

Vision *for the* Future

UNIVERSITY OF ROCHESTER

FLAUM EYE INSTITUTE

SUMMER 2015 NEWSLETTER

New therapy provides solution for patients with compromised corneas

If you have ever experienced a scratched cornea, you know the suffering can be intense. Fortunately, this discomfort is usually short lived and may not require a trip to the eye doctor. However, a handful of people with severe corneal injuries or chronic conditions experience extreme dry eye, light sensitivity, pain, and diminished visual function that can make life miserable.

Unfortunately, some of these conditions are incurable or recurring. Care teams may be limited in what they can do to make patients comfortable or see well enough to perform daily activities.

Corneal specialists, general ophthalmologists and optometrists share these challenges along with their patients, many who require frequent visits to the office. While there are dozens of underlying causes the most common include:

- Autoimmune diseases
- Corneal dystrophies
- Ocular surface disorders
- Corneal injuries
- Graft versus host disease
- Prior corneal surgeries
- Keratoconus

FEI recently became the 12th center in the United States to offer a new therapy that addresses these disorders. It is called the **Boston Foundation for Sight® (BFS) prosthetic replacement of the ocular surface ecosystem** or “PROSE” for short. The treatment involves a customized medical device that is applied to the eye. Although generally not a cure for the underlying corneal disease/condition, PROSE is highly successful at providing relief and restoring visual function to patients. This can make all the difference.

PROSE is a transparent plastic dome that covers nearly the entire surface of the affected eye. It only comes into contact with the eye



TARA VAZ, O.D. HOLDING A PROSE DEVICE.

at the edge of the sclera (whites of the eyes). The rest of the prosthesis vaults above the damaged / diseased cornea, creating a fluid-filled chamber between the surface of the eye that is filled with saline solution and the patient’s natural tears. This liquid layer bathes the eye, providing near instantaneous relief and/or improved vision while protecting the damaged cornea from the environment and blink-related trauma. The plastic dome allows for the passage of oxygen into the chamber, providing additional support for

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JAMES AQUAVELLA, M.D. AND KRYSTEL HUXLIN, Ph.D.

Endowed professors installed

A recent issue of *Vision for the Future* highlighted the incredible generosity demonstrated by FEI Professor of Ophthalmology, **James Aquavella, M.D.**, when he endowed two professorships through an estate gift honoring his late wife, Catherine. During a recent ceremony, FEI Research Director **Krystel Huxlin, Ph.D.**, was installed as the James V. Aquavella Professor of Ophthalmology.

The James V. Aquavella Research Professorship specifically recognizes a scientist

or clinician scientist who is focused on translating basic scientific discoveries into useful medicine. Income derived from the endowment provides the professor with more financial security so that she can better focus on long term solutions to preventing and curing eye disease. Huxlin has made noteworthy progress through developing and patenting technology that can retrain vision in persons who have sustained brain injuries such as stroke. As the Aquavella Professor, she plans on maintaining this direction, potentially helping tens of thousands of people recover or improve

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DIRECTOR'S MESSAGE

I begin by noting the passing of FEI Administrator and friend **John Meade, M.P.H.** During his ten years with the Flaum Eye Institute, he contributed mightily to the rapid growth of the Department. He represented us well at the Medical Center and in the community. Besides leading the staff in daily operations, he was a driving force in our strategic planning and learning organization initiatives. He always kept our missions for research, education, patient care, and technology development in the forefront. John has given us an outstanding operational platform upon which we will build our future. We will miss him!

Our clinical enterprise continues to grow. In May, we opened a new optical and vision services location (page 3) that will serve as a laboratory for delivery of health education and patient care in a retail environment. Our cornea team has added two new services to the region. Our PROSE clinic (cover) has started to treat patients with a unique medical device that promises to be of great benefit to patients with severe corneal disease. We are grateful to FEI Advisory Board member and PROSE patient Joe Hanna whose generosity helped jump-start this program. We also became one of the first practices in the Northeast to offer a new kind of corneal transplantation (page 8). This procedure promises to improve patient outcomes and reduce recovery time.



As we began a new academic year, we said goodbye to four outstanding residents (page 10). All of them began fellowship training at some of the most prestigious institutions in America. We welcomed four new residents who began their careers in ophthalmology. I am confident that they will become superb ophthalmologists. We also said farewell to our recent retina and cornea

fellows. Each will begin a private practice career using the excellent medical and surgical skills that they demonstrated during their training. And, we welcomed our new retina fellow who will spend the next two years with us.

