam, Netherlands


Amsterdam, Netherlands


Amsterdam, Netherlands
<table>
<thead>
<tr>
<th>Alan S Crandall, MD</th>
<th>IOL Exchange, Crandall AS, Masket S. American Academy of Ophthalmology, Chicago 2012-Present</th>
<th>Chicago, IL</th>
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<tbody>
<tr>
<td>Complexities Encountered with Cataract Surgery in Glaucoma Patients, Crandall AS. 17th Annual Glaucoma Symposium</td>
<td>San Francisco, CA</td>
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<tr>
<td>Managing Difficult Cannulation in Canaloplasty and 360 Trabeculotomy, Crandall AS. American Glaucoma Society 23rd Annual Meeting</td>
<td>San Francisco, CA</td>
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<tr>
<td>Intraoperative Device to Stabilize the Lens. Femtosecond Lasers. Scheie Eye Institute 139th Anniversary Meeting, Perelman School of Medicine, University of Pennsylvania</td>
<td>Philadelphia, PA</td>
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<tr>
<td>Alternatives to Tubes and Trabs. Bench-to-Practice I. Bench to Practice II Crandall Video I. Crandall Video II. Video Symposium, San Antonio Ophthalmic Symposium</td>
<td>San Antonio, TX</td>
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<tr>
<td>Donnell J Creel, PhD</td>
<td>Albinism Update. Chinese National Congress of Visual Physiology</td>
<td>Chongqing, China</td>
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<tr>
<td>Scotopic Dim Blue and Red ERG Stimuli. International Meeting of ISCEV</td>
<td>Chongqing, China</td>
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<tr>
<td>Alison Crum, MD</td>
<td>Featured Speaker, Neuro-Ophthalmic Emergencies. Utah Ophthalmology Society, Summer conference for Ophthalmologists.</td>
<td>Deer Valley, UT</td>
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<tr>
<td>Margaret M DeAngelis, PhD</td>
<td>Characterizing Pathways/Mechanisms Underlying Age-related Macular Degeneration. Korean Ophthalmology Society Symposium</td>
<td>Gyeongju, Korea</td>
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<tr>
<td>A Role for Genetics of Ethnically Diverse Populations in Studying Complex Diseases. International Retinal Society Symposium, Seoul National University Hospital</td>
<td>Seoul, Korea</td>
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<tr>
<td>Update on Age-related Macular Degeneration: The Role of Vitamin D Metabolism and BMI in Women’s Eye Health. Women’s Eye Health Annual Advisory Board/Executive Committee Meeting, Association for Research in Vision and Ophthalmology</td>
<td>Seattle, WA</td>
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<tr>
<td>The Genetics of Age-related Macular Degeneration: An Overview. Symposium, Massachusetts Eye and Ear Infirmary, 2003-Present</td>
<td>Boston, MA</td>
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<tr>
<td>Characterizing Disease Pathways in Age-related Macular Degeneration: Integrated Analysis of Genetics, Gene Expression, and Epigenetics. University of Utah School of Medicine Clinical Faculty Day</td>
<td>Salt Lake City, UT</td>
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<tr>
<td>Kathleen B Digre, MD</td>
<td>Update in Internal Medicine: Headache Update 2013</td>
<td>Park City, UT</td>
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<tr>
<td>Shedding Light on Photophobia. Grand Rounds, Emory University</td>
<td>Portland, OR</td>
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<td>Name</td>
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<tr>
<td>Yingbin Fu, PhD</td>
<td>Keynote Speaker, Toward a Refined Understanding of the Biology and Genetics of Age-related Macular Degeneration. Elizabeth Thomas Seminar</td>
<td>Nottingham, England</td>
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<tr>
<td>Low Pressure Syndromes. Scottsdale Headache Symposium</td>
<td>Invited Speaker, Toward a Refined Understanding of the Genetics and Biology of Age-related Macular Degeneration. DiaxonHit and Allergan, Inc</td>
<td>Paris, France</td>
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<tr>
<td>Come Into the Light: Understanding Photophobia. The James J Corbett Lecture, University of Mississippi</td>
<td>Invited Speaker, Phenotypic Variations in Dry Age-related Macular Degeneration. Macula of Paris 2013</td>
<td>Paris, France</td>
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<tr>
<td>Yingbin Fu, PhD</td>
<td>Precise Gene Editing in Vivo. National Eye Institute Audacious Goals Development Meeting</td>
<td>Potomac, MD</td>
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<tr>
<td>Sabine Fuhrmann, PhD</td>
<td>Axin2 Disruption Causes Ocular Defects During Mouse Eye Development, Fuhrmann S, Gibbons M, Aldredge, A. Association for Research and Vision in Ophthalmology</td>
<td>Seattle, WA</td>
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<tr>
<td>Physiology and Developmental Biology Department, Brigham Young University</td>
<td>Toward a Refined Understanding of the Biology and Genetics of Age-related Macular Degeneration: Therapeutic and Diagnostic Implications. Age-related Macular Degeneration Scientific Input Engagement</td>
<td>Chicago, IL</td>
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<tr>
