

John A. Moran Eye Center

University of Utah Health Care

FOCUS

Eyes, Windows to Your Future Health

Vision research leading to medical treatments and cures



Biological Systems of the Body



The genome includes all the genetic information found in an organism. The 13-year-long Human Genome Project (completed in 2003) provided a complete and accurate sequence of the three billion DNA base pairs that make up the human genome, and identified tens of thousands of human genes.

A transcriptome represents that small percentage of the genetic code that is transcribed into RNA molecules—estimated to be less than 5 percent of the genome in humans. Different cells show different patterns of gene expression. By studying transcriptomes, researchers hope to determine when and where genes are turned on or off in various types of cells and tissues.

The proteome is the entire set of proteins that is expressed by our genome. Proteins are the workhorses in our bodies, performing most of our primary cellular functions. The proteome is larger than the genome, in the sense that there are more proteins than genes. This is due to alternative splicing of genes and post-translational modifications.

The metabolome is the complete set of small-molecule metabolites (such as metabolic intermediates, hormones and other signaling molecules, and secondary metabolites) that are found within a biological sample, such as a single organism. Like the transcriptome and the proteome, the metabolome is dynamic, changing from second to second.

The connectome is a map of all neural connections, allowing us to understand our senses, thoughts, motions, emotions, and their disorders. Tools required to visualize these complex connections have not existed until recently. In 2009, the Marc Laboratory at the Moran Eye Center acquired the world's first complete connectome with a high enough resolution to see the smallest of connections between neurons. We're documenting this 18TB volume and already refining our understanding of retina and neural connectivity.

"Omes" & "Omics"

Your cellular and molecular biosystems

Almost everyone is familiar with the 13-year-long Human Genome Project, completed in 2003. A genome is the total amount of genetic information in the chromosomes of an organism, including its genes and DNA sequences. The Genome Project created the first comprehensive map of our genetics and our human biological system. This project made commonplace a research category called genomics. But did you know there are at least four additional "omes" or "omics" that are widely recognized by researchers today? They are called the transcriptome, the proteome, the metabolome, and the connectome. There's even a peer-reviewed journal dedicated to these biosystems and the projects they've generated. It is called, *Omics: A Journal of Integrative Biology*.

"We are stardust, we are golden, we are billion year old carbon"—Joni Mitchell

The study of these cellular and molecular biological systems has only been possible for about two decades with the onset of faster, larger, and less expensive computers, and more sophisticated instruments and equipment that allow us to examine and map smaller and smaller levels of the "stardust" that makes up our bodies. In this issue of the Moran FOCUS Annual, you will discover that the research team at the Moran Eye Center is on the leading edge of shaping and using these new "omics."



Genome

Transcriptome

Proteome

Metabolome

Connectome

2-hydroxyglutarate
Citrate

sorbitol

pyrophosphate (PPi)

guanosine 5'-monophosphate (GMP)
Acetyl CoA

FOCUS

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For more information about the Moran Eye Center, visit our website: www.moraneyecenter.org, or visit the Moran Facebook page, www.facebook.com/moraneyecenter.

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International

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Advisory



Has it Been Five Years Already?

It seems like only yesterday when we moved from the first Moran Eye Center to our present state-of-the-art facility. At the grand opening ceremony of our new building in August 2006, when we officially grew from 84,000 to 210,000-square feet, I thought our space requirements were solved for many years to come. But once again, we're bulging at the seams. Doctors are sharing offices, research laboratories are overlapping, and we're storing supplies in rental sheds again.

We are so grateful.

Our patient care, research, academic education, and local and international outreach programs continue to grow and make a difference in the lives of people with blinding eye diseases at home and around the world.

PATIENT CARE

In this issue, we look at the support programs that take us to a world-class level of care. You can read about our award-winning pharmacy team providing custom, specialized prescriptions that might not be found in many pharmacies. Dr. Julia Kleinschmidt celebrates the founding of our pioneering Patient Support Services program. Thousands of low-vision patients have transitioned to productive and rewarding lives as a result of Julia and her wonderful program. Finally, day in and day out, our ophthalmic imaging and videography experts provide stunning, tack-sharp images that assist our specialists with precise assessments of our patients' conditions.

RESEARCH

We're building 37,000 additional square feet of laboratory space this year to make more room for our new researchers and to expand our Center for Translational Medicine. As you'll read in this issue, Drs. DeAngelis and Hartnett bring valuable knowledge and skills to our renowned retinal research team. Both of these women are leaders in their areas of specialty.



EDUCATION

In the education section of this *FOCUS*, we highlight our graduating and incoming classes of residents and fellows. We've featured one of these doctors in particular, a marine, who found his calling to help those with vision loss while serving his country.

OUTREACH

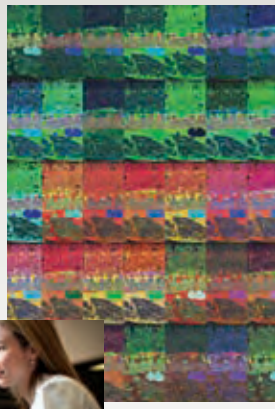
I was touched this year when Dr. Alan Crandall told us of a young boy in Ghana, Africa, who after receiving the gift of sight from Dr. Crandall, put his arms around him and said, "You are my brother." Only a child could so clearly describe the international implications of Moran's humanitarian missions. And for close-to-home outreach, be sure to read about Dr. Majid Moshirfar and the Maliheh Free Clinic in Salt Lake City, supported by Utah philanthropist Khazrow Semnani.

The breadth and services offered by the Moran Eye Center become larger and more dynamic every year. And when we build another building and it becomes overcrowded with patient care, research, education, and outreach in the next five years, you'll hear me saying once again:

We are so grateful.

Dr. Randy Olson

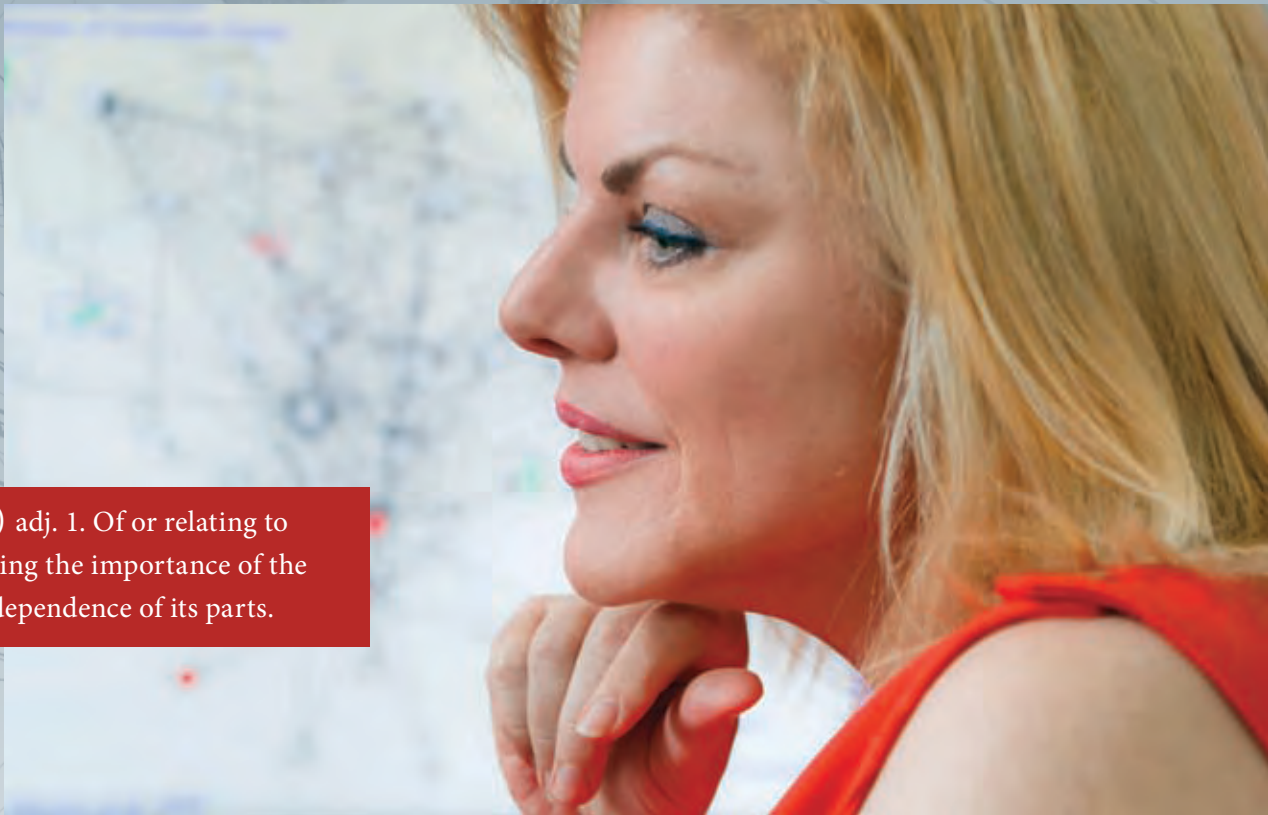
RANDALL J OLSON, M.D.
Professor and Chair of Ophthalmology
CEO, John A. Moran Eye Center



It started off like a child keen on crossing a river, focused on jumping from one rock to another. Those first jumps propelled by curiosity, several more jumps prompted by timely encouragement from others, and then eventually pure determination and passion: This river will be crossed.

TRACKING A CURE FOR **AMD**

From Harvard to Moran, Dr. DeAngelis Takes on one Patient at a Time



ho·lis·tic (h-lstik) adj. 1. Of or relating to holism. 2. Emphasizing the importance of the whole and the interdependence of its parts.

Dr. DeAngelis is carrying out scientific research involving 4 of the 5 “omes” or “omics” described and illustrated on the cover and inside cover of this issue of FOCUS. Much of her work involves studying the genetic makeup of the eye and eye tissue found in **the genome**, but it goes much farther than that. By analyzing the genetic code transcribed into RNA molecules **the transcriptome** is revealing where genes are turned on or off in various types of cells and tissues. She is also uncovering specific proteins, found in **the proteome** that are key factors in AMD and related diseases, and detailed links in **the connectome** are illuminating special connections and signals between neurons in patients with and without macular degeneration.

John A. Moran Eye Center scientist Meg DeAngelis, Ph.D., seems not far from reaching the opposite bank of this river, allowing her a view of the many currents of research—much of it from her lab— that will have advanced her quest in finding treatments and even cures for Age-Related Macular Degeneration (AMD). In her first year since moving to the Moran Eye Center as an associate professor, she has already made important leaps with half a dozen published papers revealing seminal discoveries vital to combating this blinding disease that is the most common cause of severe vision loss in people over age 50 in developed countries.

There is a sense of urgency. By 2020 some 2.9 million Americans are projected to have advanced AMD. Eventually, Dr. DeAngelis could be among those affected; a genetic disease, AMD runs in her family.



Finding Science, Discovering Blindness

As a child, Dr. DeAngelis recalls “free reign” in the kitchen on Saturday mornings mixing and measuring a mélange of ingredients to create a “cure for cancer.” It had nothing to do with baking. Her science-minded grandparents played a key role in her childhood (she is the oldest and only daughter), helping her mother raise four children on her own. While her grandfather worked for the Manhattan Project as an engineer, her grandmother “played” science with Dr. DeAngelis, helping her create two award-winning science fair projects in the 5th and 6th grade; one showed the effects of smoking on the body, and the other involved the cardiovascular system. Her curiosity in science and its power to help others gained a strong foothold.

About the same time, she recalls a blind gentleman visiting her first-grade class. As he spoke to the students about the challenges of being blind, the man’s assistant picked little Meg up and said, “This girl has the biggest blue eyes, so much like yours.” “This made an impact on me. I had never met a blind person, and I could not imagine not being able to see,” recalls Dr. DeAngelis, whose blue eyes convey both intensity and kindness. “I also decided then that I wanted to help people like him.”

tracking a cure

Building A One-of-a-Kind Database

Dr. DeAngelis’ childhood experiences help explain why in 1995, she ended up doing graduate work in New Orleans with the Cajun population of Southwest Louisiana, an area notorious for babies born profoundly deaf and with an onset of blindness by the age of 20. “When I asked them if there was one sense they could have back, they always wanted their vision,” remembers Dr. DeAngelis. It was about this time that her aunt was diagnosed with AMD— a disease for which there was a strong genetic component, but little was known about what genes influenced the disease.



Before graduating from Louisiana State University Health Sciences Center in 1999 with a Doctorate in Neuroscience, Dr. DeAngelis was awarded her first National Institute of Health grant to investigate whether there was a gene responsible for AMD. Heading east, she pursued a fellowship in this area at Harvard Medical School’s Molecular Basis of Eye Disease Program, laying the groundwork for much of her future research.

Patient by patient, Dr. DeAngelis created a one-of-a-kind and extremely instrumental database for AMD research—imagine figuring out a complex crossword puzzle and all the “across” words are now

plugged in. Since 2000, Dr. DeAngelis has been collecting genetic and environmental information on some 800 AMD patients and respective siblings who did not have the disease.

Called a “discordant sibpair” method, Dr. DeAngelis and her fellow researchers are figuring out what is protecting some people from the disease, while causing it in others within the same family. She has several cohorts located around the world to study sibpairs and the severity and progression of AMD, including groups in Utah, New Zealand, Greece, Nepal, and Timor.

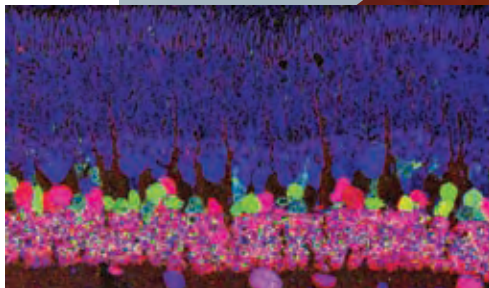
“I wanted to study something that was a great burden to society and do something about it in my lifetime,” expresses Dr. DeAngelis. For 10 years, she worked beside clinicians and then contacted patient’s relatives to develop an AMD-family study population. “That is how I made my mark.” Initially discouraged to pursue such an endeavor (in most sibpair studies, both siblings have the disease), Dr. DeAngelis disregarded the “impossibilities” and ploughed ahead. Admitting that it was a challenge considering most AMD-affected patients are elderly and their siblings may not be living or of sound mind. She fondly recalls a sibling pair, fraternal brothers in their eighties at the time, who would stop by and visit Dr. DeAngelis at her lab.

Taking Her Research to A New Level at the Moran Eye Center

At Moran, she has taken her research a step further to pinpoint disease causality by showing key genes involved in AMD. Her research team identified a novel gene known as RORA that protects against the development of AMD; it is a gene that interacts with other known AMD—genetic risk factors, allowing for tangible targets for drug therapies to prevent, slow down, or cure the disease.

Meticulously phenotyped (documented to show environmental and genetic characteristics), Dr. DeAngelis’ database is being studied in combination with the database of information collected by Moran’s Dr. Greg Hageman. Dr. Hageman directs the Moran Center for Translational Medicine (CTM) and has assembled the world’s largest collection of donated eyes for research. These two databases combine to provide a formidable front against AMD. Securing the epidemiology history (i.e., smoking, sunlight exposure, migraines, cardiovascular history, etc.) coupled with the DNA clues researchers continue to open up doors into more discoveries. “If we had not gathered the environmental info such as sun-light exposure, our biggest source of Vitamin D, we would not have discovered the genetic variants in the Vitamin D pathway that is associated with AMD risk,” explains Dr. DeAngelis.

By establishing a link between genetic variation in Vitamin D metabolism and AMD, Dr. DeAngelis’ research shows that people with higher levels of this vitamin are protected against AMD. She realized that some of the genes that are in the pathways (the network of interacting genes) are somehow related to the formation of blood vessels in our eyes. (The abnormal formation of vessels in the eyes is what makes people go blind from AMD.)





“But I was convinced the collegiality and collaboration here made this the best place to be in order to find a cure for this disease.”

A Persistent Detective; No Blind Alleys

A tough investigator in reviewing published research, Dr. DeAngelis feels too many published findings are weak in science and a “rush to judgment” is apparent. She is strict with her own findings, unyielding in her analysis. “It has to be able to be replicated again and again and able to be applied globally to other populations,” she says. “I want to have that feeling of, ‘My God, I have something here that can really help others.’”

“She is a true scientist” acknowledges her husband Michael Feehan, CEO of a medical research/consulting company and a former clinical psychologist and assistant professor at Harvard Medical School. “Meg doesn’t go down blind alleys. If the research and science doesn’t look like it’s panning out, she acts like a detective, sees where it went wrong, and then moves on to a more productive area.”

To foolproof her findings, Dr. DeAngelis targets the problem from different lines of evidence (e.g., analyze the DNA, the RNA, the epidemiology) to see if the evidence supports the findings—a bit like cross-examining a witness. “This is called genomic convergence and is used all the time in studying cancer, so I figured why not do this with AMD?”