FEI celebrated many achievements over the past six months. The University officially awarded endowed professorships to **James Aquavella, M.D.**, and to **Krystal Huxlin, Ph.D.** (cover article). **Rajeev Ramchandran, M.D., M.B.A.**, was recognized for his service to communities here and abroad by the Rochester Academy of Medicine. At our annual meeting, we welcomed back FEI

graduate **Warren Hill, M.D.**, who received the Distinguished Alumnus Award. His many contributions in the field of cataract surgery are a source of great pride. At the same meeting we also launched the inaugural **Billitier Family Distinguished Visiting Professor Lecture** made possible by the generosity of Ron Billitier and other donors. Several faculty members were acknowledged for promotions and appointments to local and national organizations involved in health-care. FEI's excellent diagnostic imaging team won numerous awards at the American Academy of Ophthalmology meeting.

Research at FEI continues to thrive. We welcome **Jesse Schalleck, Ph.D.**, an expert in functional retinal imaging at the cellular level. Our stem cell researcher, **Ruchira Singh, Ph.D.**, received grants from several private foundations (page 7) as well as the University. **Amy Kiernan, Ph.D.**, and **Krystal Huxlin, Ph.D.**, were funded for their research by the National Institutes for Health (page 8). A collaborative effort between the Center for Visual Science and FEI was funded through NEI's Audacious Goals in Eye Research program with a commitment of \$3.8 million.

Our community outreach effort gained momentum as faculty, staff and volunteers provided eye health information and conducted screenings for the region's underserved population. This was highlighted by our **Glasses for Kids** program. Youngsters from local schools without convenient access to care were screened for refractive error and other issues then fitted with new glasses the same day. This program was made possible through the efforts of faculty and staff and the generosity of the **Glover-Crask Charitable Foundation**. We also launched the **Friends of the Flaum Eye Institute** (page 9). This auxiliary organization of volunteers will be critical to our mission to promote eye health. Please consider joining.

I cannot begin to thank enough all of the people involved in promoting and sustaining the growth of FEI. This includes our Advisory Board, donors, referring doctors, alumni, faculty and staff, and all the patients who put their trust in us. You have my sincere gratitude.

Sincerely,

Steven E. Feldon, M.D., M.B.A.

Director, David and Ilene Flaum Eye Institute
Chair, Department of Ophthalmology
University of Rochester School of Medicine & Dentistry

Beep. Beep. Beep. Let the games begin! Beep. Beep. Beep.

Thanks to the generosity of the **Flaum Family**, FEI was the title sponsor of the **World Series of Beep Baseball** held in Rochester from late July through early August. The weeklong event drew more than two dozen teams from across the United States, Canada, and Puerto Rico. Beep baseball allows blind individuals to compete in a fast paced, modified version of America's favorite pastime. Batters attempt to hit a softball that emits a loud, rhythmic beep. When they connect with a pitch, they must run to a base that produces a buzzing sound before

fielders can find the beeping ball. If the runner finds the base first, a run is scored; if it is fielded first, it is an out.

"We feel fortunate to participate in this international event," **Steven Feldon, M.D., M.B.A.**, said. "The competitiveness and skill of these athletes is remarkable and inspiring. It is a great reminder that nearly everyone can overcome tremendous obstacles and participate in healthy, fun activities."

Eye Institute mourns loss of administrator

In June, FEI Administrator **John Meade, M.P.H.**, died from a rare form of cancer. Meade joined FEI in 2005 and was instrumental in planning and implementing its growth. During his tenure, personnel ranks swelled from 84 to more than 200, and clinical volumes, testing and surgeries experienced yearly double-digit gains.



Meade played a vital role in operations, finance, personnel and business development, including FEI's acquisition of its Geneva practice and the opening of its College Town satellite.

Meade was also a valued member of the University Administrators of Ophthalmology, a sister organization of the Association of University Professors of Ophthalmology. Within years of joining, he became respected for his skill and leadership in defining best practices for managing university ophthalmology departments. He had recently been elected to President of the Association.

Meade was a tireless worker known for his dedication to the Eye Institute and to his family. He is also remembered for his good humor, sense of fairness and his love of athletics. He is missed by all who worked with or knew him.



College Town opening marks the launch of Strong Vision Optical and Well Eye Care

Neighborhood residents and Well Eye Care patients of FEI are now able to enjoy enhanced services and a selection of upscale eye wear with the opening of a new location at College Town, a real estate project that has transformed underutilized land adjacent to the University of Rochester into a chic retail destination.

The Strong Vision name reflects FEI's regional commitment to eye health. In addition to the College Town location, there are offices at the University of Rochester Medical Center and our Finger Lakes Center in Geneva. Strong Vision offers optical services such as spectacle correction and contact lenses while providing routine eye care. Above all, Strong Vision stresses eye health education and the importance of wellness as it relates to vision.