<td>Gregory S Hageman, PhD</td>
<td>Keynote Speaker, Toward the Development of Therapeutics and Diagnostics for Age-related Macular Degeneration and Its Co-segregating Diseases. Invited Speaker, Toward a Refined Understanding of Age-related Macular Degeneration: A New Era. European Society of Ophthalmology</td>
<td>Copenhagen, Denmark</td>
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<tr>
<td>Keynote Speaker, Age-related Macular Degeneration: Overview, Pathology, and the Complement Pathway. Keynote Speaker, Age-related Macular Degeneration: Reticular Pseudodrusen and Therapeutic Development. Keynote Speaker, Toward a Refined Understanding of Age-related Macular Degeneration: A New Era. Pathology, Genetics, Diagnostics, and Treatment of Eye Diseases</td>
<td>Toward the Development of Therapeutics and Diagnostics for Age-related Macular Degeneration and Its Co-segregating Diseases. Moran Center for Translational Medicine: Toward the Development of Diagnostics and Therapeutics for Age-related Macular Degeneration. Total Quality Management Meeting, John A Moran Eye Center</td>
<td>Salt Lake City, UT</td>
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<td>Gregory S Hageman, PhD</td>
<td>Mary Elizabeth Hartnett, MD</td>
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<td>Invited Speaker, Toward a Refined Understanding of Age-related Macular Degeneration: Therapeutic and Diagnostic Implications. University of Utah Health Sciences Council, University of Utah</td>
<td>The Role of Age-related CCR3 Activation in Choroidal ECS in Age-related Macular Degeneration. Association for Research in Vision and Ophthalmology</td>
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<td>Salt Lake City, UT</td>
<td>Seattle, WA</td>
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<td>Invited Speaker, Toward a Refined Understanding of the Biology and Genetics of Age-related Macular Degeneration: Therapeutic and Diagnostic Implications. Department of Biochemistry, Research-in-Progress Seminar, University of Utah</td>
<td>Targeted Silencing of VEGF Reduces Aberrant Intravitreal Angiogenesis in Model of Retinopathy of Prematurity. American Ophthalmological Society Annual Meeting</td>
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<td>Salt Lake City, UT</td>
<td>La Jolla, CA</td>
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<tr>
<td>Presenter, Community Groups. Various Lectures and Presentations Have Been Given to Administrators, Faculty, and Staff of The University of Iowa; Local Hospitals (including St. Luke's Hospital, Mercy Hospital, the Veteran's Administration Medical Center, and Mercy Medical Center). LifeNet, ISOPQ, Iowa Donor Network; The Iowa City Medical Examiner; Local Retirement Centers (Melrose Meadows, Atrium Village, Cottage Grove, Methwick Manor), Senior Centers/Iowa City, Amana Clubs; and Other Organizations. These are Numerous (&gt;100) and are Not Listed Individually, 1997-Present</td>
<td>Rap1 GTPase Improves RPE Barrier Integrity and Resists Choroidal Neovascularization. Macula Society Meeting</td>
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<td>Iowa City, IA</td>
<td>Dana Point, CA</td>
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<td>Various television (Channel 2 News Health Report); newspapers (Cedar Rapids Gazette, Iowa City Press Citizen); Radio (WMT Dottie Ray Show, KXIC Radio, University Hospitals Today); and interviews. Articles pertaining to research published in numerous publications, including Iowa Eye, Iowa Life Gift, and Pacemaker, 1997-Present</td>
<td>Moderator for Basic Science/Age-related Macular Degeneration and Diabetic Retinopathy. Macula Society Meeting</td>
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<tr>
<td>Iowa City, IA</td>
<td>Dana Point, CA</td>
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<td>Moderator. Arnold and Mabel Beckman Initiative for Macular Research Conference</td>
<td>Invited Speaker, Retinopathy of Prematurity: Current Clinical Management. Ophthalmology Grand Rounds, University of Louisville School of Medicine</td>
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<td>Newport Beach, CA</td>
<td>Louisville, KY</td>
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<td>Invited Speaker, Toward a Refined Understanding of the Biology and Genetics of Age-related Macular Degeneration. R24 Outcomes Meeting, National Eye Institute</td>
<td>Invited Speaker, Insights Into Recurrent Neovascularization after Anti-VEGF Treatment in Retinopathy of Prematurity. University of Utah, John Moran Eye Center</td>
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<td>Bethesda, MD</td>
<td>Salt Lake City, UT</td>
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<td>Visiting Professor, Toward a Refined Understanding of the Biology and Genetics of Age-related Macular Degeneration: Therapeutic and Diagnostic Implications. University of California</td>
<td>Retinopathy of Prematurity. Utah North Star Optometry Seminars, John A. Moran Eye Center, 2011-Present</td>
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<tr>
<td>Los Angeles, CA</td>
<td>Salt Lake City, UT</td>