Moving From Harvard to the Moran Eye Center, Why?

“It was a tough decision,” admits Dr. DeAngelis when she was recruited to the Moran Eye Center from her assistant professorship at Harvard. “But I was convinced the collegiality and collaboration here made this the best place to be in order to find a cure for this disease.”

Emphasizing the collaboration available, she rattles off the U’s Department of Genetics, School of Pharmacy, Huntsman Cancer Institute, as well as the ability to pop into a colleague’s office across the hall and say, “comehere, take a look at this.” “I’ve been here one year and have accomplished more than ever because of the environment and support here,” says Dr. DeAngelis.

collaboration

Greg Hageman, Ph.D., who recruited Dr. DeAngelis along with Moran CEO and Department Chair Randall J Olson, M.D., recognized her multi-disciplinary background (neurology, statistics, genetics, biology) as unique and an asset for Moran's aspirations to develop a therapeutic treatment for AMD. "I had been looking for someone to bring on to our research team and Meg, hands down, stood above the rest," says Dr. Hageman.

"It is just about impossible to get anything done these days unless you are part of a team, and for Meg to achieve her grand aim of finding a cure for AMD in her lifetime, Moran provided a top-down culture of team support and mutual respect," points out Dr. Feehan, who encouraged his wife to make the jump to Utah. She also picked up on the passion and enthusiasm for science at Moran. "That kind of energy is contagious and motivates people to do sound work and fits in with Meg's own infectious passion for what she does," adds Dr. Feehan.

Empowering and Ensuring Future Scientists

"You've got to train the next generation—especially in academics. You have to want to mentor," says Dr. DeAngelis, who has held her own in an area of science often dominated by men. She knows the power of her own mentors on her career and takes on this role for others with as much commitment as she brings to her research.

"Meg is the best mentor I've ever had in over 12 years of study at a University level," says Silvia Smith, Ph.D., a post-doctoral fellow. "She is available and willing to invest energy and effort in me and others in the lab. Being supportive is part of her personality," adds Dr. Smith, who recalls Dr. DeAngelis paying for her to attend an important conference and then introducing her to key people over four days.

"She sets an example for me as a woman in the sciences," says Dr. Smith, describing Dr. DeAngelis as a brilliant scientist in both her intellect and creativity. "She is outgoing and determined and will do whatever she needs to do to make things happen. She not only has great ideas, but she comes up with interesting questions for relevant problems and finds a way to accomplish it all."

Dr. DeAngelis' lab is filled with women, partly because they are attracted to the positions in her lab but also because she feels that too many women stop pursuing a career in science after getting their Ph.D., "I think this is due to a lack of mentoring."

Spearheading Future AMD Drug Therapies

Milking her cohort of sibpairs yet again, and in partnership with her husband who consults with pharmaceutical companies, they've discovered a potential springboard into creating targeted AMD therapies for drug companies using cluster analysis. Dr. DeAngelis promotes clustering groups with common traits (i.e., high cholesterol and hypertension or smokers and genetic risk factors) and developing a drug targeting a particular population profile. "It is a good way to use genetic and environmental factors to stratify your risk population," she explains.

"A lot of drugs fail because they are thinking of the diseased population as a whole, not in segments. You have a better chance of finding the appropriate therapeutic target and intervention when you cluster populations." It also allows clinical trials to be designed more effectively to find a successful drug.

Dr. DeAngelis seems to have a sixth sense for what will succeed. She hones in on her students strengths and guides them down a road likely to lead to more success. Her rapport with people brings out the best in them, allowing for additional collaboration and commitment benefiting her research. "She'll come into the lab with some idea that no one else is doing, and we're wondering where did this come from, then two to three months down the line, it becomes apparent that this is science that needs to be happening," says Margaux Morrison, who has done research in Dr. DeAngelis' lab for six years as a undergraduate and now as a graduate student. "She is always ahead of the game." This ability may propel her in that final leap across the river, resulting in treatments and even a cure for AMD.

"You've got to train the next generation—especially in academics. You have to want to mentor..."

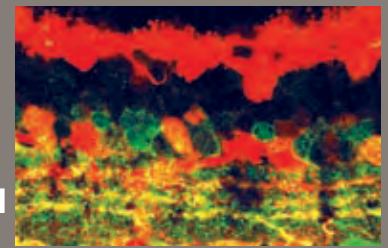


mentor

teamwork

Research

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SPECIALTY
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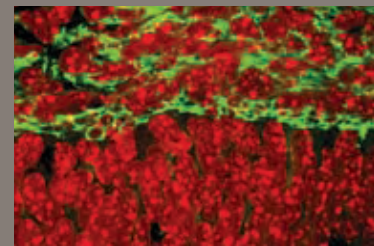


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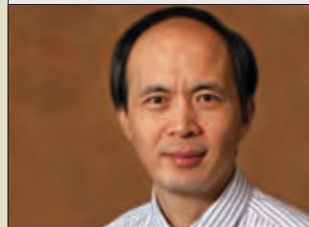
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Jun Yang, Ph.D.
Assistant Professor, Ophthalmology and Visual Sciences.

SPECIALTIES
Cell Biology of Photoreceptors and Retinal Diseases



When a Pharmacy is More Than a Pharmacy

*BEHIND THE SCENE ROLE OF THE
MORAN PHARMACISTS IN CARING FOR YOUR EYES*

When the Food and Drug Administration removed the intravenous medication EDTA from the market, due to safety concerns, it had an unexpected outcome for patients at the Moran Eye Center. Patients suffering from Band Keratopathy (calcium deposits on the cornea) lost their only method to dissolve these painful deposits. Although problematic when used intravenously, when used to treat eye conditions, EDTA has no harmful effects.

Moran's eye specialists turned to the center's pharmacists for a solution. Marianne Jensen, Pharmacist in charge, called the University Health Center's Drug Information Service (an invaluable resource for her) and told them the problem. Research revealed a published "recipe" that would allow Marianne and her team to compound (mixing of drugs) to recreate these eye drops.

Not long after, a patient who had undergone surgery for this condition showed up at the Moran pharmacy. "The doctor told her about our role in making her treatment possible, so she came down to thank us and to give us a big hug," recalls Jensen, who is in scrubs and sits perched on the edge of a chair, prepared to jump up at a moment's notice. Her shift is over and it is one of the few times she's had a chance to sit for more than a brief moment all day.



When dispensing medication, the compassionate and thorough counseling Moran Eye Center pharmacist Urvi Pandya imparts to her patients caught the eye of University of Utah Physicians who nominated her for a national award. Pandya received the 2011 One to One Patient Counseling Award by the American Pharmacists Association for her expertise in this area resulting in better health and improved outcomes for patients. One of the anonymous nominators stated, “We’re seeing 100 percent patient compliance rates due to good counseling, and better outcomes by her willingness to go above and beyond to help patients.”

Pandya also works in the University Hospital’s Outpatient Pharmacy Services providing medication therapy management with post-operative Orthopedic Trauma and Surgical Patients, as well as the Outpatient Pharmacy. “Her knowledge base is tremendous and this lends itself to excellent counseling for our patients,” says fellow Moran pharmacist Marianne Jensen.



Compassion



“Because patients who have had vision correction or cataract surgeries often give us a big smile and say, ‘Hey, I can see you!’ ”



One-On-One Pharmacy Care—Know Us by Name

PHARMACISTS:

Marianne Jensen, PharmD, BCPS
Barbara Olchek, RPh
Urvi Pandya, PharmD

TECHNICIANS:

Nikki Brice, CPhT
Bahar Goldareh, CPhT

Compact and even cozy, every inch of Moran's pharmacy is systematically organized; hundreds of medications, mostly eye drops, line shelves in tiny colored bottles. The staff of five (three pharmacists and two technicians) navigate this small territory with ease and efficiency and know their regulars by name.

For most patients, the pharmacy is the last stop in their continuum of care; however, few realize the crucial behind-the-scenes role this specialized pharmacy plays long before a patient is discharged.

Before each day begins, the staff compounds all the necessary drugs needed for scheduled surgeries that day. They remain on call in case a specified medication is suddenly requested

during surgery. Throughout the day, they will fill 80 to 100 prescriptions. Most patients leave with two to three different prescribed eye drops. Marianne describes a typical day: "Demands are coming at us from multiple directions every day; from the minute we walk in the door until we leave, it is hopping. All of our efforts are aimed at obtaining the best possible outcomes for our patients."

"We may be the only place in the Intermountain West to provide certain specialty compounds," points out Jensen, who holds up a dog-eared and worn-soft book that is clearly the "bible" when it comes to compounding. She recalls a patient with an eye injury who needed some eye drops that were not available commercially. Using information from the book, they were able to use an IV medication to "recreate" the eye drops. "Our doctors can request specialty drugs

they've seen documented in medical literature as well, although everything goes through a strict approval process by the hospital prior to dispensing," adds Jensen.

The rapid evolution of medications requires staff to keep clinics updated on changes, new medications, and the discontinuation of drugs. They also coordinate all prescription processing through the insurance companies, saving patients time and hassle. At last, when the pharmacy staff is face-to-face with patients, they counsel each one on their medications—how to use, what to expect, concerns, etc. "This is one of our favorite moments," says Jensen, "because patients who have had vision correction or cataract surgeries often give us a big smile and say, 'Hey, I can see you!'"

*"Demands are coming at us
from multiple directions every day;
from the minute we walk in the door
until we leave, it is hopping. All of our
efforts are aimed at obtaining the
best possible outcome for our patients."*



Ophthalmic Imaging and Videography Department

Art and Science

Capturing Sight

Have you ever imagined what your eyeball looks like, or the intricate mechanisms that help it process the world you see? The medical imaging specialists at the Moran ophthalmic imaging and videography department use technology, photography, art, medicine, and science to create pictures and videos of the inside and outside of the eyeball every day. The images are stored in an electronic database where they can be accessed and 'studied' by the physician in the exam lane while they 'study' your eyes. These images can be viewed from different angles, sent to other doctors or departments, or safely saved and stored for future use, all of which is an essential aid for treating everything from low vision to blinding eye diseases.

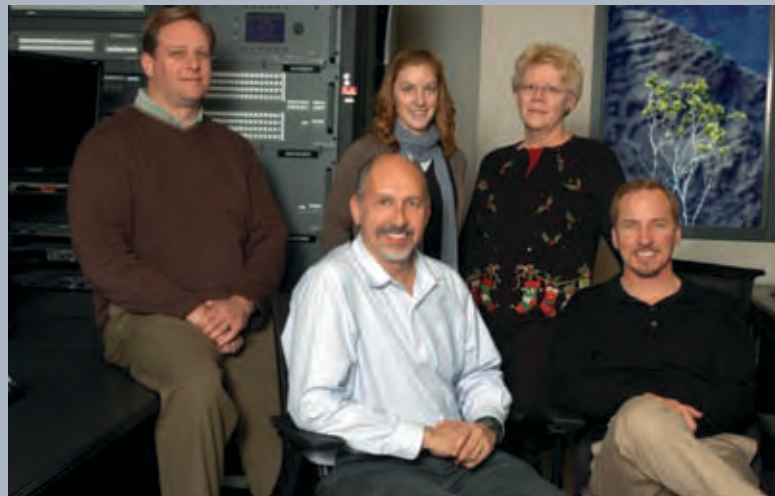
Some of the tests performed at Moran include spectral domain optical coherence tomography (OCT, which is a scanning laser procedure), auto fluorescence, blue reflectance, infra red, color fundus photography, ICG and fluorescein angiography, slitlamp biomicrography, gonioscopy and external photography. These tests reveal such things as fluid in the retina, retinal nerve fiber density, and thicknesses of the retina and optic nerve. The tests can also show changes in your eye from one visit to the next, down to the level of microns!

“The Moran imaging department collectively has more than 73 years of ophthalmic imaging experience.”

Movies of every surgery

Moran's Ophthalmic imaging team also provides the latest advancements in videography by capturing every surgical procedure, by assisting the research department to create images for clinical trials, and by creating videos that document research projects. Video cameras are connected to each surgical microscope in our surgery suites, allowing Moran doctors, fellows, and residents to review the stored videos of surgeries performed here at any time.

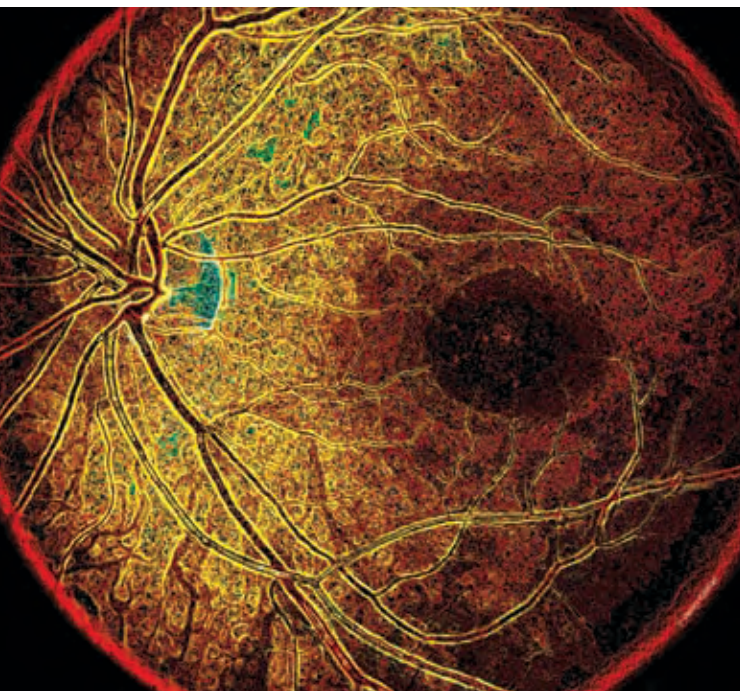
The Moran imaging department collectively has more than 73 years of ophthalmic imaging experience. The photographers have all earned the title of Certified Retinal Angiographer (C.R.A.) from the Ophthalmic Photographers' Society.



Standing: Glen Jenkins, CRA, Cyrie Fry, CRA, OCTC, Paula Morris, CRA, FOPS Seated: Jim Gilman, CRA, videographer Randal Miller, BA.

Jim Gilman *We've come a long way*

Jim Gilman, project manager for the Moran imaging team, describes how he came to this highly specialized occupation.



“I was in college studying biomedical communications and I thought, wow, here's a degree program that combines my interests in biology with photography. As a part of the curriculum, I worked for a hospital-based photography department at Duke University. I was shooting slides of procedures from open heart surgeries to brain surgeries and loving every minute of it! I rotated to the eye center. It was there, on the spot, that I decided this was the direction I wanted to take. Shortly after I was hired by the Duke Eye Center as an ophthalmic photographer. The field continues to evolve with new state-of-the-art technologies. We used to shoot over 40 rolls of slide film a day and hand process black and white angiograms. Now we can produce a 20-slice 3-dimensional image of the retina in 10 seconds. We have come a long way!

The imaging team can colorize photos for clarity, emphasis, and art

Jim Gilman Ophthalmic Imaging

The Moran Patient Support Services Program

CELEBRATING 20 YEARS OF COMPASSION AND ASSISTANCE

“It is not miserable to be blind; it is miserable to be incapable of enduring blindness.”—Milton, John

Dr. Julia Kleinschmidt, founder and director of the Moran Eye Center Patient Support Services Program, helps people to be capable of enduring blindness. In fact, July 2011 marks the 20th anniversary of the Moran Eye Center Patient Support Services Program. This was a pioneering program in 1991. The Moran Eye Center was the first academic vision center in the United States to employ a full-time counselor specializing in the psychological challenges of vision loss.



Dr. Julia J. Kleinschmidt

For more than two decades, Moran patients have had a strong advocate on their side. Dr. Julia J. Kleinschmidt continues to be a source of comfort and inspiration for countless patients and their families. She helps patients deal with one of the most difficult aspects of vision loss—the mental and emotional turmoil they go through when sight is suddenly taken or when they learn they have a blinding eye disease that will eventually cause them to lose their vision over time.

Dr. Kleinschmidt came to the Moran Eye Center while she was pursuing her Ph.D.; she was interested in how people respond to a visual disability. In the ensuing years, she has established her reputation as one of the world’s experts on the psychosocial impacts of vision loss.

Dr. Kleinschmidt says that the psychosocial reactions to vision loss are issues often neglected. They can leave visually-impaired people and their friends and families unprepared. “Counseling and group interaction provide encouragement, examples of success, and the feeling you’re not alone,” says Dr. Kleinschmidt. “It has been shown that early interventions can be critical in vision loss. Patients often react with denial, anger, fear, grief, hurt, rejection, abandonment and/or the fear of these things if the vision loss is gradual. In many cases, without guidance, the potential for isolation, depression, and dependence is great.