"There is a needed transformation going on in health care," **Steven Feldon, M.D.**, said. "We are being tasked with keeping the visual system healthy. As primary care providers, we must be equipped both to assess future risk as well as to screen for eye disease at the earliest stages. The most common blinding diseases can be prevented with effective implementation of this surveillance system. We believe that a network built on a foundation of local Strong Vision optical shops combined with the research, education and advanced care capabilities of the Flaum Eye Institute provides the optimal continuum to promote regional eye health."

The College Town store opened to very positive reviews, pairing a modern interior design with two new frame lines exclusive to the region: William Morris and Coco Song. The store is open six days per week — including Saturdays — and walk-in eye examinations are available.

Hours of operation, appointment requests and special promotions for each location, as well as information about eye health, are available at www.strongvision.org

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their vision.

"This is an incredibly humbling experience," Huxlin said during the event. "By accepting this professorship, I feel entrusted with carrying Jim Aquavella's legacy of making an impact in restoring vision. I look forward to receiving Jim's continued guidance and mentorship working on something he understands deeply — bridging the gap between basic research and medicine; using science to push not only the boundaries of theoretical knowledge, but to better serve and help our fellow humans."

Also presented at the ceremony was the Catherine Aquavella Distinguished Professorship of Ophthalmology. This appointment is reserved for a clinician scientist involved in corneal research. Aquavella himself — one of the world's most renowned cornea researchers and physicians — graciously accepted the appointment. During his tenure, the professorship will not fund him, but endowment income will continue building in the corpus until the next professor is selected.

"I think endowed professorships are the best way to memorialize someone," Aquavella said. "I am proud that Kay's name (Catherine) will endure with each accolade accrued by the people who will hold this position. I am also gratified that someone so accomplished as Krystel will be the torchbearer for FEI's translational research mission which means so much to me."

Both appointments were presented by **Mark Taubman, M.D.**, University of Rochester School of Medicine & Dentistry Dean and Chief Executive Officer of UR Medical Center and **Joel Seligman, J.D.**, President of the University of Rochester.

A MOST GRATEFUL THANK YOU TO OUR DONORS FOR THEIR GENEROUS GIFTS AND ONGOING SUPPORT.

The David and Ilene Flaum Eye Institute is most grateful to its donors for their generous gifts and ongoing support. We are especially appreciative to the friends, patients, alumni and faculty who contributed to our Annual Fund. The Annual Fund is an essential source of funding that helps us to continue our groundbreaking work in vision care and research. This year, your donations had a direct impact on our mission, helping us recruit new faculty and purchase new equipment for our clinic and research laboratories. The following donors have contributed in various ways to FEI between December 1, 2014 and June 30, 2015. Gifts can be designated to the Annual Fund and mailed to:

Jennifer Richardson, Director of Advancement, FEI, 210 Crittenden Blvd., Box 659, Rochester, NY 14642.

Or make a gift online by going to eyeinstitute.urmc.edu and clicking on "Ways to Help."

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We offer special thanks to Bausch + Lomb, Research to Prevent Blindness, Glover-Crask Charitable Trust, David & Ilene Flaum, James & Catherine Aquavella, and Lynn & Walter Lutz for their sustaining support.

New program helps disadvantaged kids see better

Thanks to funding from the *Glover-Crask Charitable Trust*, the Flaum Eye Institute has been able to launch the **Glasses for Kids** program. Glasses for Kids allows FEI to provide vision screenings and eyeglasses for children who live below the poverty line and are in need of vision care. Since its inception, the program has served three local charter schools including Hope Hall School, Nativity Preparatory Academy, and the Renaissance Academy Charter School of the Arts.

At every event, a pediatric ophthalmologist, residents, opticians, an optometrist, a nurse, and staff are on hand. Each student is given a vision screening to determine whether or not he or she needs glasses. Although not a full eye exam, the team does check for vision problems that may warrant more than glasses. If a child's vision falls below 20/40, the student is invited to choose a pair of frames from a wide selection of up-to-date styles. Opticians then use the prescription provided at the screening to make the glasses using FEI's on-site lens finishing lab. Nearly everyone gets to take home his or her glasses the same day.

With the exception of time and transportation, the students and schools do not absorb any cost associated with the program. FEI is working to open the program to more schools as we recognize the overwhelming need for vision correction in the community. Unfortunately, these important screenings often fall through the cracks for families that are struggling financially. Poor vision due to refractive error is a main reason children fall behind in school, and many don't realize that they have a problem until they are fitted with glasses. Sister Diana Dolce with the Hope Hall School understands this need better than most. "Many times, families want to provide what's best but they have



FEI OPTICIAN ANTHONY JULIANO (RIGHT) FITS STUDENT WITH GLASSES.

to pay the bills they need to live, so something like eye care gets put on the back shelf," she said.