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<td>Invited Speaker, Toward a Refined Understanding of the Biology and Genetics of Age-related Macular Degeneration: Therapeutic and Diagnostic Implications, Angiogenesis, Exudation, and Degeneration</td>
<td>Robert O Hoffman, MD</td>
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<td>Miami, FL</td>
<td>Visiting Professor Lecture, Retinoblastoma. Black Hills Regional Eye Institute, 2007-Present</td>
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<tr>
<td>Bryan W Jones, PhD</td>
<td>Rapid City, SD</td>
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<td>Plasticity in the Degenerate Retina. Medical College of Wisconsin</td>
<td>Milwaukee, WI</td>
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<td>Retinal Remodeling and Plasticity. National Institutes of Health, National Eye Institute</td>
<td>Bethesda, MD</td>
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<td><strong>David Krizaj, PhD</strong></td>
<td><strong>Nick Mamalis, MD</strong></td>
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<td><strong>Unorthodox Calcium Signaling in the Retina. Research Seminar, Department of Neurobiology and Anatomy, University of Utah</strong></td>
<td><strong>What Do You Know about Postoperative TASS? How to Prevent It?</strong> Mamalis N. Asia Pacific Association of Cataract and Refractive Surgeons 26th Annual Meeting</td>
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<td><strong>Molecular Mechanisms of Glaucoma. Neuroprotection in Glaucoma is Achieved by Blocking Mechanosensitive Ion Channels in Retinal Ganglion Cells. International Society for Eye Research</strong></td>
<td><strong>Capsular Bag Opacification with a New Silicone Oil-filled Accommodating Intraocular Lens, Mamalis N, Floyd A, Liu E, Stallings S, Morris C.</strong> Amsterdam, Netherlands</td>
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<td><strong>Does Mechanosensation Contribute to Pressure-induced Light Perception and Glaucoma? Ryskamp D. Research Seminar, University of Idaho</strong></td>
<td><strong>How Many Multifocal IOLs are Explanted and Why?</strong> Survey on Foldable IOLs Requiring Explantation or Secondary Intervention: 2012 Update, Mamalis N, Floyd A, Liu E, Stallings S. Pathologic Comparison of Asymmetric or Sulcus Fixation of Three-piece Intraocular Lenses with Square versus Round Anterior Optic Edges, Werner L, Ollerton A, Strenk S, Strenk L, Mamalis N. XXXI Congress of the European Society of Cataract and Refractive Surgeons</td>
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<tr>
<td><strong>Photoreceptor Calcium Signaling Downstream from the Outer Segment. The Role of Store-operated Calcium Entry in Intracellular Calcium Regulation in Mammalian Rods and Müller Glia. Presented by T. Molnar. FASEB Summer Research Conference on the Biology and Chemistry of Vision</strong></td>
<td><strong>How Many Multifocal IOLs are Explanted and Why?</strong> Survey on Foldable IOLs Requiring Explantation or Secondary Intervention: 2012 Update, Mamalis N, Floyd A, Liu E, Stallings S. Pathologic Comparison of Asymmetric or Sulcus Fixation of Three-piece Intraocular Lenses with Square versus Round Anterior Optic Edges, Werner L, Ollerton A, Strenk S, Strenk L, Mamalis N. XXXI Congress of the European Society of Cataract and Refractive Surgeons</td>
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<td><strong>No Pressure—Calcium Multitasking in RGCs. Close to Nature’s Secrets. Festschrift for David Copenhagen</strong></td>
<td><strong>Polymodal Integration of Sensory Information in the Retina. University of Arizona</strong></td>
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<tr>
<td><strong>Non-orthodox Calcium Signaling in the Retina. Department, Neurobiology and Anatomy Research Seminar</strong></td>
<td><strong>Polymodal Integration of Sensory Information in the Retina. University of Arizona</strong></td>
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<td><strong>Invited Seminar at Colorado State University, 2008-Present</strong></td>
<td><strong>Polymodal Integration of Sensory Information in the Retina. University of Arizona</strong></td>
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<td><strong>San Francisco, CA</strong></td>
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<td><strong>Invited Seminar at Colorado State University, 2008-Present</strong></td>
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<td>Robert E Marc, PhD</td>
<td>Jules Stein Annual Retreat, Keynote Speaker</td>
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<td>National Eye Institute Invited Lecturer</td>
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<td>Mark D Mifflin, MD</td>
<td>Cornea Time Preservation Study, Utah Ophthalmologic Society 34th Annual Conference</td>
<td>Salt Lake City, UT</td>
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<tr>
<td>Majid Moshirfar, MD, FACS</td>
<td>Phakic IOL: Verisyse versus Vision Lens. Change in Keratometry Over Time Following LASIK and PRK. American Society of Cataract and Refractive Surgery</td>
<td>San Francisco, CA</td>
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<td>Management of Infections and Non-infectious Inflammation after LASIK and PRK Surgery. John A. Moran Eye Center, University of Utah</td>