Dr. Randall J Olson, CEO of the Moran Eye Center, pays tribute to Dr. Kleinschmidt: “I consider Julia to be a true friend and mentor. She brings a message of hope and optimism to her patients, declaring whenever and wherever she can that they will live a full and productive life regardless of their situation. I’ve heard her tell many patients with calm assurance, regardless of their level of vision loss, that they ‘can do everything except drive and be an astronaut.’ Julia has followed and encouraged many of our pediatric patients with vision loss throughout their lives and into their adulthood. Many of us at Moran consider her our Mother Teresa in that she is supportive of any element of heartbreak, heartache, discontent or concern that exists in the lives of our patients, their families, and even in the lives of our faculty and staff. If there is any grieving or personal condition, she is there to give support. It is hard to describe how critical this fantastic person is and the level of support she gives to our sense of being at Moran. It would be impossible for anyone other than those who work with her to understand what an amazing role she plays in the positive rehabilitation and can-do attitude of our patients.”

“Congratulations” and a heartfelt “thank you” to Dr. Kleinschmidt for 20 years of success.

About the Moran Patient Support Services Program

Dr. Julia J. Kleinschmidt works with patients, their families, and community resources to provide customized support for those confronting the reality of vision loss. Dr. Kleinschmidt, Clinical Professor in the Department of Ophthalmology and Visual Sciences at the Moran Eye Center, is also Faculty Associate in the Department of Special Education where she teaches a class on the psychosocial implications of visual impairment. She presents annual guest lectures at the University of Utah's Center on Aging. Dr. Kleinschmidt has a Masters Degree in Social Work and is a Licensed Clinical Social Worker, with a Ph.D. in Health Education.

Dr. Kleinschmidt developed and directs the ophthalmology-based Patient Support Program for people with visual impairment and their families. Services include the following: crisis counseling, information and referral services, support groups, and the Orientation to Vision Loss Program. Dr. Kleinschmidt has conducted research and is published in professional journals including: *Journal of Visual Impairment and Blindness*, *Journal of Health Education*, *Journal of Neurology*, and *The Gerontologist*.

Dr. Kleinschmidt is also the author of the book *"The Impact of Vision Loss in the Elderly."* Dr. Kleinschmidt has presented papers and lectures at prominent universities and events across the United States, and in Israel, South Africa, Canada, Sweden, and England.

Services offered through the Patient Support Program include the following:

- **Orientation to Vision Loss Program:** This is a 2-hour orientation held once a month for recently visually-impaired individuals and their families. Topics include how to use remaining vision optimally, adjustment strategies, and resources available to help.
- **Supportive Counseling:** For individual patients and/or their families, this is an opportunity to better understand and deal with the emotional responses to the vision loss and to encourage and support the adjustment process.



Analea Garbett

A support group touch—tour of the Utah Museum of fine Arts.



Bernice Ballard

- **Support Groups:** These group meetings are offered at no charge. They present an opportunity to share experiences with others in the same situation and to give and receive encouragement and support. The groups include a VIP Group (for retired persons with visual impairment) and individual support groups for patients with ataxia and pseudotumor cerebri.

For more information about patient support services call or write:

DR. JULIA KLEINSCHMIDT

John A. Moran Eye Center, University of Utah

65 Mario Capecchi Drive

Salt Lake City, Utah 84132

801-585-2213, julia.kleinschmidt@hsc.utah.edu



Julia and Bill Kleinschmidt and Deborah Harrison experiencing blindness at the Love is Blind fundraiser for the Utah Foundation for the Blind.

Ophthalmologists

MORAN'S OPHTHALMOLOGISTS



CEO of the John A. Moran Eye Center

Randall J. Olson, M.D., Chair of The Department of Ophthalmology and Visual Sciences, and CEO, 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 intra-ocular lens complications, tele-ophthalmology and corneal transplantation techniques. He was selected as one of the *15 best cataract surgeons in the United States* in a peer survey conducted by *Ophthalmology Times*. *Cataract and Refractive Surgery Today* named Dr. Olson as one of 50 international opinion leaders. He has appeared in the last three editions of *Best Doctors in America*.

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

- *Corneal and External Eye Diseases*

Doctors in Alphabetical Order



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

SPECIALTIES

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



Richard A. Aldous, M.D., is a general ophthalmologist who treats emergent and urgent eye problems in the Triage Clinic at the Moran Eye Center, University of Utah location. He is interested in all aspects of ophthalmology and has a special interest in teaching medical students, interns, and residents.

SPECIALTIES

- *Comprehensive Ophthalmology*
- *Triage Clinic*



Paul S. Bernstein, M.D., Ph.D. 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*



Alan S. Crandall, M.D., focuses on the medical and surgical management of glaucoma and cataracts. Dr. Crandall has experience with trabeculectomy and laser cyclophotocoagulation. He is involved in numerous clinical research studies at the Moran Eye Center. Dr. Crandall is also the Director of the Medical Education Program. He lectures throughout the world and was selected by *Cataract and Refractive Surgery Today* as one of *fifty international opinion leaders*.

SPECIALTIES

- *Cataract Services*
- *Glaucoma*



Kathleen B. Digre, M.D., specializes in neuro-ophthalmology. She 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) on the internet at <http://Novel.Utah.edu>.

SPECIALTY

- *Neuro-Ophthalmology*





David C. Dries, M.D., 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. He has special interest in amblyopia, esotropia, exotropia, retinopathy of prematurity, retinoblastoma, infant and childhood cataracts, and nasolacrimal duct obstruction.

SPECIALTIES

- *Pediatric Ophthalmology*
- *Adult Strabismus*



R. Michael Duffin, M.D., practices comprehensive ophthalmology, specializing in cornea and external eye diseases. He joined the Moran Eye Center after 22 years of private practice experience in California. Dr. Duffin has conducted over 20 humanitarian eye projects, mostly in Latin America, including cataract surgery and cornea transplants.

SPECIALTY

- *Comprehensive Ophthalmology*



Jason Goldsmith, M.D., focuses on the medical and surgical management of cataracts and glaucoma. Dr. Goldsmith's research interests include the use of optical coherence tomography, an ophthalmic imaging technology, for use in screening for angle closure glaucoma.

SPECIALTIES

- *Cataract Services*
- *Glaucoma*



Joseph L. Hatch, M.D., 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 LDS Church Vision Initiative. This program sends eye-care professionals to countries throughout the world.

SPECIALTY

- *Comprehensive Ophthalmology*



Roger P. Harrie, M.D., practices comprehensive ophthalmology and ocular surgery with a subspecialty in ophthalmic ultrasound. He is the senior instructor in the ocular ultrasound course at the annual American Academy of Ophthalmology meeting. Dr. Harrie has made more than 20 humanitarian trips, mostly training doctors in developing countries in diagnostic and therapeutic techniques.

SPECIALTY

- *Comprehensive Ophthalmology*



Mary Elizabeth Hartnett, M.D., is a vitreoretinal surgeon and treats and manages adult and pediatric retinal cases. She is now building a pediatric retina center, and pediatric and adult retina clinical practice at the Moran Eye Center. She performs surgery at both the Moran Eye Center and at Primary Children's Medical Center.

SPECIALTY

- *Pediatric and Adult Retinal Diseases and Surgery*



Robert O. Hoffman, M.D., is Chief of the Division of Pediatric Ophthalmology and Eye Muscle Disorders. He has special interests in retinopathy of prematurity, ocular genetics, craniofacial disorders, pediatric cataracts, and complicated strabismus.

SPECIALTIES

- *Pediatric Ophthalmology*
- *Adult Strabismus*



Bradley J. Katz, M.D., Ph.D., specializes in neuro-ophthalmology, cataract, and comprehensive ophthalmology. He evaluates patients with diseases that affect the optic nerve and diseases of the brain that affect vision and eye movements. Dr. Katz also conducts research in these areas.

SPECIALTIES

- *Cataract Services*
- *Neuro-Ophthalmology*



Scott A. Larson, M.D., 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. Dr. Larson provides specialized care for patients from across the Intermountain West.

SPECIALTIES

- *Pediatric Ophthalmology*
- *Adult Strabismus*



Nick Mamalis, M.D., focuses his clinical practice on comprehensive ophthalmology including cataract and other anterior ocular surgeries. As Director of the Ophthalmic Pathology Laboratory, Dr. Mamalis evaluates all specimens submitted to the laboratory. Dr. Mamalis is the Editor of the *Journal of Cataract and Refractive Surgery* and is a member of the American Association of Ophthalmic Pathologists. He is also Director of the Intermountain Ocular Research Center and is performing research in the area of intra-ocular lenses and postoperative inflammation. Dr. Mamalis was selected by *Cataract and Refractive Surgery Today* as one of the 50 international opinion leaders.

SPECIALTIES

- *Cataract Services*
- *Ophthalmic Pathology*
- *Comprehensive Ophthalmology*



Mark D. Mifflin, M.D., 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 vision correction using lasers, intra-ocular lenses, and conductive keratoplasty.

SPECIALTIES

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



Majid Moshirfar, M.D., F.A.C.S., is the Director of the Moran Eye Center Cornea and Refractive Surgery Program. Dr. Moshirfar 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. 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*.

SPECIALTIES

- *Cornea Transplant*
- *Vision Correction Surgery (LASIK, PRK, LASEK, Phakic IOL, Intacs, CK)*
- *Cataract Surgery and Intraocular Implants*
- *Corneal Inflammatory Eye Diseases*
- *Artificial Cornea*



Bhupendra Patel, M.D., F.R.C.S., F.R.C., 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*



Geoffrey Tabin, M.D., is a corneal specialist and Director of the International Division at the Moran Eye Center. In addition to his work in Utah providing corneal, cataract, and refractive care, Dr. Tabin is working to develop eye-care delivery in developing countries. Part of his research includes improving cataract and corneal surgery.

SPECIALTIES

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



Jean Tabin, M.D., provides general vision care and comprehensive ophthalmology services at the Moran Eye Center.

SPECIALTY

- *Comprehensive Ophthalmology*



Michael P. Teske, M.D., is the 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, M.D., provides medical and surgical care, specializing 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. Steven Foster, entitled, *Diagnosis and Treatment of Uveitis*.

SPECIALTY

- *Uveitis, Ocular Infections*



Judith E. A. Warner, M.D., specializes in neuro-ophthalmology—the study of the eye as it relates to the brain. 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, temporal arteritis, papilledema, episodic vision loss, and migraine headaches.

SPECIALTY

- *Neuro-Ophthalmology*



Norm A. Zabriskie, M.D., specializes in the medical and surgical treatment of glaucoma and cataracts. He is the Vice-Chairman of Clinical Operations and the Medical Director of the John A. Moran Eye Center. He has a research interest in the genetics of glaucoma.

SPECIALTIES

- *Cataract Services*
- *Glaucoma*



The bus ride that landed 22-year-old Khosrow Semnani in Salt Lake City 42 years ago with only \$47 dollars in his pocket was the culmination of his boyhood dream to one day live in America. And though his life as he knew it in Iran had ended, his adventures were about to begin: From living as a poor hungry college student, to working at odd jobs, to becoming a wealthy philanthropist, Semnani fulfilled the American Dream.

THE SEMNANI

A legacy of humanitarian giving, restoring sight to those in need

Indeed, his adventures could easily fill a book. Young Khosrow grew up in Iran, the fourth of seven children. His father had several careers that included farmer, contractor, and commercial icemaker. In 1968, Semnani came to Salt Lake City. Arriving with nothing but his work ethic and ability to make things happen, (traits that would serve him well all his life), he pursued his dream of attending an American university. But fulfilling his dreams were not without challenges. While studying physics and chemistry at the University of Utah, he worked at various jobs to support himself, such as mopping floors in Carlson Hall at Westminster College for \$1.25 an hour, painting houses for \$15 a room, and mowing lawns at \$15 per job. He completed his formal education by earning a bachelor's of science degree in chemistry and physics and a master's degree in engineering administration at the University of Utah in 1977.

Semnani went to work for Kennecott as a research chemist for seven years until he was laid off along with hundreds of other workers. (It was during that time that Moran CEO, Dr. Randall J Olson, was also working on the same Kennecott project to earn tuition money. But their paths never crossed, until just this past year when Dr. Olson was introduced to Mr. Semnani by Moran's Dr. Majid Moshirfar.)

Semnani's expertise was electrochemistry as it relates to metal refining. Long story short, the EPA established new guidelines for disposing hazardous wastes, and the nearest location was in Arizona. Semnani talked a banker into giving him a loan and



Khosrow Semnani, Dr. Majid Moshirfar, and Dr. Randall J Olson

combined it with his life's savings to buy land in the west deserts of Utah. In the beginning, he actually dug trenches with a hand shovel preparing the site for EPA approval.

He soon sold this property and purchased 640 acres at what was called the Clive Facility where he opened Envirocare, now called Energy Solutions, a company he sold six years ago.

Semnani, has been a 40-year resident of Utah. He and his wife Ghazaleh have three sons, Taymour, Rodmeher, and Jahangere. While he runs a successful investment management company, he is foremost a philanthropist and an activist against nuclear proliferation. He is very concerned about the nuclear conflicts in the world and the unthinkable possibility of the land of his birth being destroyed in a nuclear incident.

“Khosrow Semnani had dreams as a young boy to one day live in America”



But Semnani's real love is giving, particularly helping the sick and needy. And the diamond-in-the-rough among his extraordinary life achievements is the Maliheh Free Clinic, founded in 2005, and named after his Grandmother, Maliheh Abdollahi, who exemplified to Semnani kindness, charity, and humanitarian work.

The primary focus of the free clinic is to provide routine health maintenance and preventative care for those marginalized children and adults who would otherwise be left out—families living in poverty who do not have health insurance and cannot qualify for Medicare or Medicaid. Funds to build the clinic were completely donated as are most of the medical services. And it is staffed by over 100 volunteer-only professionals, one of whom is Moran's own selfless Dr. Majid Moshirfar. The clinic is located at 415 East 3900 South. For more information go to www.malihehfreeclinic.org.

Moran's Dr. Majid Moshirfar and his Extended Family of Patients

While Muti Aitaoto rode an early morning bus from Boise to Salt Lake City this past spring, he didn't notice the scenery slipping by. Even if he had been able to see it, he was so entrenched in his thoughts—a churning mass of gratitude and incredulity—that he might have missed it anyway. Blind in both eyes now, Aitaoto wondered, “How is it that I have ended up with one of the best eye doctors in America despite having no way to pay for his services?”

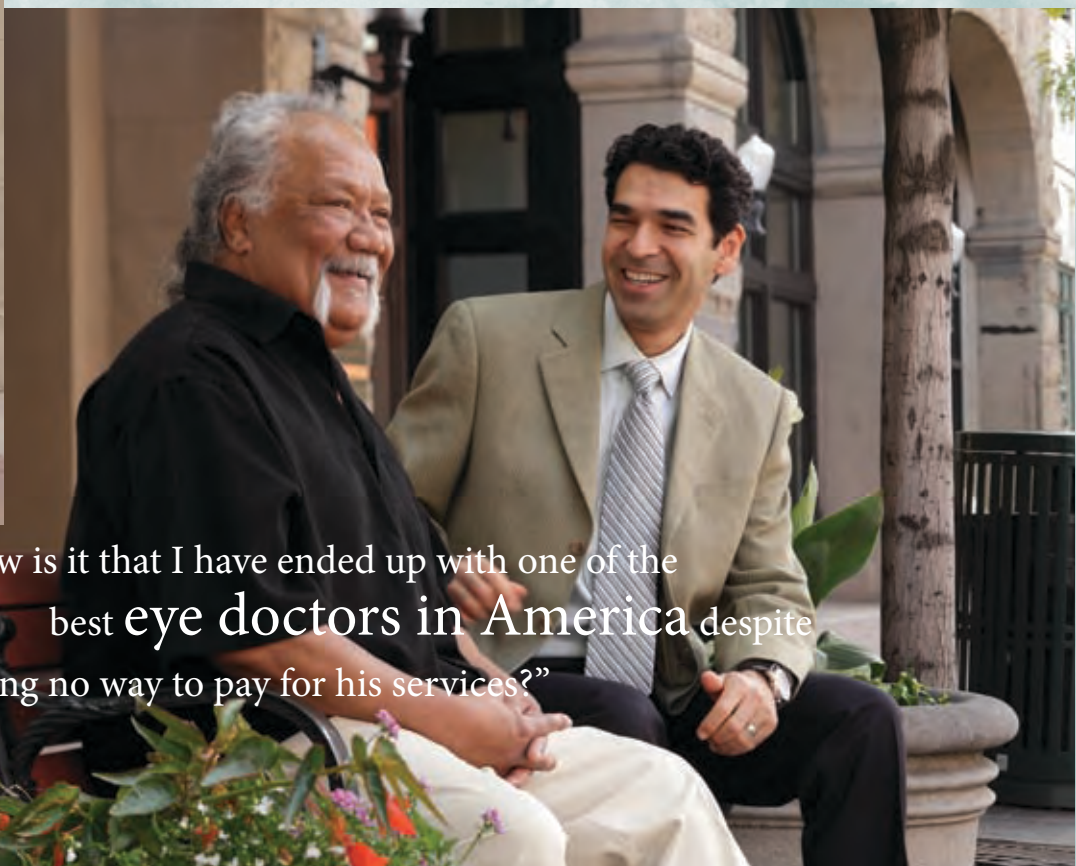
Aitaoto was heading to the Maliheh Free Clinic to see Dr. Majid Moshirfar, Director of the Cornea and Refractive Surgery Division at the Moran Eye Center. “This doctor works on big-name people, and here I come with no insurance, and he puts me on top of the list. I cried on my way to Salt Lake.”