Glasses for Kids is the idea of **John Harris**, who is an FEI advisory board member and manager of the Glover-Crask Charitable Trust. A key goal of the trust is to intervene in the lives of at risk youth to help them succeed in society. Glover-Crask has committed to providing additional funding as the venture takes off. Harris and FEI's **Michele Replogle** and **Callie Appleby** — who managed the logistics of starting the program — plan to provide this service monthly and expand it throughout the Finger Lakes.

"It's heartwarming," said Replogle. "A girl at our last event put on her glasses and was almost in tears because she could see. She told me it 'was a whole new world,' everything was clearer and brighter for her. It's just really a nice program and we hope to bring smiles to many kids."

If you have questions, comments or are interested in helping with future events, please contact **Callie Appleby** at **(585) 276-7311**.

PROSE – a solution for compromised corneas

CONTINUED FROM COVER

the cornea. If refractive error is present, the curvature of PROSE can be custom designed to incorporate a patient's prescription.

Tara Vaz, O.D., manages the day-to-day operations of the PROSE clinic, working in close contact with FEI's cornea specialists. Vaz completed a specialized fellowship at the Boston Foundation for Sight, which makes the prosthetics. During treatment, she customizes the device(s) for each patient's condition and unique eye shape. The prostheses are then manufactured in Boston at BFS and shipped overnight to Rochester. If the device needs refinement, Vaz makes the necessary design changes and BFS manufactures and ships the new prosthetic device. Once an optimal customization of PROSE is achieved, Vaz begins the process of training the patient to apply, remove and care for the device, which is worn during waking hours. For many patients the effect provided by PROSE can be dramatic.

"It's hard to believe until you experience it," Vaz said. "There are so many eye problems that can contribute to a patient having a compromised ocular surface. However, they all share some similarities: discomfort, diminished vision or a combination of the two. Once the protective prosthetic dome is filled with saline,

the therapeutic effect begins. Sometimes it's instantaneous and dramatic, other times it's a staged process. But in the end, nearly all of my PROSE patients function much better."

Such is the case with Larry Fallone who lost vision in one eye when he was younger. Later in life he developed a serious infection in his good eye related to an ophthalmic procedure performed elsewhere. The procedure also required the removal of his natural lens. To save his eye, FEI doctors had to use a powerful combination of medicines to treat the infection. This left Fallone's cornea in rough shape and he suffered from aphakia (which causes extreme farsightedness) due to the removal of his natural lens.

"The infection was devastating," Fallone said. "Although doctors were able to save my eye, it led to scar tissue, ulcers, and haze forming in my cornea. At this point my vision was terrible. They tried many things to help my cornea heal, including taking my blood and making it into something called serum tears which were placed in my eye. This didn't provide as much improvement as I was hoping for. I still had very poor vision and sensitivity to light. During one of my visits, Dr. Hindman mentioned that FEI had this new therapy that could put my cornea in a better environment.

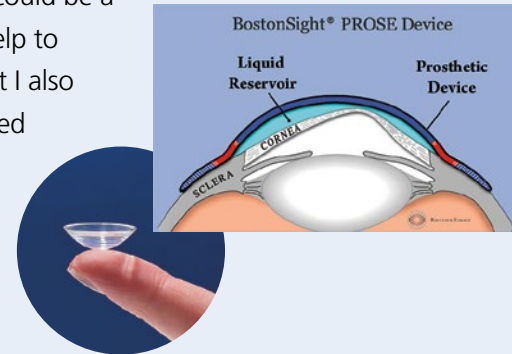
She referred me to Dr. Vaz."

"When Mr. Fallone came to me, the challenge was obvious," Vaz said. "He is a very active person and wanted to get on with his life despite all these hurdles. I thought that PROSE could be a

great help to him. But I also counseled him that we would take a

stepwise approach to his treatment. My first goal was to support his ocular surface and prevent any further breakdown of the cornea. Vision improvement would be a secondary goal."

Because Fallone has had multiple procedures and treatments to his eye, optimizing the prosthesis required a great deal of effort and many visits. To begin to correct the extreme farsightedness left by the removal of his natural lens, the device had to be made as thick as the technology allowed. Fallone soon mastered applying the device with the help of special tools that keep him aligned. Very quickly, the surface of his cornea began to



Generous supporter with firsthand experience backs

Joe Hanna is no stranger to FEI or to dry eyes. The Rochester landlord sits on FEI's Advisory board and is a long time patient of **James Aquavella, M.D.** He has struggled with severe dry eye disease for years.

"There wasn't a lot anyone could do," Hanna said. "I tried everything from ointments and artificial tears to wearing goggles to special eye drop cocktails that were custom made by a compounding

pharmacy. I was very unhappy; it (dry eye) really impacts the quality of your life. It is always with you."