<td>Salt Lake City, UT</td>
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<tr>
<td>Harald E Olafsson, OD</td>
<td>Utilization of Hybrid Lenses Management of Irregular Corneas and Significant Astigmatism. Management of Astigmatism Using Contact Lenses. Treatment of Irregular Corneas with Contact Lenses. King Fahd Cultural Center</td>
<td>Riyadh, Kingdom of Saudi Arabia</td>
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<td>Case Studies in Clinical Contact Lens Care. Utah Optometric Association Annual Convention</td>
<td>Midway, UT</td>
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<td>Contact Lenses a,b,........to z. Northstar Regional Optometric Symposium, University of Utah, John A. Moran Eye Center</td>
<td>Salt Lake City, UT</td>
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<td>Randall J Olson, MD</td>
<td>Tullos O. Coston Lecturer, Why are 20/20 Patients Still Unhappy after Cataract Surgery? Dean McGee Eye Institute, University of Oklahoma</td>
<td>Oklahoma City, OK</td>
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<td>Dean McGee Eye Institute Lecture, What Resulteth From a Minor Phaco Tip Change? University of Oklahoma, Department of Ophthalmology</td>
<td>Oklahoma City, OK</td>
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<td>Speaker, Pseudophakic Dysphotopsia. Session Moderator, Complicated Cases in Cataract Surgery. Hawaiian Eye Symposium</td>
<td>Kona, HI</td>
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<td>What Bothers Patients after Successful Cataract Surgery? University of California San Diego, Shiley Eye Center</td>
<td>San Diego, CA</td>
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<td>What Outcomes Really Matter after Cataract Surgery? Jules Stein Eye Institute, University of California, Los Angeles Department of Ophthalmology</td>
<td>Los Angeles, CA</td>
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<td>Invited/Visiting Professor, A Lesson in Pursuit of New Understanding via Clinical Research. University of Iowa Carver College of Medicine, Department of Ophthalmology Research Day</td>
<td>Iowa City, IA</td>
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<td>Jeff Pettey, MD</td>
<td>Effective Communication During Patient Encounters. Residence Lecture, John A. Moran Eye Center</td>
<td>Salt Lake City, UT</td>
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<td>Kigali, Rwanda</td>
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<td>Himalayan Cataract Project. RANZCO Annual Congress, 2012-2013</td>
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<td>Melbourne, Australia</td>
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<td>Impossible Dreams: Everest and Eradicating World Blindness. UCLA Health, David Geffen School of Medicine</td>
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<td>Conversation with Dr. Geoff Tabin. White Cap Summit, White Cap’s Annual Dental Conference</td>
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<td>Yale Eye Center. Connecticut Society of Eye Physicians</td>
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<td>Farmington, CT</td>
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<td>Haibo Wang, MD, PhD</td>
<td>Activation of Rap1 Prevents Tumor Necrosis Factor Alpha-induced ROS Generation in RPE, McCloskey M, Witchen ES, Hartnett ME. Association for Research in Vision and Ophthalmology</td>
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<td>Liliana Werner, MD, PhD</td>
<td>Development and Characteristics of a New IOL Material. 36th Simpósio Internacional Moacyr Álvaro</td>
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<td>São Paulo, Brazil</td>
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<td>Speaker, Panelist, Moderator, Annual Meeting of the American Society of Cataract and Refractive Surgery</td>
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<td>Poster, Light Transmittance of Explanted Hydrophobic Acrylic Intraocular Lenses with Surface Light Scattering. The Association for Research in Vision and Ophthalmology</td>
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<td>Development and Characteristics of a new Hydrophobic Acrylic IOL Material. II Curso de Actualización en Oftalmología, Sociedad Mexicana de Oftalmología</td>
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<td>Speaker, Panelist, Moderator, Annual Meeting of the European Society of Cataract and Refractive Surgery</td>
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<td>Amsterdam, Netherlands</td>
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<td>Marielle P Young, MD</td>
<td>Interpreting Letters from Pediatric Ophthalmologists. Utah Chapter of the Association for the Education and Rehabilitation of the Blind and Visually Impaired, Division of Services for the Blind and Visually Impaired</td>
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<td>Diagnosis and Management of Infantile Cataracts. Pediatric Grand Rounds, Utah Valley Regional Hospital</td>
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<td>Ophthalmic Findings in Pediatric Patients who Warrant Further Work-up. Utah Ophthalmology Summer Program</td>
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