For the past six months, Aitaoto had been living in a murky darkness after his one-functioning eye went blind from severe cataracts. He had exhausted all his efforts in accessing treatment. A doctor in Boise helped put him in contact with the Maliheh Clinic, and within two weeks of his call, Aitaoto was scheduled for a sight-restoring eye operation.

“Nurse, I'm going to start crying when I open my eyes,” Aitaoto recalls saying after the surgery, as the nurse began peeling off the gauze. “Just cry, the tears will help with the healing,” she replied. “She was the first face I saw when I opened my eyes,” remembers Aitaoto. “I told her she had the most beautiful face I'd ever seen.”

“It took 20 minutes to improve his sight, and he waited six months—blind—for that surgery,” says Moshirfar, shaking his head. “He could see the next day.” Regardless of where he sees his patients, the U's Moran Eye Center or the Maliheh Clinic, Moshirfar tries to envision all of them as a family member—a brother, a mother, a son—to return the faith they put in him. “When you see that sense of trust, you take that and try to transform it into something,” expresses Moshirfar.

Riding the bus back home, Aitaoto admits to reading every roadside sign. “I could see everything, birds, airplanes, clouds, mountains... Now, I smile and say hello to everyone; this is a whole new beginning for me.”



“How is it that I have ended up with one of the best eye doctors in America despite having no way to pay for his services?”

“It took 20 minutes to improve his sight, and he waited six months—blind—for that surgery,”



Dr. Majid Moshirfar in front of the Maliheh Free Clinic

The Maliheh Free Clinic, giving others the chance to live their dreams

“We believe a lot of people in the third-world countries need our help. That is a fact. But you don’t have to go far from here to find people desperately in need of eye care,” says Dr. Moshirfar.

Every four weeks, he clears his schedule and spends the day at the Maliheh Free Clinic treating patients, many of whom would remain blind or whose eyesight would be compromised without surgery and medicine. “I just assume start here,” adds Moshirfar, who believes that this clinic is a model and springboard for reaching more people who would otherwise not have access to health care.

The Maliheh Clinic provides comprehensive care to patients, not solely eye care, and helps them access specialists when needed. The clinic was founded by Khosrow Semnani, and it is through his generosity that every patient who walks through the clinic’s doors is provided care regardless of their financial situation. While Moshirfar has long donated his skills, there are many other costs that come into play, which the clinic covers.

Moshirfar recalls poignant moments with patients, which fill him with gratitude. Patients like Ines Carnero, a janitor who was losing sight in her left eye. A single mother at the time, Carnero was struggling to work with an eye that was both painful and unsightly; with no insurance and a minimum wage job, she feared the worse. “This doctor was my angel,” says Carnero of Moshirfar, in broken English, clasping her hands together emphasizing feelings that her words could not fully express. “It seemed he knew exactly what I was going through.”

The Maliheh Clinic was established not long after Moshirfar first met Semnani, a fellow Persian. Semnani was his patient and underwent surgery to improve his eyesight. Both came to America

as young men with little in their pockets, and both shared a common belief and deep appreciation for the American dream of achieving limitless possibilities through hard work. “We were given the opportunity to make ourselves better and more useful to mankind,” says Moshirfar, a soft-spoken man with warm brown eyes. Yet he continues to think about how much more work needs to be done in helping others. “It is time to help our fellow Americans for believing in us and giving us the chance to achieve our dreams.”



“This doctor was my angel”

A BETTER VISION *of the WORLD and HERSELF* for 88-year-old Mrs. Sakota

Dr. Patel sets the standard for patient care at the Moran Eye Center

Choosing to care

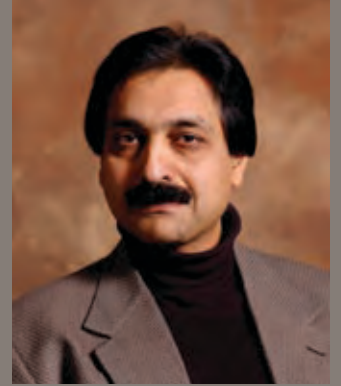
Though it's the exception, haven't we all experienced distant or impersonal behavior from a physician at some time in our life? It can leave you feeling hurt, put down, or rejected. Maybe you had thoughts like, "I guess he's stressed; he is a specialist and very busy." Or, "Well, I was lucky she saw me; she's the best doctor for my case and very well educated and important." But aren't these just excuses? Maybe behaving with extra care toward patients is actually the *choice* of the doctor—a doctor like Moran's Dr. Bhupendra Patel—a man from whom all medical students, residents, fellows, and doctors can learn. Though Dr. Patel always credits his staff and the Moran team for his satisfied patients.

Dr. Patel was educated at the University of Liverpool and the University of London. He is a world-renowned oculoplastic and facial plastic surgeon, as well as a professor of ophthalmology and visual sciences at the University of Utah. He is a sought after speaker worldwide and has received many prestigious awards. His expertise is in reconstructing facial bones

and fractures and disorders of the eyelids, to name just a few, which means that he performs miracles of reconstruction on patients suffering from cancer, to patients disfigured in car accidents, to patients with other serious injuries to the face and eyes.

Healing and caring

But the true measure of Dr. Patel's miracles is not just evidenced in the successes of his surgeries; it is in his ability to care for patients as fellow human beings, in his spirit of service, and in his open, heartfelt communication. It may not be surprising, then, to learn that the letters of sincere gratitude that he receives from patients each month are what Dr. Patel cherishes most about his work! Marie Sakota came to Moran with partial vision loss from limited eyelid obstruction. She left with not only better sight, but with the feeling that Dr. Patel and his staff truly cared about her as an individual.



Dr. Bhupendra Patel

The extra mile

Dr. Patel has a wonderfully educated, distinct British accent, so imagine hearing the cadence of his voice and the clip of his tone when you read what he says about his experience with patients like Marie Sakota: "When we have finished with surgery on a patient, I trouble my wonderful assistants Dena Magallanes and Jill Streeter considerably with an open-door policy towards our patients. They can call me or Dena or Jill directly at any time. I also ask them to send before-and-after photos and correspondence to each and every patient and physician of the type sent to Marie. Maybe we should, in theory, just move on to the next patient. Yet, there is a considerable impact such follow-up photos and letters have on patients: both in terms of reminding them why we did the surgery but to also remind them that they are not just another case to us."

This statement, the pictures of Marie Sakota, and her beautiful letter are legacies that Dr. Patel leaves with patient after patient, month after month, year after year—and it is this compassionate patient care that keeps Dr. Patel going, surgery after surgery.

Dear Dr. Patel,

Thank you! Thank you! Thank you!!! I was just thinking that I wish I could have a before and after picture of my eyelids. Today, I received your pictures of me. Thank you so much. I placed the photos in a gold picture frame and have it displayed in my living room to show what outstanding work you do. I cannot believe the difference. It was a pleasure to meet you. Everyone at the Moran Eye Center was so kind and helpful especially to this 88 year old woman. If I hear of anyone needing an eyelid lift, I will gladly recommend you.

My sons also send their regards and appreciate you. They did say that you sending your regards to my "two charming sons" is definitely a stretch. I don't know if they are "charming" but they do take good care of me. Wishing you and your loved one the very best. Thank you again for your skill as a surgeon, your great bedside manners, and the wonderful photographs.

Love,

Marie Sakota
Marie Sakota
Rexburg, Idaho

October 21, 2010



Community Clinics

Moran Eye Center in your Community The Moran Eye Center provides comprehensive eye exams, eyeglass and 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 offers a full range of world class medical services.



Moran Eye Center Doctors of Optometry

- Robert Corry, O.D.
- Timothy Gibbons, O.D.
- Mark McKay, O.D.
- Scott Miller, O.D.
- Alan Morgan, O.D.
- Harald Olafsson, O.D.
- Clair Palmer, O.D.
- Colleen Schubach, O.D.
- Craig Smith, O.D.
- Bryan Vincent, O.D.



Meet Michael Yei

Manager, Moran International Division

The Moran Eye Center is delighted to welcome our new International Division Manager, Michael Yei. Michael comes to this position with a wealth of experience facilitating and managing sustainable development efforts in education, health, and economic development in developing countries and low income societies.



Michael Yei and his wife Jill Miller at the Summit of Mt. Kilimanjaro.

Among a long list of programs, Michael recently completed a yearlong assessment of the health, education, and economic development resources on the Utah strip of the Navajo Nation. Prior to that, he served as the executive director of the nonprofit Ouelessebououg Alliance serving over 25,000 people in 26 villages in remote regions of Mali, West Africa. Michael has spent several months per year living and working in Africa where he trained local staff and volunteers to develop strategic and sustainable programs on the ground in Mali. He is experienced in developing a culture of trust and mutual understanding his staff from the United States and villagers in Africa.

“I’m thrilled to be a member of the Moran International Division with its long tradition of humanitarian missions and training international residents and fellows at the local level,” Michael says. “We hope to expand this mission and carry out sustainable programs in emerging countries for many years to come.”



Dr. Geoffrey Tabin with happy patients in Africa



Dr. Alan Crandall with a joyful patient in Nepal.

The Moran Eye Center International Division

A tradition of humanitarian missions, education, research, and training

The World Health Organization reports more than 150 million people living in the developing world are “functionally blind,” and of those 150 million cases, four out of five could be cured through simple surgery. In developing nations, 90 percent of individuals who become blind will lose their ability to work—a fact that is devastating to families and communities where the struggle for survival is a day-to-day challenge, and the ability to work is the difference between life and death.

The magnitude of this eye-sight epidemic has not gone unnoticed by the physicians at the John A. Moran Eye Center. Sixteen years ago, Dr. Alan Crandall began leading teams of Moran physicians on humanitarian missions in Ghana Africa. Today, with Dr. Geoff Tabin as the Director of the Moran International Division, Moran physicians continue to carry out missions worldwide. In particular we have partnered with the Himalayan Cataract Project and the Tilganga Institute of Ophthalmology to help restore sight to countless blind individuals in the Himalayan and African regions.

The John A. Moran Eye Center has developed a self-sustaining approach to international ophthalmological care and training. While Moran physicians provide onsite, in-field training during their time abroad, our International Observers Program sponsors medical students from throughout the world, allowing them to gain skills and techniques that they would be unable to learn in their home country. By empowering and educating medical professionals within developing countries, the International Division can ensure that Ophthalmology care in developing nations continues through generations of local practitioners.

“Sixteen years ago Dr. Alan Crandall began leading teams of Moran physicians on humanitarian missions in Ghana, Africa.”

Dr. Bala Ambati examining a child in India.

The following is a partial list of International Fellows/Observers, who have visited the John A. Moran Eye Center in the past year. Moran senior residents, surgeons, and ophthalmology professors provide extraordinary surgery mentoring opportunities to our international residents and fellows in a wide array of ophthalmic subspecialists.

Dr. Kavita Dhakhwa Paudel	Lalitpur, Nepal
Dr. Peter Armah	Accra, Ghana
Dr. Bhim Rai	Mongar, Bhutan
Dr. Seth Lartey	Accra, Ghana
Dr. Kunzang Lhaki Dorji	Thimphu, Bhutan
Dr. Amina Rai	Kathmandu, Nepal
Dr. Lan Hu	Shenyang, China
Dr. Rojeeta Parajuli	Kathmandu, Nepal
Dr. Rachana Rana	Kathmandu, Nepal
Dr. Claudia Andrea Lozano	La Paz, Bolivia
Dr. Keepa Vaidya	Kathmandu, Nepal
Dr. Aravind P. Murugesan	Madurai, India
Dr. Saumya Sanyal	Siliguri, West Bengal
Dr. Nahom Ayalew Tirune	Dominican Republic
Dr. Yewubnesh Somega	Ethiopia



The Few, the Proud, the Marine Corps Ophthalmologist

Moran second-year resident Thomas Oberg, M.D. can keep his cool in a surgical gown—or a hazmat suit



When you learn the background of Moran second-year resident, Dr. Thomas Oberg, you quickly understand why he gave his baby boy such a beautiful and meaningful name. “Ronin” means “masterless or independent samurai” in Japanese.

Thomas Oberg’s career path toward ophthalmology really began immediately after high school. He wanted to serve his country and embark on an adventure, so he joined the Marines. After nine months of boot camp, combat training, and specialty training (in nuclear, biological, and chemical warfare defense), he was stationed in Yuma, Arizona for the remainder of his four-year service. There he trained his fellow marines to detect deadly weapons and protect themselves and others in biological warfare environments.

Dr. Oberg rather matter-of-factly describes some of the most important parts of the training: “Basically we threw the guys in a cement bunker and burned a bunch of gas agents to teach them how to think rationally in that type of environment.” Maybe that’s why Dr. Oberg is immune to pepper spray, among other things.

He completed his service and enrolled at the University of Arizona to major in molecular and cellular biology. He began working in physical therapy at the local VA Hospital and gained an interest in medicine through working with patients and interacting with physicians.

Dr. Oberg’s decision to go into ophthalmology came easily when he

completed an ophthalmology rotation in his third year of medical school at the University of Arizona. “Ophthalmology allows you to interact with every patient population from infants to senior citizens,” says Dr. Oberg. “I like that, and really enjoy working with patients in both a clinical and surgical setting.”

When it came time to apply for residency after graduating from medical school, Dr. Oberg instantly knew the John A.



Thomas Oberg promoted to sergeant

“Basically, we threw the guys in a cement bunker and burned a bunch of gas agents to teach them how to think rationally in that type of environment.”

Moran Eye Center was right for him. His classmates continually praised the program. He completed a rotation with Moran’s Dr. Majid Moshirfar. “Moran was a perfect fit for me because I was looking for a program to get more one-on-one learning experiences with attendings and fellows, and Moran offered me that opportunity,” he says.

No stranger to hard work and dedication, Dr. Oberg credits the Marines for preparing him for his residency and career in medicine. “The Marines gave me the discipline to work incredibly hard day after day,” he said. “Serving in

the Marines also taught me to keep my cool under pressure and to always stay focused.” You certainly get the feeling he would be very calm and collected in any medical emergency.

Originally from Long Island, New York, Dr. Oberg now lives in Holladay, Utah with his wife Christy, a hospitalist with University of Utah Health Care’s University Hospital. As for their little boy Ronin—you just get the feeling he’ll grow up to be independent and brave like his dad. And while Ronin means “masterless samurai” in Japanese, the word samurai means “one who serves.”

Faculty at the Moran Eye Center provide ophthalmology training to medical students, interns, residents, fellows, research fellows and international fellows. As the only medical school in the Mountain West, the University of Utah plays an important role in training the region's next generation of ophthalmologists and ophthalmology specialists. The Moran Eye Center provides training in our fully equipped surgical suites, and in partnership with the 400-bed University of Utah Hospital, and the 131-bed Salt Lake Veterans Administration Medical Center. Additional training is conducted at Primary Children's Medical Center.



Residency Program 2011-2012

FIRST YEAR



Jim Bell, M.D.



Dan Bettis, M.D.



Leah Owen, M.D.

SECOND YEAR



Derick Holt, M.D., Ph.D.



Krista Kinard, M.D.



Tom Oberg, M.D.

THIRD YEAR



Grant Morshedi, M.D.



Brice Williams, M.D., Ph.D.



Lloyd Williams, M.D., Ph.D.

Fellowship Program 2011-2012

CORNEA

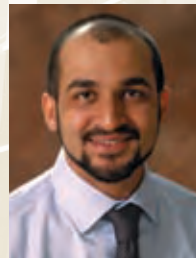


Maylon Hsu, M.D.



Gene Kim, M.D.

RETINA



Akbar Shakoor, M.D.



Julia Shulman, M.D.

**NEURO
OPHTHALMOLOGY**



Bonnie Keung, M.D.

GLAUCOMA



Kandon Kamae, M.D.



Snow Slade, M.D.

**ANTERIOR SEGMENT/
OPHTHALMIC
EDUCATION**



Jeff Pettey, M.D.

A Global Education Program

The Division of International Ophthalmology at the John A. Moran Eye Center

is helping our ophthalmology residents and fellows to understand outreach service through participation in the United Nations Millennium Village 15 interventions in 12 African villages, including remote areas of Nigeria, Kenya, Rwanda, Tanzania, and Ghana.