As Hanna learned more about his condition and its treatment, he came across information about PROSE. Aquavella was very familiar with the prosthesis and its inventor, Perry Rosenthal, MD. Hanna traveled to Boston to see if he was a candidate for the treatment. Within two days, he had a device for each eye. As with many patients, he experienced a dramatic turnaround.

"It really works!" Hanna said. "My condition went from being very uncomfortable to livable." Hanna noted that some time was required in learning to apply and remove the devices, but it was worth it. "I'd be miserable without them. When I wake up my discomfort is about a 10," he continued. "Once they're in, it drops to a 3. They get me through the day."

Hanna — a generous supporter of FEI and the University of Rochester Medical Center — decided that he wanted to share his experience with the Rochester region. After meeting with FEI Chair **Steven Feldon, M.D.**, he helped fund a PROSE clinical service in Rochester.

"I'm a big believer in supporting research at the Eye Institute and throughout the University of Rochester," Hanna said. "But research is usually about the future, and I wanted to do something here in Rochester that would have an immediate impact and help people.

TARA VAZ, O.D., STEVEN FELDON, M.D., M.B.A., JOE HANNA, JAMES AQUAVELLA, M.D., GEUNYOUNG YOON, Ph.D.



heal, showing dramatic improvement in irregularities and a reduction in haze. Fallone has noticed the difference.

“PROSE was a Godsend,” he said. “My steps have been small and steady. When I started, my vision was 20/200 at best. Now I’m 20/100 and it seems to get a little clearer each week. The scattering of light is more tolerable. It is easier to navigate around the house and to read large print. I hope that with PROSE I’ll continue to see improvement.”

PROSE clinics located throughout the country are experiencing growing success in negotiating with insurers to pay for a majority of the treatment. They see the obvious benefits to giving these patients back their lives by restoring functional vision. Local insurers should soon follow.

In addition to serving as a regional patient care site, the Eye Institute will play a vital role in making improvements to the prosthetic device. In a related research project, **Geunyoung Yoon, Ph.D.**, is applying optical principles similar to those used in wavefront LASIK to enhance the optical attributes of PROSE devices. This research is part of a NIH sponsored collaboration between Boston Foundation for Sight and FEI.

new treatment

PROSE is the perfect opportunity and I know firsthand that it works.”

The initial funding Hanna provided to FEI, helped defray many start-up costs for the new service, including underwriting Vaz’s training. Hanna is first to point out that he is grateful for the support of Feldon.

“Without his buy-in there would be no way to pay for the operational infrastructure required in starting the program,” Hanna said. “This is a great partnership and provides a necessary service to our region. If PROSE helps a handful of people in its first year as much as it has helped me, we’ve done a great thing.”

FEI recognizes the generosity of its Advisory Board and philanthropy from grateful patients, foundations, industry, and persons interested in promoting eye health. If you would like to learn about how your gift can enhance lives and make breakthrough discoveries, contact **Jennifer Richardson** at 585-273-5472.

Stem cell researcher receives multiple awards highlighted by Knights Templar Foundation presentation

Ruchira Singh, Ph.D., who joined the FEI research faculty in October 2015, is one of a promising new group of investigators interested in the use of stem cells to study and treat eye disease. Employing a special technique, she takes a patient’s cells and then transforms them into something called human induced pluripotent stem cells (hiPSC). Singh then uses the hiPSCs and grows a living copy of that person’s retinal tissue inside a laboratory dish — including any hereditary retinopathies or predisposition to retinal diseases. This novel approach allows Singh to develop specific disease models “in a dish” to better understand the molecular mechanism(s) of retinal and neurodegenerative diseases, with the goal of developing pharmacological therapies to treat them.

This exciting research has caught the attention of numerous foundations whose missions are to prevent blindness and restore sight. Just in the past year these agencies have awarded Singh more than \$600,000.

These grants and awards include:

📖 A \$300,000 Career Development Award from *Research to Prevent Blindness* to model the process of macular degeneration. Through this award, Singh hopes to conduct three parallel studies that focus on the retinal pigment epithelium (RPE) and its underlying blood supply of choroidal endothelial cells (ECs). In combination, these structures are responsible for maintaining the health and function of photoreceptors that convert light into chemical signals that are interpreted by the brain as visual images. Photoreceptor death is a leading cause of blindness in hereditary eye diseases (such as Sorsby’s fundus dystrophy) and disease related to multiple factors including age, genetic tendencies, and environment (cigarette smoke, light exposure, etc.). hiPSC models of macular degenerations could help provide better understanding of disease processes and offer a means testing the efficacy of currently approved drugs and pharmaceuticals in the fight against blindness.

📖 Singh received a \$160,000 grant from *BrightFocus Foundation* that is directed toward study of the interactions between the RPEs and ECs in macular degeneration. Because both RPEs and ECs are affected in macular degeneration, it is important to know which cell type is affected first and is thus responsible for initiating visual dysfunction. Funds will be used to develop hiPSC models from the cells of patients who have hereditary macular degenerations. An hiPSC co-culture model of macular degeneration has never been attempted before.

📖 Singh received a \$60,000 Career Starter Grant from the *Knights Templar Foundation* to develop an hiPSC model of juvenile Batten disease. This inherited disorder primarily affects the nervous system and leads to a variety of challenges including visual problems, developmental regression, motor skills loss and other issues. In juvenile Batten disease, progressive vision loss is usually the first symptom present. Singh’s model will compare the retinal pathophysiology of patients who have juvenile Batten disease with an unaffected sibling. This study hopes to better understand the disease process and may someday result in treatments that could improve the quality of life for people suffering from Battens. Grand Encampment of the Knights Templar Northeastern Department Commander, **Thomas Tsirimokos**, traveled from New Hampshire to make the presentation. He was joined by New York State Knights Templar Grand Commander, **Reverend Charles Roberts** of Rochester.



REV. CHARLES ROBERTS, RUCHIRA SINGH, Ph.D. AND THOMAS TSIRIMOKOS.

📖 Singh also received \$55,000 from the *Retina Research Foundation* to examine the role of environmental stressors in macular degeneration using patient-derived hiPSC cells. Specifically, she is looking at the effect of iron overload, UV light and cigarette smoking on macular degeneration. Understanding how environmental stressors, like smoking, affect the function of cells in our eyes will be important for designing new and rational drug therapies.

📖 Singh received additional grants of \$50,000 and \$25,000, respectively, from the *University of Rochester* and the *David Bryant Trust* to forward her work in vision-related stem cell research.

RESEARCH UPDATES

FEI basic scientist **Amy Kiernan, Ph.D.**, was recently awarded nearly \$2 million from the NIH to continue her work investigating the genetic pathways responsible for the development of sensory organ cells, especially those of the ear (2RO1DC009250-06A1). Previous studies have shown that the genetic transcription factor SOX2 is essential in the development of sensory cell types in the ear. However, scientists still have little understanding of how and when SOX2 acts throughout the stages of development. Kiernan's latest work will create a model that focuses on how SOX2 acts to generate sensory regions by defining the spatial and temporal requirements for SOX2 function. She will also investigate whether SOX2 is capable of producing sensory regions in the postnatal and adult inner ear and if JAG1-mediated notch signaling acts upstream of SOX2. Together these experiments may reveal fundamental function of SOX2 and its potential in regenerating or replacing critical cell types in the inner ear.

Audacious!

The National Eye Institute selected the University of Rochester as one of its lead sites for its Audacious Goals research initiative. **David Williams, Ph.D.**, will lead a team of scientists, including FEI's **Jennifer Hunter, Ph.D.**, and **William Merigan, Ph.D.**, in designing an optical system to image responses to light of large numbers of individual cells in the retina, with the objective of accelerating the development of the next generation of cures for blindness. The Rochester group will receive \$3.8 million from the National Eye Institute over the next five years. The central goal of this campaign is to replace cells of the retina that have been damaged by disease or injury and to restore their connections to the visual centers of the brain.

"These ambitious projects will give us a window into the visual system," said NEI Director **Paul A. Sieving, M.D., Ph.D.** "Tools developed will enhance the study of functional changes in the retina and optic nerve, in real-time and at the cellular level, and will be indispensable when evaluating new regenerative therapies for eye diseases."

The Rochester team plans to test their system in collaboration with investigators who are exploring three different approaches to vision restoration: preserving photoreceptors with gene therapy, replacing lost photoreceptors using stem cells, and genetically re-engineering cells other than photoreceptors to respond to light.

Williams is particularly excited that "a single imaging platform will be used to improve three different methods to restore vision."

The instrument used to image the retinal cells was pioneered by FEI's Hunter. The system operates in the infrared light spectrum and detects minute fluorescence in living retinal cells without damaging them. Merigan brings to the project expertise in new optogenetic techniques of vision restoration that use a substance found in certain algae to co-opt retinal ganglion cells to function man-made photoreceptors, thereby circumventing cells damaged by disease.