Our resident and fellowship exchange program is a model for university ophthalmology departments and centers worldwide. We have played host to visiting international fellows as part of the Freeman International Ophthalmology Fellowship Grant from India (cornea and cataract anterior segment), Bhutan (pediatric), Ghana (pediatric), and Nepal (medical retina and neuro-ophthalmology). We are currently bringing ophthalmology fellows from Rwanda (cornea) and Kenya (pediatric ophthalmology and medical retina) as well as additional corneal fellows from Nepal. Our senior residents and fellows may travel to the Tilganga Hospital in Kathmandu to work, learn, and teach ophthalmic surgery.



Residency Program 2010-2011

FIRST YEAR



Derick Holt, M.D., Ph.D.



Krista Kinard, M.D.



Tom Oberg, M.D.

SECOND YEAR



Grant Morshedi, M.D.



Brice Williams, Ph.D.



Lloyd Williams, M.D., Ph.D.

THIRD YEAR



Kandon Kamae, M.D.



Snow Slade, M.D.



Jeff Pettey, M.D.

Fellowship Program 2010-2011

CORNEA



Marcus Neuffer, M.D.



Shameema Sikder, M.D.



Sonya Dhar, M.D.

RETINA



Karyn Bourke, M.D.



Julia Shulman, M.D.



Julie Shelton, M.D.

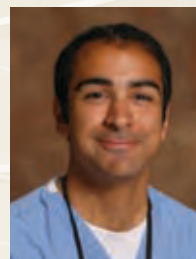
GLAUCOMA

**NEURO
OPHTHALMOLOGY**

PATHOLOGY



J. Steele McIntyre, M.D.



Shaheen Kavoussi, M.D.



Stan Fuller, M.D.

The following is a selection of news from the John A. Moran Eye Center. For more information about these stories and other news and events, please visit the Moran website at: www.moraneyecenter.com

Highlights

Moran Event Highlights

Third Annual “Night for Sight”

*MORAN EYE CENTER FUNDRAISING EVENT
A GREAT SUCCESS*

Hosted at Snowbird Ski and Summer Resort

The John A. Moran Eye Center, Salt Lake City, Utah, U.S.A., in partnership with the Himalayan Cataract Project (HCP) presented “A Night for African Sight” Saturday, February 26 hosted by Snowbird Ski and Summer Resort. The dinner and auction raised awareness and funds to support international eye surgeries and training in Africa. The event featured presentations by accomplished mountaineers Dr. Geoffrey Tabin, Neal Beidleman and Timmy O’Neill.

Moran Physicians Donate Private Party

Enthusiastic donors gave generously through both silent and live auctions. The most popular silent auction items included a special party hosted by Drs. Alan Crandall and Geoffrey Tabin a dinner party hosted by Dr. Crandall, and framed photographs by Ace Kvale. The largest donation of the evening was generously provided in the amount of \$25,000 for general support of the International Ophthalmology program at the Moran Eye Center.

A Legacy of Humanitarian Missions

The Moran Eye Center has been carrying out missions to Africa and around the world for more than 15 years and has a proud tradition of providing eye care and critical training to areas of the world where specialized care is inadequate or non-existent. In 2005, the Moran Eye Center broadened its efforts when



Dr. Tabin joined the Moran Eye Center as the Director of the International Division. This partnership included an alliance with the Himalayan Cataract Project.

A Successful Partnership

The HCP works to eradicate preventable and curable blindness through high-quality ophthalmic care, education, and the establishment of a world-class eye care infrastructure. Each year, Dr. Tabin along with ophthalmologists from the Moran Eye Center and other institutions, in partnership with HCP and its flagship partner, the Tilganga Institute of Ophthalmology, screen over 335,000 patients and provide over 30,000 surgeries in developing countries.

For more information on how you can help the Moran Eye Center and our partners in our quest to provide sight for the blind in underdeveloped areas of the world, call our development office at 801-585-9700.

Silent auction activities at the Night for Sight Event at Snowbird.



Highlights



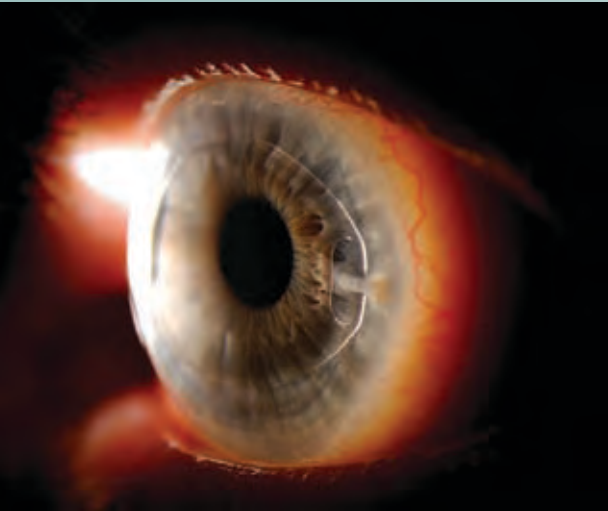
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The New Webvision—Enhancing and Improving an Early Internet Gem

MORAN RESEARCHER DR. BRYAN JONES BRINGS WEBVISION, A RESOURCE FOR ONLINE RETINAL EDUCATION INTO THE 21ST CENTURY.

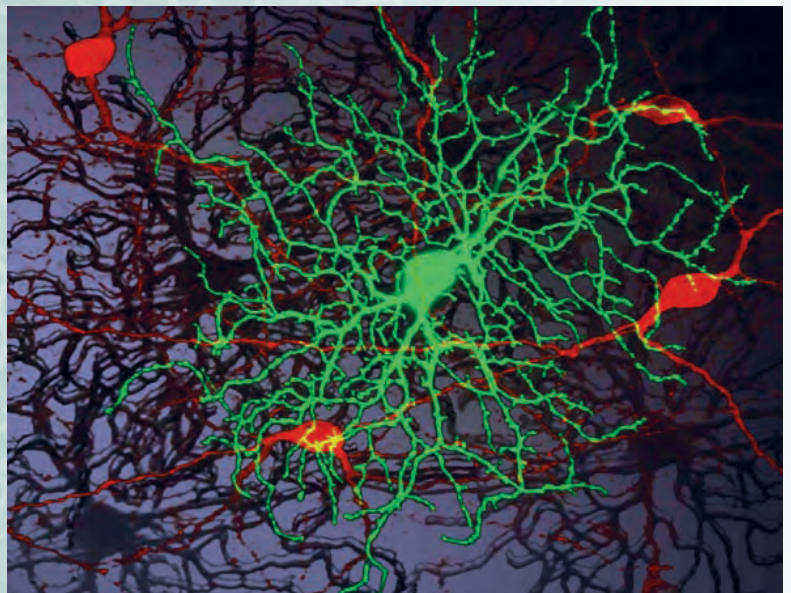
Hard work, planning and persistence on Webvision has been rewarded by European Vision Research (<http://www.vision-research.eu/>) who voted the site as the best website in vision research and ophthalmology. Webvision and nine other sites were recognized for providing meaningful content, quality information, exchange of ideas and translating complex science into understandable information.

Nominations for websites were accepted worldwide for websites in the vision research and ophthalmology fields. All nominations were judged by an interdisciplinary panel according to the following criteria: quality content, frequent updates, easy to use and having attractive design and presentation. Webvision can be found at (www.webvision.med.utah.edu).



About Webvision

Webvision is perhaps the very first online textbook on the Internet. Webvision was originally conceptualized by Dr. Helga Kolb (professor emeritus) with the assistance of Trish Goede and Dr. Eduardo Fernandez who implemented and hand coded the html. Dr. Kolb's good friends, Drs. Ralph Nelson and Dr. Eduardo Fernandez continued their involvement over the years with Dr. Fernandez making many of the original movies and writing additional html. In 2000, Dr. Bryan William Jones took over day to day management of the website and with personal funding and financial support from Research Prevent Blindness and Dr. Robert E. Marc (Director of Research for the Moran Eye Center), on April 11, 2011, Webvision transitioned to a new Macintosh server running WordPress that will allow Webvision to continue to grow and expand, allowing the community to share and participate in a more dynamic and immediate way than ever before.



Moran Eye Center Granted Institute Status



*INSTITUTE WILL FOSTER MULTIDISCIPLINARY COLLABORATIONS
TO ACCELERATE RESEARCH TO NEW PATIENT TREATMENTS*

Bridging Research Efforts

The John A. Moran Eye Center (JMEC) recently announced the formation of The Vision Institute. The establishment of the Vision Institute bridges research efforts across University of Utah colleges and departments to enhance and broaden the area of translational medicine. This team approach into the study of diseases will help turn research discoveries into drugs and medical devices that benefit patients.

Includes Center for Translational Medicine

Forming the Vision Institute includes the establishment of the Moran Center for Translational Medicine. “Our goal is the acceleration of the translation of basic scientific discoveries to clinically effective diagnostics and therapies for the treatment of devastating eye disorders such as age-related macular degeneration and glaucoma, as well as other diseases with shared etiologies,” Olson said.

Gregory Hageman, Ph.D., presidential professor of Ophthalmology and Visual Sciences, who recently came to Moran Eye Center from the University of Iowa, leads the Moran Center for Translational Medicine. Research activities must reach the “marketplace” to have an impact on patient care. Developing partnerships through the Vision Institute is key to making this happen, and they will help us to develop coordinated strategies and provide a thorough understanding of disease biology, says Hageman.

Eye Disease Research Must Span Research Disciplines and Clinical Specialties

Worldwide research, along with findings from Moran Eye Center indicate that many of the most serious blinding diseases are often accompanied by the presence of a distinct set of coexisting or additional diseases, called comorbidities. Genetic study of the various diseases and their respective comorbidities shows diseases of the eye often affect multiple organ systems, rather than being limited to ocular tissues. To understand these diseases, Moran Eye Center works with a variety of other research disciplines and clinical specialties.

The scope of research and technical expertise at the Moran Eye Center now far transcends the study of vision and extends into systemic disease biology, cancer research, brain plasticity, gene therapies, new imaging technologies, and new molecular tools. The collaborative relationships of our faculty range from physics and computer sciences to bioengineering and infectious diseases. It is fitting to encompass this ever-broadening scientific horizon in the Vision Institute, with its far larger scientific and translational missions,” said Robert Marc, Ph.D., Director of Research at Moran Eye Center.

Vision Institute Mission Statement

The Vision Institute at the John A. Moran Eye Center at the University of Utah is dedicated to serving our patients and the greater public health community by creating a broad-based organization focused on clinical care, care-giver education, and basic and translational research. Using a multidisciplinary approach, we encourage learning from our patients and using that knowledge to create effective educational and research programs with the goal of creating new, widely available treatments for diseases shared by our patients and the global health community.



Donors

2010

The following individuals and organizations contributed to the Moran Eye Center from January 1, 2010 through December 31, 2010

GIFTS OF \$500,000 AND ABOVE

Bamberger-Allen Health & Education Foundation

John A. Moran

GIFTS OF \$100,000 AND ABOVE

Allergan, Inc.

Alexander S. Bodi

Gayle L. Eschmann

Research to Prevent Blindness, Inc.

GIFTS OF \$50,000 AND ABOVE

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GIFTS OF \$25,000 AND ABOVE

Abbott Medical Optics

The Boyd Henrie Family

GIFTS OF \$10,000 AND ABOVE

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Leah Hatzithanasiou and Family

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Louise and Norman A. Zabriskie, MD

Robert C. and Patience Ziebarth

JOHN A. MORAN EYE CENTER DONOR REPORT FOR 2010

GIFTS OF \$100 AND ABOVE

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Carol A. and Stanley J. Riemer
Raye C. and Joseph F. Ringholz
Salt Lake City Lions Club
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JOHN A. MORAN EYE CENTER DONOR REPORT FOR 2010

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James M. and Linda W. Steele		

PLANNED GIFT

The following individuals and organizations designated a planned gift to the Moran Eye Center from January 1, 2010 through December 31, 2010

Richard A. and Carol M. Fay

IN MEMORY OF

Those in whose memory gifts were made to the Moran Eye Center from January 1, 2010 through December 31, 2010

David Arbuckle

William F. Bailey

Douglas L. Beckstead

William S. Brown

Kyle Carlile

Michael Cooper

Cecil P. Counts

Winona H. Cowan

Henry J. Desz

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Bartley H. Stowell

Calvin W. Thomson

Donald M. Willey

IN HONOR OF

Those in whose honor gifts were made to the Moran Eye Center from January 1, 2010 through December 31, 2010

Captain Daniel M. Anderson, MD

Alan S. Crandall, MD

Elmer Inman

Renee Krebs

Warren V. Kunz

Jean H. and Lamar Miller

John Mills

Sandee Mills

Matthew R. Parsons, MD

Geoffrey Tabin, MD

Judith Warner, MD

Stephen Wynn

The John A. Moran Eye Center is very grateful for the contributions made to support our mission and goals. We have made every effort to ensure that this 2010 Donor Report is as accurate as possible. Should you find an error or wish to change your listing, contact us at the following: 801-585-9700.

Honors and Awards

MORAN EYE CENTER

Alan Crandall	Vocational Excellence through Humanitarian Service Award President of the American Society of Cataract and Refractive Surgery.	2011 2009 & 2010
Robert Hoffman	Ruth Craig Award, Lifetime Contributions to the Blind and Visually Impaired.	2010
Geoffrey Tabin	Certificate of Appreciation from EyeCare America. 2010 Volunteer Award. Alumni Achievement Award/Hall of Honor Recipient for 2010.	2010 2010
Gregory Hageman	Mertz Lectureship, Manhattan Eye, Ear, & Throat Hospital Gold Fellow, Association for Research in Vision and Ophthalmology Barlow Distinguished Lecture in Vision, State University of New York, Upstate Medical University.	2010 2010 2010
Mary Elizabeth Hartnett	Accepted to the American Ophthalmology Society	2010
Majid Moshirfar	Top Doctor in The Global Directory of Who's Who	2010 & 2011
Randall J Olson	Listed in "Guide to America's Top Ophthalmologists" Schutz Lecture, New York University, New York, New York Premier Surgeon List of Leading Innovators in the Field of Premium IOL Implant Surgery. Governor's Medal for Science and Technology	2010 2010 2010
Michael Teske	Lewis Peterson Service Award	2010
Shameema Sikder	2010 Claes Dohlman M.D. Award	2010

Humanitarian Missions

MORAN EYE CENTER

Dr. Bala Ambati (Lloyd Williams)	Zambia, Africa India	August 2010 April 2011	Dr. Geoffrey Tabin	Tanzania Trinidad Nepal Rwanda & Ethiopia Nairobi, Tanzania & Nigeria, Africa Nepal Ghana, Africa Trinidad Beijing, China Bhutan/Nepal	January 2011 February 2011 April 2011 April, May 2011 February 2010 March, April 2010 April, May 2011 July, August 2010 September 2010 September, October 2010
Dr. Alan Crandall	Cairo, Egypt Ethiopia Africa Bhutan & Nepal Africa	February 2010 February, March 2010 April, May 2010 September, October 2010 April 2011	Dr. Gregory Hageman	Ghana, Africa	April 2010
Dr. Robert Hoffman	Guatemala Ghana, Africa Bhutan & Nepal Indonesia Ghana, Africa	February 2010 May 2010 October 2010 November 2010 April-2011	Dr. Paul Bernstein	Ghana, Africa	April 2010

Grand Rounds

DATE	PRESENTER	TOPIC OR TITLE
August 4, 2010	Sri Koduri Director, Health Professions Resources, Utah Medical Education Council	"Utah's Physician Workforce and UMEC"
August 11, 2010	Caroline Denwood, MSIV, <i>Loyola University</i>	"Non-arteritic Ischemic Optic Neuropathy & Obstructive Sleep Apnea"
August 18, 2010	Mark Hill, MSIV, <i>University of Utah</i> Jamie Dhaliwal, MSIV, <i>University of Colorado</i>	"Sulcoflex Pseudo-phakic Supplementary" "Globe Rupture Complicated by Neurofibromatosis"
August 25, 2010	Rick Nordgren, MSIV, <i>Medical College of Wisconsin</i> Melissa Cortez, M.D., Neurology Resident <i>University of Utah</i> Andrew Ollerton, MSIV, <i>University of Utah</i>	"Complications & Management of New Color Iris Implantation in Phakic Eyes" "Central Retinal Artery Occlusion"
	Zachary Joos, MSIV, <i>Creighton University</i>	"Á Prospective, Contralateral Comparison of Photorefractive Keratectomy (PRK) vs Thin-Flap LASIK"
	Natalie Weathered, M.D., Neurology Resident, <i>University of Utah</i>	"Ocular Surface Squamous Neoplasia Masquerading as Superior Limbic Keratoconjunctivitis" "The Great Masquerader: A Case of Ocular Syphilis"
September 1, 2010	Kandon Kamae, M.D. Chief Resident, <i>Moran Eye Center</i> Griffin Jardine, MSIV, <i>University of Utah</i>	"Wandering Eyes" "Endocapsular Carousel Technique Phacoemulsification" & "An Objective Comparison of Phacoemulsification Ultrasonic Technologies"
September 8, 2010	Leah Owen, MD, Intern, <i>Moran Eye Center</i> Ethan Tittler, MSIV, <i>University of Southern California</i>	"Modulation of Soluble-FLT1 Expression: Ocular Implications and Beyond..." "Ocular Manifestations of Fabry Disease"
September 15, 2010	Zachary Bodner, MSIV, <i>Dartmouth University</i> Brian Zaugg, MSIV, <i>University of Utah</i>	"Epithelial Ingrowth in Post-LASIK Patients" "Anterior Flexing of Single-Piece Hydrophilic Acrylic IOL Haptics"
September 29, 2010	Shantanu Neravelta, MSIV, <i>University of Louisville</i> Roger Harrie, M.D., Faculty, <i>Moran Eye Center</i>	"Ultra-Thin DSAEK" "A Review of Indications for Ophthalmic Ultrasound"
October 13, 2010	Lloyd Williams, M.D., Ph.D., Resident, <i>Moran Eye Center</i>	"Experiences in Zambia"
October 20, 2010	Romulo Albuquerque, MSIV <i>University of Kentucky</i> Stewart Walther, MSIV, <i>Texas Tech University</i>	"Introducing a New Member of the VEGF Family" "CMV Retinitis"
October 27, 2010	David Gay, MSIV, <i>Virginia Commonwealth University</i> Barbara Wirostko, M.D., <i>Moran Researcher</i> Russell S. Gonnering, M.D., MMM, FACS, CPHQ, Department of Ophthalmology, <i>University of Wisconsin SOM & Public Health</i>	"Pediatric Patient With an Anterior Segment Mass" "Phase I PK and Phase 3 Results for Xalatan in Pediatric Glaucoma" "Ophthalmology 2010: Changes, Challenges & Choices"
November 3, 2010	Scott Larson, M.D., Faculty, <i>Moran Eye Center</i> Summer Gibson, M.D., Neurology Resident, <i>University of Utah</i>	"My Child's Eyes are Crossing, Does She Need a Brain Scan?" "A Second Look at Hemianopsia"

Grand Rounds

DATE	PRESENTER	TOPIC OR TITLE
November 17, 2010	Kathleen Digre, M.D., Faculty, <i>Moran Eye Center</i> Marla Davis, MSIV, <i>University of Kentucky</i>	"An Update on Idiopathic Intracranial Hypertension" "Visual and Hearing Loss, Is it Multiple Sclerosis?"
December 1, 2010	Kathleen B. Digre, M.D. Faculty, <i>Moran Eye Center</i> & Yingbin Fu, Ph.D., <i>Moran Researcher</i>	"Melanopsin"
December 8, 2010	Barbara Wirostko, M.D., <i>Moran Researcher</i>	"Glaucoma, A Vascular Mediated Pathology"
December 15, 2010	Mark Mifflin, M.D., Faculty, <i>Moran Eye Center</i> Brice Williams, M.D. Ph.D., Resident, <i>Moran Eye Center</i>	"ACGME Site Review Preparation" "Heed Resident Retreat"
January 12, 2011	Grant Morshedi, M.D., Resident, <i>Moran Eye Center</i>	"Nanotechnology & Ophthalmology"
January 19, 2011	David Krizaj, Ph.D., <i>Moran Researcher</i> Meghan Candee, M.D., Neurology Resident, <i>University of Utah</i>	"TRPing into Glaucoma" "12-Year-Old Girl with Unilateral Eyelid Edema and Erythema"
January 26, 2011	Paul Bernstein, M.D., Ph.D., Faculty, <i>Moran Eye Center</i>	"Phytochemicals & Retinal Disease"
February 2, 2011	Brice Williams, M.D., Ph.D., Resident, <i>Moran Eye Center</i>	"Is it a Third? And Early Worsening of Diabetic Retinopathy"
February 9, 2011	Daniel Bettis, M.D., Intern, <i>Moran Eye Center</i>	"Angiotensin Converting Enzyme & Corneal Neovascularization"
February 16, 2011	Lloyd Williams, M.D., Ph.D., Resident, <i>Moran Eye Center</i> Barbara Wirostko, M.D., <i>Moran Researcher</i>	"Elliptical Curve Fitting Using Direct Algebraic Solution to a Generalized Eigensystem: Applications to Corneal Modeling" "Phase 3 Study Xalatan in Pediatric Glaucoma"
February 23, 2011	Khizer Khaderi, M.D., MPH <i>Doheny Eye Institute,</i> <i>University of Southern California</i>	"Beyond Gaming: Assessing Visual Function through Video Game"
March 2, 2011	Professor Hugh R. Taylor, AC <i>University of Melbourne</i>	"The Impact of Vision Loss"
March 9, 2011	Derick Holt, M.D., Ph.D., Resident, <i>Moran Eye Center</i> Krista Kinard, M.D., Resident, <i>Moran Eye Center</i>	"Late Dislocation of LASIK Flap" "Flickering Movie Vision "
March 16, 2011	Karyn Bourke, M.D., Fellow, <i>Moran Eye Center</i>	"Ocular Effects of Smoking"
March 23, 2011	Meg DeAngelis, Ph.D., <i>Moran Researcher</i>	"Genomic Convergent Approach for Character-Characterizing Pathways/Mechanisms Underlying Age related Macular Degeneration"
March 30, 2011	Tom Oberg, M.D., Resident, <i>Moran Eye Center</i>	"The New Triple Procedure with Topical Anesthesia"
April 13, 2011	Mark Mifflin, M.D., Faculty, <i>Moran Eye Center</i>	"Accreditation"
April 20, 2011	Julie Shelton, M.D., Fellow, <i>Moran Eye Center</i>	"Ophthalmic Manifestations of Neurologic Disorders & Vice Versa"
May 4, 2011	Marcus Neuffer, M.D., Fellow, <i>Moran Eye Center</i>	"What DSAEK? Why Isn't my Vision 20/20?"
May 25, 2011	M.E. Hartnett, M.D., Faculty, <i>Moran Eye Center</i>	"ROP – Update from Clinical and Lab"

Clinical Trials

Currently more than 50 clinical research trials are being carried out at the Moran Eye Center, which provides more than 3,000 clinical trial visits of our 120,000 patient visits each year.

AGE-RELATED MACULAR DEGENERATION

Title: A Randomized, Double Masked, Active Controlled Phase III Study of the Efficacy, Safety, and Tolerability of Repeated Doses of Intravitreal VEGF Trap in Subjects with Neovascular Age-Related Macular Degeneration Clinical Evaluation of Anti-angiogenesis in the Retina - Intravitreal Trial 3 (VIEW-1)

Sponsor: Regeneron Pharmaceuticals, Inc.
Principal Investigator: Michael P. Teske, M.D.

Title: Geographic Atrophy Treatment Evaluation (GATE) The Safety and Efficacy of AL-8309B Ophthalmic Solution for the Treatment of Geographic Atrophy (GA) Secondary to Age-Related Macular Degeneration (AMD)

Sponsor: Alcon Research, Ltd.
Principal Investigator: Michael P. Teske, M.D.

Title: Genetics Protocol of Macular Telangiectasia Type 2: The MacTel Study

Sponsor: Lowy Research Foundation
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

Title: A Phase 2, Randomized, Double-masked, Controlled Trial to Establish the Safety and Efficacy of Intravitreal Injections of E10030 (anti-PDGF Pegylated Aptamer) given in Combination with LUCENTIS® in Subjects with Neovascular Age-related Macular Degeneration

Sponsor: Ophthotech, Inc.
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

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

Sponsor: Notal Vision, Ltd.
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

Title: Age-Related Eye Disease Study 2 (AREDS2): A Multi-center, Randomized Trial of Lutein, Zeaxanthin, and Omega-3 Long-Chain Polyunsaturated Fatty Acids (Docosahexaenoic Acid [DHA] and Eicosapentaenoic Acid [EPA]) in Age-Related Macular Degeneration

Sponsor: NIH / NEI
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

CATARACT

Title: A Prospective Multicenter Clinical Study to Evaluate the Safety and Effectiveness of the Synchrony® Dual Optic Intraocular Lens in Patients Undergoing Cataract Extraction

Sponsor: Visiogen, Inc
Principal Investigator: Alan Crandall, M.D.

Title: Toxic Anterior Segment Syndrome (TASS) Following Cataract Surgery and Intraocular Lens Implantation: Early Signals Pilot Study

Sponsor: FDA / ASCRS
Principal Investigator: Nick Mamalis, M.D.

Title: A Study of Phenylephrine HCl's and Ketorolac Tromethamine's Ability, Alone and in Combination, to Maintain Mydriasis and Relieve Pain and Inflammation in Subjects Undergoing Unilateral Cataract Extraction with Lens Replacement (CELR)

Sponsor: Omeros Corporation
Principal Investigator: Alan Crandall, M.D.

CORNEA

Title: Cornea Donor Study
Sponsor: JAEB Center for Health Research/NEI
Principal Investigator: Mark Mifflin, M.D.

RETINITIS PIGMENTOSA

Title: A Phase II Multiple Site, Randomized, Placebo-controlled Trial of Oral Valproic Acid for Retinitis Pigmentosa

Sponsor: National Neurovision Research Institute
Principal Investigator: Paul S. Bernstein M.D., Ph.D.

UVEITIS

Title: 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

Sponsor: Abbott Laboratories, Inc.
Principal Investigator: Albert T. Vitale, M.D.

Title: Human Anti-TNF Monoclonal Antibody Adalimumab in Subjects with Inactive Non-infectious Intermediate, Posterior, or Pan-uveitis

Sponsor: Abbott Laboratories, Inc.
Principal Investigator: Albert T. Vitale, M.D.

Title: A Multicenter Open-label Study of the Long-term Safety and Efficacy of the Human Anti-TNF Monoclonal Antibody Adalimumab in Subjects with Non-infectious Intermediate, Posterior, or Pan-uveitis Incorporating Amendment 1

Sponsor: Abbott Laboratories, Inc.
Principal Investigator: Albert T. Vitale, M.D.

Title: A Phase 3 Multicenter, Randomized, Double-masked Study of the Safety and Efficacy of Difluprednate 0.05% Ophthalmic Emulsion Compared to Prednisolone Acetate 1% Ophthalmic Suspension in the Treatment of Endogenous Anterior Uveitis

Sponsor: Alcon Research, Ltd.
Principal Investigator: Albert T. Vitale, M.D.

Title: Multicenter Uveitis Steroid Treatment (MUST) Trial

Sponsor: NIH / NEI
Principal Investigator: Albert T. Vitale, M.D.

NEURO-OPHTHALMOLOGY

Title: Case-crossover Study of PDE5 Inhibitor Exposure as a Potential Trigger Factor for Acute NAION

Sponsor: Pfizer, Inc.
Principal Investigator: Kathleen B. Digre, M.D.

Title: Phase I Open-label, Dose-escalating Trial of QPI-1007 Delivered by Intravitreal Injection to Patients with Optic Nerve Atrophy and Acute Non-arteritic Anterior Ischemic Optic Neuropathy

Sponsor: Quark Pharmaceuticals, Inc.
Principal Investigator: Bradley Katz, M.D., Ph.D.

Title: 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)

Sponsor: NIH / NEI
Principal Investigator: Kathleen B. Digre, M.D.

PEDIATRICS

Title: Amblyopia Treatment Study (ATS)15: Increasing Patching for Amblyopia

Sponsor: JAEB Center for Health Research / NIH
Principal Investigator: Scott A. Larson, M.D.

Title: Amblyopia Treatment Study (ATS) 16: Augmenting Atropine Treatment for Amblyopia

Sponsor: JAEB Center for Health Research / NIH
Principal Investigator: Scott A. Larson, M.D.

Title: Telemedicine Approaches to Evaluating Acute-phase ROP (The e-ROP Study)

Sponsor: NIH / NEI
Principal Investigator: Robert O. Hoffman, M.D.

CLINICAL RESEARCH AWARDS

Title: National Eye Evaluation Research Network (NEER) Clinical Treatment and Evaluation Centers (CTEC) for the Study of Orphan Inherited Retinal Degenerative Diseases and Dry Age-related Macular Degeneration

Sponsor: National Neurovision Research Institute and the Department of Defense (DOD) Telemedicine and Advanced Technology Research Center (TATRC)
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

Title: Measurement of Critical Flicker Fusion Frequency

Funding: University of Utah Technology Commercialization Grant
Principal Investigator: Bradley Katz, M.D., Ph.D.

Title: Proteomics and Genomics of Giant Cell Arteritis

Funding: American Geriatrics Society
Principal Investigator: Bradley Katz, M.D., Ph.D.

Title: Genomic Analysis of Non-arteritic Anterior Ischemic Optic Neuropathy

Funding:
Principal Investigator: Bradley Katz, M.D., Ph.D.

Title: Raman Measurement of Macular Carotenoid Pigments in the Human Retina

Funding: NIH/NEI
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

Title: Genetic and Molecular Studies of Eye Diseases

Funding: NIH/NEI
Principal Investigator: Gregory Hageman, Ph.D.

Title: Macular Pigment Imaging in Infants using the RetCam®

Funding: Abbott Laboratories, Inc.
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

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

Funding: Lowy Research Institute
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

Title: National Ophthalmic Genotyping and Phenotyping Network, Stage 1 — Creation of DNA Repository for Inherited Ophthalmic Diseases

Funding: NIH/NEI
Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

Title: Communication About Glaucoma and Patient Outcomes

Funding: NIH
Principal Investigator: Jason Goldsmith, M.D.

INVESTIGATOR-INITIATED CLINICAL RESEARCH PROJECTS

Title: Allegretto Wave Optimized versus VISX Star4 CustomVUE Laser Assisted in situ Keratomileusis (LASIK)

Principal Investigator: Majid Moshirfar, M.D.

Title: Allegretto Wave Optimized versus VISX Star4 CustomVUE Photorefractive Keratectomy (PRK)

Principal Investigator: Majid Moshirfar, M.D.

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

Principal Investigator: Paul S. Bernstein, M.D., Ph.D.

Title: Impact of AcrySof Glistenings on Visual Quality

Principal Investigator: Randall J Olson, M.D.

Title: Use of Black Diaphragm Intraocular Lens for Aniridia

Principal Investigator: Alan Crandall, M.D.

Title: Genetic Associations in Preterm Infants at Risk of Retinopathy of Prematurity

Principal Investigator: Mary Elizabeth Hartnett, M.D.

Title: IIH Without Papilledema Exists

Principal Investigator: Kathleen B. Digre, M.D.

Title: Arachnoid Granulations and Idiopathic Intracranial Hypertension

Principal Investigator: Kathleen B. Digre, M.D.

Title: Assessment of Photophobia in Moran Eye Center Patients

Principal Investigator: Kathleen B. Digre, M.D.

Title: Evaluation of a Diagnostic Clinical Evaluation Tool for Progressive Supranuclear Palsy

Principal Investigator: Kathleen B. Digre, M.D.

Title: Effect of Systemic Anticoagulant and Antiplatelet Therapy on Outcomes of Trabeculectomy

Principal Investigator: Jason Goldsmith, M.D.

Title: Long-term Outcome of Pediatric Tear Duct Surgery

Principal Investigator: Scott A. Larson, M.D.

Title: Utah Childhood Vision Screening Survey

Principal Investigator: Scott A. Larson, M.D.

Title: Retrospective Analysis of Neurofibromatosis Type 1-Associated Optic Glioma Outcome after Treatment

Principal Investigator: Robert O. Hoffman, M.D.

Title: Optic Nerve Drusen: Clinical Characterization and Genetic Mapping

Principal Investigator: Bradley Katz, M.D., Ph.D.

Title: Treatment of Giant Cell Arteritis with Antibiotics

Principal Investigator: Bradley Katz, M.D., Ph.D.

Title: Screening Device for Diseases of the Optic Nerve

Principal Investigator: Bradley Katz, M.D., Ph.D.

Title: Benign Essential Blepharospasm in Children

Principal Investigator: Judith Warner, M.D.