FEI Director of Research Professor **Krystal Huxlin, Ph.D.**, recently received a grant from the NEI to study corneal nerve regeneration after injury. Damage to these pain sensing nerves has long-term consequences for patients such as eye pain, dry eye, recurrent corneal erosions or surface scratches, corneal opacity, and lost visual acuity. She and her collaborators, corneal surgeon **Holly Hindman, M.D., M.P.H.**, and molecular biologist **Kye-Im Jeon, Ph.D.**, will use the nearly \$2 million award to develop models of corneal wound healing after photorefractive keratectomy (PRK). The grant will allow them to study the basic cellular and molecular mechanisms controlling corneal nerve regeneration after injury. Early data suggests that a cell type called a myofibroblast — which is necessary to wound healing — may inhibit regeneration of nerves in multiple layers of the cornea. Huxlin's research team aims to characterize the effect of myofibroblasts during the early wound healing response and determine what happens when myofibroblast differentiation is blocked. Long-term effects of the healing process on corneal optics will be assessed. Understanding the molecular mechanisms of nerve regeneration and nerve-myofibroblast interactions during wound healing are critical to developing new therapies. The knowledge gained will be used in developing treatments for corneal injuries that protect the health of the ocular surface.

New procedure may improve cornea transplant results

As the 21st century began, the surgical procedure of corneal transplantation experienced dramatic changes. New techniques were introduced whereby surgeons replaced only part of a patient's diseased cornea instead of the entire cornea. Called Descemet's stripping endothelial keratoplasty (DSEK) the new surgery replaced only the back of the cornea, leaving the front intact. This significantly reduced recovery time and eliminated the need for sutures to hold the transplant in place during the healing process.

A new procedure offered by FEI cornea specialist, **Holly Hindman, M.D., M.P.H.**, takes the concept of partial thickness transplantation a step further. Called Descemet's membrane endothelial keratoplasty (DMEK), the new technique replaces the one-cell thick endothelial layer forming the inner lining of the cornea. The layer has about the same thickness as that of a single red blood cell. The delicate procedure produces better postoperative visual acuity, reduces the amount of swelling, and may lower transplantation failure rate due to the host body rejecting the donor graft. DMEK requires an experienced corneal surgeon and is not yet a replacement for DSEK, but experts predict it will become more widely available in the not too distant future.

Patient Care: (585) 273-3937 (EYES) ■ LASIK: (585) 273-2020
Clinical Trials: (585) 276-8734 ■ Research Laboratories: (585) 273-2609
www.EyeInstitute.urmc.edu

Clinical trial investigates benefits of omega-3 fatty acids supplements in treatment of dry eye disease

FEI is now accepting patients for the NEI sponsored Dry Eye Assessment and Management Study (DREAM). This clinical research study involves the recruitment of 600 patients at approximately 21 eye centers across the United States. Its purpose is to compare omega-3 fatty acids supplement, an over-the-counter nutritional supplement, versus placebo (olive oil) in people with moderate to severe dry eye disease. Omega-3 fatty acids are used to treat hypertriglyceridemia (high levels of fat in the blood). Although some patients with dry eye disease use these supplements to relieve their symptoms, their usefulness in treating dry eye disease has not been established with scientific certainty.

Participants are given study pills, which are large soft gel caps, and asked to take 5 of these pills a day for at least one year. The pills are either an omega-3 (fish oil) supplement or a placebo. The type of pills (omega-3 supplements or placebos) received are determined randomly, like a coin toss. Patients who participate in the study need to complete five study visits over the period of one year. At the end of one year, some eligible participants may be asked to continue with a one-year extension study.

At each study visit, participants are examined by an ophthalmologist and asked to complete a questionnaire about their dry eyes and general health. They are also asked to provide a blood sample at some visits. Other test are also used to gather additional information related to dry eye.

To be considered for the study, candidates must meet the following criteria:

- Age 18 or older
- Have dry eye symptoms for at least 6 months
- Be able to swallow five large soft gel caps daily
- Be available for one year of follow-up
- Be available for a second year of follow-up if determined eligible

The study doctor will discuss these and other criteria with candidates and determine final eligibility after the first two study visits.

The Rochester, New York, investigator is FEI's **Holly Hindman, M.D.** To learn more about this study interested persons can contact FEI clinical trials coordinator **Andrea Czubinski** at (585) 275-7323.

Volunteering for a clinical research study is one of the greatest things a person can do to advance medicine.

Clinical trials allow doctors and scientists to evaluate new ways to prevent, detect, or treat disease. Although these studies offer no guarantee for cure, they are one of the cornerstones for nearly every single breakthrough in medicine.