National & International *Presentations/Lectures*

PRESENTER	TOPIC OR TITLE	LOCATION	DATE
Paul Bernstein, M.D., Ph.D.	Platform speaker, RD2010 meeting.	Montreal, Canada	2010 - Present
	Invited speaker and panelist, Hohenheim Consensus Conference.	Stuttgart, Germany	2010 - Present
Alan Crandall, M.D.	Presidents' Address (outgoing). The American Society of Cataract and Refractive Surgery (ASCRS).	Boston, Massachusetts	2010
	Cataract in the Patient with Pseudoexfoliation. ASCRA Winter Update 2010	Playa del Carmen, Mexico	2010
	Under Pressure - Glaucoma Issues in Cataract Surgery. Asia-Pacific Association of Cataract and Refractive Surgeons.	Cairns, Australia	2010
	International Prechop Symposium. The American Society of Cataract and Refractive Surgery (ASCRS).	Boston, Massachusetts	2010
	Hard Lenses with Loose Zonules in PXE Case Presentation. American Society of Cataract and Refractive Surgery (ASCRS). 2010 Winter Update.	Playa del Carmen, Mexico	2010 - Present
R. Michael Duffin, M.D.	Indications and Techniques for Penetrating Cornea Transplantation. Bolivian Ophthalmology Society.	La Paz, Bolivia	2010
	Medical Treatment of Ocular Surface Disease. Bolivian Ophthalmology Society.	La Paz, Bolivia	2010
Meg DeAngelis, M.D.	Identification of Underlying Mechanisms of the Complex Disorder Age-Related Macular Degeneration. University of Otago Christchurch School of Medicine.	Christchurch New Zealand	2010
Gregory Hageman, M.D.	Plenary Lecture, "A New Era for Age-related Macular Degeneration: Biological & Therapeutic Insights," Beaumont Hospital.	Dublin, Ireland	2010
	Keynote Speaker, "A New Era in our Understanding of Age-related Macular Degeneration," Retina 2010.	Dublin, Ireland	2010
	Invited Speaker, "Complement Dysregulation in AMD," Macula of Paris 2010.	Paris, France	2010
	Invited Speaker, "Complement, Immune Responses and Age-related Macular Degeneration," 16th Retina International World Congress.	Stresa, Italy	2010
Mary E. Hartnett	Gene-environment Interactions and Retinal Disease. Association for Research in Vision and Ophthalmology (ARVO).	Ft. Lauderdale, Florida	2010
	Retinopathy of Prematurity: Genetics and Environment. Association for Research in Vision and Ophthalmology (ARVO).	Ft. Lauderdale, Florida	2010
Nick Mamalis	Toxic Anterior Segment Syndrome Update. XI-th Annual International Congress. Modern Technologies in Cataract and Refractive Surgery 2010. The Russian Society of Ophthalmologists.	Moscow, Russia	2010

Moran faculty members have presented at hundreds of lectures and presentations across the country and world. This is a sample of their presentations from 2010.

National & International *Presentations/Lectures*

PRESENTER	TOPIC OR TITLE	LOCATION	DATE
	New and Experimental Accommodating IOLs. American Society of Cataract and Refractive Surgery: Winter Update.	Riviera Maya, Mexico	2010
	Toxic Anterior Segment Syndrome: Analysis of Recent Outbreaks. American Academy of Ophthalmology.	Chicago, Illinois	2010
Mark Mifflin	Anatomy and Physiology of the Anterior Segment. Ophthalmic Photographers' Society.	Chicago, Illinois	2010
Majid Moshirfar	Prospective Comparison of Visual Outcomes After Wavefront-Guided PRK Versus Wavefront-Guided LASIK. J. Schliesser, M. Moshirfar, J.C. Chang. American Society of Cataract and Refractive Surgery.	Boston, Massachusetts	2010
	Adipose-Derived Stem Cells on Naturally Derived Scaffold as New Horizon in Bioengineered Cornea: Preclinical Pilot Project. L Espandar, M Moshirfar. American Society of Cataract and Refractive Surgery.	Boston, Massachusetts	2010
Randall J Olson	International Task Force of Ophthalmic Subspecialty Education. World Ophthalmology Congress.	Berlin, Germany	2010
	Comparative Study of Corneal Endothelial Protection Characteristics Between Dispersive and Adaptive OVDs. XXVIII Congress of ESCRS.	Paris, France	2010
	Endophthalmitis Prevention. The American Society of Cataract and Refractive Surgery. Eye World Symposium.	Boston, Massachusetts	2010
	Complications Associated with Prior Keratoplasty. American Academy of Ophthalmology	Chicago, Illinois	2010
Geoffrey Tabin	Manual Small Incision Cataract Surgery (SICS). Asia-Pacific Academy of Ophthalmology.	Beijing, China	2010
	Extracapsular Cataract Extration: Non-phacoemulsification. Large and Small Incision Approach. American Academy of Ophthalmology.	Chicago, Illinois	2010
Liliana Werner	Alcon Advancements in Cataract Technology Symposium.	Fort Worth, Texas	
	117th Congress of the Société Française d'Ophtalmologie.	Paris, France	2010
	XXVth Congress of the Sociedad Española de Cirugía Ocular Implanto-Refractiva (SECOIR).	Cadiz, Spain	2010
	World Ophthalmology Congress.	Berlin, Germany	2010
Norm Zabriskie	Managing Glaucoma, Cape Verde Hospital.	Praia Cape Verde, Africa	2005 - Present
	Management of Glaucoma, Georgetown Hospital.	Georgetown, Guyana	2006 - Present
Donnel Creel	Fundamentals of Electroretinograms. B.P. Koiraza Lion's Centre for Ophthalmic Studies. Tribhuvan University Teaching Hospital.	Kathmandu, Nepal	2010
	Visual anomalies associated with albinism. Hong Kong Eye Hospital.	Hong Kong, China	2010

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	<i>Total Award</i>		
Balamurali Ambati, M.D., Ph.D.		<i>Membrane Protein Trafficking</i>	\$1,795,090
<i>The Role of sFlt in Corneal Avascularity</i>	\$1,682,593	National Institute of Health Duration: 12/1/2008–11/30/13	
National Eye Institute Duration: 5/1/2008–4/30/13		<i>Mammalian Phototransduction</i>	\$1,678,511
<i>Supplement - Intraceptor</i>	\$112,875	National Institute of Health Duration: 12/2/2006–11/30/11	
National Eye Institute Duration: 9/1/2010–8/31/11		<i>Molecular and Cellular Characterization of Spata7 in Mouse Photoreceptor</i>	\$40,000
<i>Intraceptor Interference of VEGF Pathways</i>	\$1,486,985	Knights Templar Eye Foundation Duration: 7/1/2010–6/30/11	
National Eye Institute Duration: 2/1/2008–4/30/12		<i>Study of Retinal Degeneration</i>	\$176,000
<i>Nanoparticle Drug Delivery</i>	\$50,000	Foundation Fighting Blindness Duration: 12/2/2006–11/30/11	
Utah Science Technology and Research Duration: 8/1/2010–6/30/11		Paul S. Bernstein, M.D., Ph.D.	
<i>Ocular Drug Delivery</i>	\$50,000	<i>VLC-PUF As in Dominant Stargardt's Disease (STGD3)</i>	\$195,000
University of Utah Research Foundation Duration: 11/15/2010–11/14/11		Foundation Fighting Blindness Duration: 8/1/2010–7/31/13 <i>This grant was shared with David Krizaj, Ph.D.</i>	
<i>Sirna Inhibition of Corneal Neovascularization</i>	\$79,013	<i>Biochemistry & Pharmacology of Macular Cartenoids</i>	\$1,866,201
Quark Pharmaceuticals Inc. Duration: 9/1/2010–1/31/11		National Institute of Health Duration: 7/1/2007–4/30/12	
Alessandra Angelucci, M.D., Ph.D.		<i>Macular Disorders</i>	\$240,000
<i>Contextual Effects in V1</i>	\$240,025	Macula Vision Research Foundation Duration: 12/16/2007–12/15/12	
National Science Foundation Duration: 3/1/2009–2/28/11		<i>Mactel Macular Carotenoids</i>	\$215,400
<i>V1 to V2 Pathways</i>	\$1,121,226	Lowy Medical Research Institute Duration: 11/1/2010–8/31/12	
National Institute of Health Duration: 8/1/2009–7/31/12		Margaret M. DeAngelis, Ph.D.	
Wolfgang Baehr, Ph.D.		<i>Sibling Study of Age-Related Macular Degeneration</i>	\$811,358
<i>Core Vision Research Grant (Baehr & Bernstein)</i>	\$959,218	National Institute of Health Duration: 7/31/2010–8/31/11	
National Institute of Health Duration: 7/1/2010–6/30/15		<i>Genetic Epidemiology of Age-Related Macular Degeneration</i>	\$78,118
<i>Function of the RP Protein RP2 - Houbin Zhang</i>	\$150,248	Brigham & Womens Hospital Duration: 9/1/2010–8/31/11	
National Institute of Health Duration: 9/30/2010–9/29/11			

Identifying Underlying Mechanisms of Age-Related Macular Degeneration \$500,000
Edward N. & Della L. Thome Memorial
Duration: 7/1/2010–12/14/12

Yingbin Fu, Ph.D.

RPB Career Development Award \$200,000
Foundation Fighting Blindness
Duration: 7/1/2008–6/30/12

Assembly & Trafficking of GB1G1 Subunits in Rod Photoreceptors \$27,647
University of Utah Research Foundation
Duration: 1/1/2010–3/31/13

Development of a New Therapy for Leber Congenital Amaurosis \$40,000
Knights Templar Eye Foundation
Duration: 7/1/2011–6/30/12

Gregory Hageman, Ph.D.

DEC Complement MOD Therapy \$6,505,990
National Institute of Health
Duration: 8/1/2009–7/31/11

Mactel Research Project \$37,127
Lowy Medical Research Institute Limited
Duration: 10/1/2009–3/31/11

Mary Elizabeth R. Hartnett, M.D.

Phosphorylation of LiverX Receptor-2 - Haibo Wang Fellowship \$41,000
American Heart Association
Duration: 7/1/2009–6/30/11

(Bridge Funding) Mechanisms of Angiogenesis in ROP \$289,257
National Institute of Health
Duration: 5/1/2010–6/30/10

Mechanisms of Angiogenesis in ROP \$1,508,372
National Institute of Health
Duration: 7/1/2010–6/30/14

Endothelial Transmigration in Neovascular Age-Related Macular Degeneration \$683,687
National Institute of Health
Duration: 5/1/2010–2/29/12

Treatment for Severe ROP \$125,769
March of Dimes
Duration: 5/1/2010–5/31/11

Bryan William Jones, Ph.D.

RPB Career Development Award \$200,000
Research to Prevent Blindness
Duration: 1/1/2007–12/31/11

Normal Aging vs. Late Stage AMD Phenotypes \$750,000
Edward N & Della L Thome Memorial
Duration: 12/15/2010–12/14/12

Comp Molecular Phenotyping \$50,000
Utah Science Technology and Research
Duration: 1/12/2010–4/30/11

Bradley Katz, M.D.

Use of nanoparticle and Thin Film Technologies \$35,000
University of Utah Research Foundation
Duration: 12/1/2010–11/30/11

David Krizaj, Ph.D.

Regulation of Neurotransmission in the Retina \$1,702,478
National Institute of Health
Duration: 9/1/2007–08/31/12

Calcium Overload in Retinitis Pigmentosa Model \$232,296
Foundation Fighting Blindness
Duration: 8/1/08-7/31/11

fMRI Study of Architecturally Induced Contemplative States \$10,000
The Brain Institute, University of Utah
Duration: 2009-2011

The Role of miRNA in the Physiology and Pathology of the Mammalian Retina \$10,000
Slovenian Science Research Agency
Duration: 2010-2011

Neuroscience Program Training Grant \$25,000
National Institute of Health
Duration: 2010-2012

The Role of Very Long Chain Polyunsaturated Acids (VLC-PUFAs) in Dominant Stargardt Disease (STGD3) and Dry Age-related Macular Degeneration \$195,000
 Foundation Fighting Blindness
 Duration: 2010-2013
 This grant was shared with Paul Bernstein, M.D., Ph.D.

Core Vision Research Grant \$451,472
 National Institute of Health
 Duration: 7/1/2010-6/30/15

Edward Levine, Ph.D.

Core Vision Research Grant \$580,336
 National Institute of Health
 Duration: 12/1/2008-11/30/12

Role of CX10 Embryonic Retinal Cells \$1,493,714
 National Institute of Health
 Duration: 1/1/2010-11/30/12

Role of CHX10 in Embryonic Retinal Progenitor Cells \$206,825
 National Institute of Health
 Duration: 7/1/2010-12/31/11

Robert Marc, Ph.D.

Role of Retinoic Acid Signaling in Neuritogenesis of Retinal Degenerative \$20,000
 Fight for Sight
 Duration: 7/1/2010-6/30/2011

Structural Neurochemistry of Retinal Circuits \$2,322,329
 National Institute of Health
 Duration: 12/1/2008-11/30/11

Retinal Remodeling \$1,289,958
 National Eye Institute
 Duration: 7/1/2010-6/30/15

Structural Neurochemistry Role of Retinoic Acid Signaling In Neuritogenesis During Retinal Degeneration \$40,000

Knights Templar Eye Foundation
 Duration: 7/1/2010-6/30/11

Core Vision Research Grant \$1,131,287
 National Institute of Health
 Duration: 7/1/2010-6/30/15

(ARRA) Challenges in Imaging UCSB Subcontract \$359,728

National Science Foundation
 Duration: 10/1/2010-9/30/13

Metabolic Markers of Photoreceptor Light Induced Damage \$2,100

Fight For Sight
 Duration: 9/1/2010-11/30/10

Randall J Olson, M.D.

Add-On Lens for the Treatment of Refractive Error & Dysphotopsia \$35,000
 University of Utah Research Foundation
 Duration: 11/1/2010-10/31/11

Jun Yang, Ph.D.

Gene Therapy for Retinitis Pigmentosa in Usher Syndrome Type 2 \$150,000
 Foundation Fighting Blindness
 Duration: 8/1/2010-7/31/13

Disease Mechanism and Treatment of RP in Usher Syndrome Type 2 \$75,000

Hope for Vision
 Duration: 2/1/2010-1/31/11
 National Eye Institute
 Duration: 4/1/2005-06/30/10

Journal Articles

This is a sample of more than 100 abstracts of published materials and posters presented by Moran faculty between July 1 and December 31, 2010 **PUBLISHED**

Acta Ophthalmologica

Ehrlich R, Harris A, Ciulla TA, Kheradiya N, Winston DM, **Wirotko B**. **Diabetic macular oedema: physical, physiological and molecular factors contribute to this pathological process.** Acta Ophthalmol. 2010 May;88(3):279-91. Epub 2010 Mar 11. Review. PMID: 20222885.

Advances in Experimental Medicine and Biology

Barabas P, Cutler Peck C, **Krizaj D**. **Do Calcium channel blockers rescue dying photoreceptors in the Pde6b (rd1) mouse?** Adv Exp Med Biol. 2010;664:491-9. PubMed PMID: 20238051.

Jiang L, **Baehr W**. **GCAP1 Mutations associated with autosomal dominant cone dystrophy.** Adv Exp Med Biol. 2010;664:273-82. PMID: 20238026.

American Journal of Clinical Nutrition

Mayne ST, Cartmel B, Scarmo S, Lin H, Leffell DJ, Welch E, Ermakov I, Bhosale P, **Bernstein PS, Gellermann W**. **Noninvasive assessment of dermal carotenoids as a biomarker of fruit and vegetable intake.** Am J Clin Nutr. 2010 Oct;92(4):794-800. Epub 2010 Aug 4. PMID: 20685953.

American Journal of Ophthalmology

Sobrin L, Reynolds R, Yu Y, Fagerness J, Levezuel N, **Bernstein PS**, Souied EH, Daly MJ, Seddon JM. **ARMS2/HTRA1 locus can confer differential susceptibility to the advanced subtypes of age-related macular degeneration.** Am J Ophthalmol. 2011 Feb;151(2):345-52.e3. Epub 2010 Dec 3. PMID: 21122828.

Ness PJ, **Mamalis N, Werner L, Maddula S, Davis DK, Donnenfeld ED, Olson RJ**. **An anterior chamber toxicity study evaluating Besivance, AzaSite, and Ciprofloxacin.** Am J Ophthalmol. 2010 Oct;150(4):498-504.e1. Epub 2010 Aug 3. PubMed PMID: 20678751.

Meyer JJ, Kuo AF, **Olson RJ**. **The risk of capsular breakage from phacoemulsification needle contact with the lens capsule: a laboratory study.** Am J Ophthalmol. 2010 Jun;149(6):882-886.e1. Epub 2010 Mar 15. PubMed PMID: 20231013.

Schmutz JS, **Olson RJ**. **Thermal comparison of Infiniti OZil and Signature Ellips phacoemulsification systems.** Am J Ophthalmol. 2010 May;149(5):762-7.e1. Epub 2010 Mar 4. PubMed PMID: 20202619.

American Journal of Pathology

Monaghan-Benson E, Hartmann J, Vendrov AE, Budd S, Byfield G, Parker A, Ahmad F, Huang W, Runge M, Burridge K, Madamanchi N, **Hartnett ME**. **The role of vascular endothelial growth factor-induced activation of NADPH oxidase in choroidal endothelial cells and choroidal neovascularization.** Am J Pathol. 2010 Oct;177(4):2091-102. Epub 2010 Aug 27. PMID: 20802176.

American Journal of Physiology. Cell Physiology

Krizaj D, Mercer AJ, Thoreson WB, Barabas P. **Intracellular pH modulates inner segment calcium homeostasis in vertebrate photoreceptors.** Am J Physiol Cell Physiol. 2011 Jan;300(1):C187-97. Epub 2010 Sep 29. PubMed PMID: 20881233.

Archives of Biochemistry & Biophysics

Li B, Ahmed F, **Bernstein PS**. **Studies on the singlet oxygen scavenging mechanism of human macular pigment.** Arch Biochem Biophys. 2010 Dec 1;504(1):56-60. Epub 2010 Aug 1. PubMed PMID: 20678467.

Archives of Ophthalmology

Schaumberg DA, Chasman D, Morrison MA, Adams SM, Guo Q, Hunter DJ, Hankinson SE, **DeAngelis MM**. **Prospective study of common variants in the retinoic acid receptor-related orphan receptor α gene and risk of neovascular age-related macular degeneration.** Arch Ophthalmol. 2010 Nov;128(11):1462-71. PMID: 21060049.

Moshirfar M, Khalifa YM, Espandar L, **Miffilin MD**. **Aquarium coral keratoconjunctivitis.** Arch Ophthalmol. 2010 Oct;128(10):1360-2. PubMed PMID: 20938008.

Budd SJ, Thompson H, **Hartnett ME**. **Association of retinal vascular endothelial growth factor with avascular retina in a rat model of retinopathy of prematurity.** Arch Ophthalmol. 2010 Aug;128(8):1014-21. PMID: 20697002.

Budd SJ, **Hartnett ME**. **Increased angiogenic factors associated with peripheral avascular retina and intravitreal neovascularization: a model of retinopathy of prematurity.** Arch Ophthalmol. 2010 May;128(5):589-95. PMID: 20457980.

Gehrs KM, Jackson JR, Brown EN, Allikmets

R, **Hageman GS**. **Complement, age-related macular degeneration and a vision of the future.** Arch Ophthalmol. 2010 Mar;128(3):349-58. Review. PMID: 20212207.

Biology of Reproduction

Li H, Palczewski K, **Baehr W, Vitamin A** **deficiency results in meiotic failure and accumulation of undifferentiated spermatogonia in prepubertal mouse testis.** Biol Reprod. 2011 Feb;84(2):336-41. Epub 2010 Sep 29. PMID: 20881313.

BMC Ophthalmology

Weber PA, **Wirotko BM**, Xu X, Goss TF, Zlateva G. **Newly diagnosed exudative age-related macular degeneration treated with pegaptanib sodium monotherapy in US community-based practices: medical chart review study.** BMC Ophthalmol. 2010 Feb 9;10:2. PMID: 20144224.

Brain Research Bulletin

Qazi Y, Wong G, Monson B, Stringham J, **Ambati BK**. **Corneal transparency: genesis, maintenance and dysfunction.** Brain Res Bull. 2010 Feb 15;81(2-3):198-210. Epub 2009 May 27. Review. PubMed PMID: 19481138.

British Journal of Ophthalmology

Gupta P, Yee KM, Garcia P, Rosen RB, Parikh J, **Hageman GS**, Sadun AA, Sebag J. **Vitreoschisis in macular diseases.** Br J Ophthalmol. 2011 Mar;95(3):376-80. Epub 2010 Jun 28. PMID: 20584710.

Bulletin of Mathematical Biology

Newby JM, **Bressloff PC**. **Quasi-steady state reduction of molecular motor-based models of directed intermittent search.** Bull Math Biol. 2010 Oct;72(7):1840-66. Epub 2010 Feb 19. PMID: 20169417.

Canadian Journal of Ophthalmology

Olson RJ. **Thoughts on simultaneous bilateral cataract surgery.** Can J Ophthalmol. 2010 Dec;45(6):569-71. English, French. No abstract available. PMID: 21135889.

Welch NR, Gregori N, **Zabriskie N, Olson RJ**. **Satisfaction and dysphotopsia in the pseudophakic patient.** Can J Ophthalmol. 2010 Apr;45(2):140-3. PubMed PMID: 20379298.

Journal Articles

PUBLISHED

Clinical and Experimental Ophthalmology

Thapa R, Paudyal G, **Bernstein PS**. **Demographic characteristics, patterns and risk factors for retinal vein occlusion in Nepal: a hospital-based case-control study**. *Clin Experiment Ophthalmol*. 2010 Aug;38(6):583-90. Epub 2010 Jun 24. PMID: 20584017.

Clinical Ophthalmology

Olson R, Sonnenfeld E, Bucci FA, Price FW, Raizman M, Solomon K, Devgan U, Trattler W, Dell S, Wallace RB, Callegan M, Brown H, McDonnell PJ, Conway T, Schiffman RM, Hollander DA. **Methicillin resistance of Staphylococcus species among health care and nonhealth care workers undergoing cataract surgery**. *Clin Ophthalmol*. 2010 Dec 10;4:1505-14. PubMed PMID: 21191448; PubMed Central PMCID: PMC3009999.

Chan RP, Yonekawa Y, Morrison MA, Sun G, Wong RK, Perlman JM, Chiang MF, Lee TC, **Hartnett ME, DeAngelis MM**. **Association between assisted reproductive technology and advanced retinopathy of prematurity**. *Clin Ophthalmol*. 2010 Nov 26;4:1385-90. PMID: 21179223 [PubMed - in process]

Khalifa YM, Davis D, **Mamalis N, Moshirfar M**. **Epithelial growth over the optic surface of the type 1 Boston Keratoprosthesis: histopathology and implications for biointegration**. *Clin Ophthalmol*. 2010 Oct 5;4:1069-71. PubMed PMID: 20957142.

Khalifa YM, **Moshirfar M**. **Improved centration of the type 1 Boston Keratoprosthesis in donor carrier tissue**. *Clin Ophthalmol*. 2010 Aug 19;4:931-3. PMID: 20823936.

Cornea

Feilmeier MR, Sivaraman KR, Oliva M, **Tabin GC**, Gurung R. **Etiologic diagnosis of corneal ulceration at a tertiary eye center in Kathmandu, Nepal**. *Cornea*. 2010 Dec;29(12):1380-5. PubMed PMID: 20847686.

Current Eye Research

Haas P, Steindl K, Aggermann T, Schmid-Kubista K, Krugluger W, **Hageman GS**, Binder S. **Serum VEGF and CFH in exudative age-related macular degeneration**. *Curr Eye Res*. 2011 Feb;36(2):143-8. Epub 2010 Dec 15. PMID: 21158586.

Current Opinion in Ophthalmology

Moshirfar M, Hazin R, Khalifa YM. **Central toxic keratopathy**. *Curr Opin Ophthalmol*. 2010 Jul;21(4):274-9. Review. PubMed PMID: 20531192.

Moshirfar M, Mifflin M, Wong G, Chang JC. **Cataract surgery following phakic intraocular lens implantation**. *Curr Opin Ophthalmol*. 2010 Jan;21(1):39-44. Review. PubMed PMID: 19890209.

Current Topics in Developmental Biology

Fuhrmann S. **Eye morphogenesis and patterning of the optic vesicle**. *Curr Top Dev Biol*. 2010;93:61-84. Review. PubMed PMID: 20959163.

Developmental Biology

Fujimoto E, Stevenson TJ, **Chien CB**, Bonkowski JL. **Identification of a dopaminergic enhancer indicates complexity in vertebrate dopamine neuron phenotype specification**. *Dev Biol*. 2011 Apr 15;352(2):393-404. Epub 2011 Jan 27. PMID: 21276790.

Pittman AJ, Gaynes JA, **Chien CB**. **nev (cyfip2) is required for retinal lamination and axon guidance in the zebrafish retinotectal system**. *Dev Biol*. 2010 Aug 15;344(2):784-94. Epub 2010 Jun 9. PMID: 20537992.

European Journal of Neuroscience

He Q, Wang P, **Tian N**. **Light-evoked synaptic activity of retinal ganglion and amacrine cells is regulated in developing mouse retina**. *Eur J Neurosci*. 2011 Jan;33(1):36-48. doi: 10.1111/j.1460-9568.2010.07484.x. Epub 2010 Nov 22. PMID: 21091802.

Human Molecular Genetics

Kirschman LT, Kolandaivelu S, **Frederick JM**, Dang L, Goldberg AF, **Baehr W**, Ramamurthy V. **The Leber congenital amaurosis protein, AIPL1, is needed for the viability and functioning of cone photoreceptor cells**. *Eur J Neurosci. Hum Mol Genet*. 2010 Mar 15;19(6):1076-87. Epub 2009 Dec 30. PMID: 20042464.

IEEE transactions on neural systems and rehabilitation engineering

Baker JJ, Scheme E, Englehart K, Hutchinson DT, **Greger B**. **Continuous detection and decoding of dexterous finger flexions with implantable myoelectric sensors**.

IEEE Trans Neural Syst Rehabil Eng. 2010 Aug;18(4):424-32. Epub 2010 Apr 8. PMID: 20378481.

Insight (American Society of Ophthalmic Registered Nurses)

Longmuir S, Gilbertson A, Pfeifer W, **Olson RJ**. **Pediatric ophthalmology attire: should we wear a white coat?** 2010 Oct-Dec;35(4):11-3. PMID: 21189797.

International Journal of Pharmaceutics

Mayo AS, **Ambati BK**, Kompella UB. **Gene delivery nanoparticles fabricated by supercritical fluid extraction of emulsions**. *Int J Pharm*. 2010 Mar 15;387(1-2):278-85. Epub 2009 Dec 16. PMID: 20025945.

Investigative Ophthalmology & Visual Sciences

Wickremasinghe SS, Xie J, Lim J, Chauhan DS, Robman L, Richardson AJ, **Hageman GS**, Baird PN, Guymier R. **Variants in the APOE Gene are associated with improved treatment outcome following anti-VEGF therapy for neovascular AMD**. *Invest Ophthalmol Vis Sci*. 2011 Jan 18. [Epub ahead of print] PMID: 21245410.

Edelhauser HF, Rowe-Rendleman CL, Robinson MR, Dawson DG, Chader GJ, Grossniklaus HE, Rittenhouse KD, Wilson CG, Weber DA, Kuppermann BD, Csaky KG, Olsen TW, Kompella UB, Holers VM, **Hageman GS**, Gilger BC, Campochiaro PA, Whitcup SM, Wong WT. **Ophthalmic drug delivery systems for the treatment of retinal diseases: basic research to clinical applications**. *Invest Ophthalmol Vis Sci*. 2010 Nov;51(11):5403-20. PMID: 20980702.

Zayed MA, Uppal A, **Hartnett ME**. **New-onset maternal gestational hypertension and risk of retinopathy of prematurity**. *Invest Ophthalmol Vis Sci*. 2010 Oct;51(10):4983-8. Epub 2010 May 12. PMID: 20463319.

Westenskow PD, McKean JB, Kubo F, Nakagawa S, **Fuhrmann S**. **Ectopic Mitf in the embryonic chick retina by co-transfection of β -catenin and Otx2**. *Invest Ophthalmol Vis Sci*. 2010 Oct;51(10):5328-35. Epub 2010 May 12. PubMed PMID: 20463321.

Journal of Cataract & Refractive Surgery

Werner L, Jia G, Sussman G, Maddula S, Ness P, Davis D, Burrow M, **Mamalis N**. **Mechanized model to assess**

capsulorhexis. resistance to tearing. J Cataract Refract Surg. 2010 Nov;36(11):1954-9. PubMed PMID: 21029905.

Khalifa YM, **Moshirfar M**, **Mifflin MD**, Kamae K, **Mamalis N**, **Werner L**. Cataract development associated with collagen copolymer posterior chamber phakic intraocular lenses: clinicopathological correlation. J Cataract Refract Surg. 2010 Oct;36(10):1768-74. PubMed PMID: 20870124.

Maddula S, Davis DK, Ness PJ, Burrow MK, **Olson RJ**. Comparison of wound strength with and without a hydrogel liquid ocular bandage in human cadaver eyes. J Cataract Refract Surg. 2010 Oct;36(10):1775-8. PubMed PMID: 20870125.

Leng C, Feiz V, Modjtahedi B, **Moshirfar M**. Comparison of simulated keratometric changes induced by custom and conventional laser in situ keratomileusis after myopic ablation: retrospective chart review. J Cataract Refract Surg. 2010 Sep;36(9):1550-5. PubMed PMID: 20692569.

Zaug B, **Werner L**, Neuhann T, Burrow M, Davis D, **Mamalis N**, Tetz M. Clinicopathologic correlation of capsulorhexis phimosis with anterior flexing of single-piece hydrophilic acrylic intraocular lens haptics. J Cataract Refract Surg. 2010 Sep;36(9):1605-9. PubMed PMID: 20692577.

Moshirfar M, Schliesser JA, Chang JC, Oberg TJ, **Mifflin MD**, Townley R, Livingston MK, Kurz CJ. Visual outcomes after wavefront-guided photorefractive keratectomy and wavefront-guided laser in situ keratomileusis: Prospective comparison. J Cataract Refract Surg. 2010 Aug;36(8):1336-43. PubMed PMID: 20656157.

Werner L, Chang W, Haymore J, Haugen B, Romaniv N, Sandstedt C, Chang S, **Mamalis N**. Retinal safety of the irradiation delivered to light-adjustable intraocular lenses evaluated in a rabbit model. J Cataract Refract Surg. 2010 Aug;36(8):1392-7. PubMed PMID: 20656165.

Werner L. Glistenings and surface light scattering in intraocular lenses. J Cataract Refract Surg. 2010 Aug;36(8):1398-420. Review. PubMed PMID: 20656166.

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Mamalis N, Grossniklaus HE, Waring GO 3rd, **Werner L**, Brubaker J, Davis D, Espandar L, Walker R, Thyzel R. Ablation of lens epithelial cells with a laser photolysis system: histopathology, ultrastructure, and immunocytochemistry. J Cataract Refract

Surg. 2010 Jun;36(6):1003-10. PubMed PMID: 20494774.

Moshirfar M, Meyer JJ, Schliesser JA, Espandar L, Chang JC. Iris-fixated phakic intraocular lens implantation for correction of high myopia in microspherophakia. J Cataract Refract Surg. 2010 Apr;36(4):682-5. PMID: 20362865.

Davis D, **Werner L**, Strenk S, Strenk L, Yeh O, **Mamalis N**. Long-term pathological follow-up of obsolete design: Pannu universal intraocular lens. J Cataract Refract Surg. 2010 Mar;36(3):512-6. PubMed PMID: 20202555.

Journal of Computational Neuroscience

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Journal of Lipid Research

Liu A, Chang J, Lin Y, Shen Z, **Bernstein PS**. Long-chain and very long-chain polyunsaturated fatty acids in ocular aging and age-related macular degeneration. J Lipid Res. 2010 Nov;51(11):3217-29. Epub 2010 Aug 5. PubMed PMID: 20688753.

Journal of Neural Engineering

Kellis S, Miller K, Thomson K, Brown R, House P, **Greger B**. Decoding spoken words using local field potentials recorded from the cortical surface. J Neural Eng. 2010 Oct;7(5):056007. Epub 2010 Sep 1. PMID: 20811093.

Journal of Neuro-Ophthalmology

Frohman L, **Digre K**. Elimination of consult codes in neuro-ophthalmology: another blow to our subspecialty? J Neuroophthalmol. 2010 Jun;30(2):210-1. No abstract available. PMID: 20523201.

Digre KB, Friedman DI. An overweight young woman with new headache and normal-appearing optic discs. J Neuroophthalmol. 2010 Mar;30(1):85-90. No abstract available. PMID: 20182215.

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methicillin-resistant *Staphylococcus aureus* after contact with gatifloxacin with and without preservative. J Immunol. 2010 Nov 1;185(9):5486-94. Epub J Ocul Pharmacol Ther. 2010 Apr;26(2):133-6. PubMed PMID: 20334536.

Journal of Ophthalmology

Kelly U, Yu L, Kumar P, Ding JD, Jiang H, **Hageman GS**, Arshavsky VY, Frank MM, Hauser MA, Rickman CB. Heparan sulfate, including that in Bruch's membrane, inhibits the complement alternative pathway: implications for age-related macular degeneration. J Immunol. 2010 Nov 1;185(9):5486-94. Epub 2010 Sep 27. PMID: 20876352.

Journal of Physiology

Krizaj D, Mercer AJ, Thoreson WB, Barabas P. Intracellular pH modulates inner segment calcium homeostasis in vertebrate photoreceptors. Am J Physiol Cell Physiol. 2011 Jan;300(1):C187-97. Epub 2010 Sep 29. PMID: 20881233.

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Molecular and Cellular Biochemistry

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Choi JH, Law MY, **Chien CB**, Link BA, Wong RO. **In vivo development of dendritic orientation in wild-type and mislocalized retinal ganglion cells.** *Neural Dev.* 2010 Nov 2;5:29. PMID: 21044295.

Neurologic Clinic

Spencer BR Jr, **Digre KB.** **Treatments for neuro-ophthalmologic conditions.** *Neurol Clin.* 2010 Nov;28(4):1005-35. Review. PubMed PMID: 20816275.

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Li B, Vachali P, **Bernstein PS.** **Human ocular carotenoid-binding proteins.** *Photochem Photobiol Sci.* 2010 Nov;9(11):1418-25. Epub 2010 Sep 3. Review. PubMed PMID: 20820671.

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