Each is rigorously conducted, following the highest patient safety protocols. FEI offers participation in the following studies:

- ⊙ DREAM (Dry Eye Assessment and Management) A multi-center, double masked safety study to evaluate the effectiveness and safety of Omega 3 fatty acids administered by taking 5 gel caps per day, in relieving the symptoms of moderate to severe dry eye disease. (*H. Hindman, M.D., M.P.H.; Tara Vaz, O.D.*)
- ⊙ PEDIG (Pediatric Eye Disease Investigator Group) Amblyopia Treatment Study (ATS18) - Study of Binocular Computer Activities for Treatment of Amblyopia. (*B. Hammond, M.D.; M. Gearinger, M.D.*)
- ⊙ A Randomized, Multicenter, Double Masked, Parallel-Group Study Assessing the Safety and Efficacy of Loteprednol Etabonate Ophthalmic Gel, 0.5% versus Prednisolone Acetate Ophthalmic Suspension, 1% for the Treatment of Intraocular Inflammation Following Surgery for Childhood Cataract. (*M. Gearinger, M.D.*)
- ⊙ Assessment of Prototype Hand-Held Fundus Camera (*D. Kleinman, M.D., M.B.A.*)
- ⊙ Short-term Evaluation of Combination Corticosteroid+Anti-VEGF Treatment for Persistent Central-Involved Diabetic Macular Edema Following Anti-VEGF Therapy in Pseudophakic Eyes (*D. DiLoreto, M.D., Ph.D.*)
- ⊙ Treatment for Central-Involved Diabetic Macular Edema in Eyes with Very Good Visual Acuity (*D. DiLoreto, M.D., Ph.D.*)

For the above studies and other research involving human subjects, contact Rick Barrett at (585) 276-8734.

VOLUNTEER: New patient organization puts eye health in focus

Friends of the Flaum Eye Institute (FOEI) is a new auxiliary group made up of patients and others interested in furthering the missions of FEI. During a recent charter membership recruitment campaign, more than one hundred individuals joined. The volunteer organization is organized and maintained by FEI Outreach Specialist **Callie Appleby** and receives additional support from **Steven Feldon, M.D., M.B.A.**, and **Jennifer Richardson**.

FOEI's main purpose is to organize and empower volunteers to help the Eye Institute promote vision health through a variety of activities which include:

- ✓ Participating in vision screenings such as glasses for kids
- ✓ Supporting eye health educational events
- ✓ Organizing and helping patient support groups
- ✓ Promoting FEI in the community
- ✓ Raising money to support patient care efforts
- ✓ Participating in and creating awareness of clinical research studies

Plans are being made for a welcoming event in October where volunteers can get to know each other and discuss specific roles and projects in which they'd like to participate. Persons interested in joining the Friends of the Flaum Eye Institute can ask at the check-in desk or contact **Callie Appleby** at (585) 276-7311. Online registration is also available at www.FOEI.urmc.edu

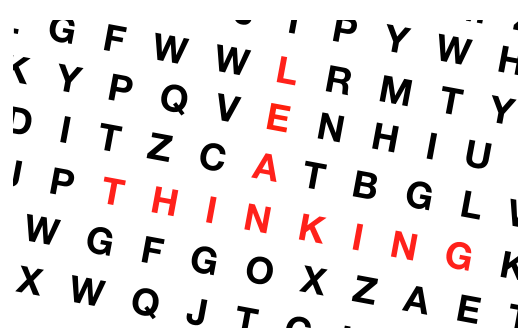


Third-year residents return from India

Angela Bessette, M.D., Morgan Renner, M.D., and Anushree Sharma, M.D., each did rotations at the L.V. Prasad Eye Institute (LVPEI) in Hyderabad, India. This optional rotation is designed to give senior residents opportunities to further hone their surgical skills and develop a deeper appreciation for international ophthalmology. Residents who visit LVPEI get to experience medical and surgical care on a whole new level as many of the patients have pathologies uncommon to the United States. In addition, residents get to visit some of LVPEI's more than 200 satellite clinics and learn about models of delivering medical care in a developing nation.

Residents embrace "LEAN" to improve patient experience

Led by senior Rachel Wozniak, M.D., Ph.D., and recent graduate Morgan Renner, M.D., FEI residents teamed together to introduce "LEAN" systems thinking into their clinic. LEAN is a discipline used throughout organizations that aspire to maximize customer value while minimizing waste. Encouraged by FEI faculty Ronald Plotnik,



M.D., M.B.A., and Benjamin Hammond, M.D., with assistance from UR Medicine's LEAN Initiative, residents strategized and implemented ways to improve the patient

experience by reducing wait times. Changes, including the standardization of equipment in all exam rooms, improved wait times by 20 minutes per patient. Residents and clinic staff look to build on this initial success and further enhance the patient experience.

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LASIK: (585) 273-2020

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Moving day

With July comes the bittersweet departure of residents and fellows as they begin the next chapter in their young careers in ophthalmology. Retina fellow **Wayne Davis, D.O.**, headed to Columbia, Missouri. There he will enter into private practice while serving on clinical faculty of the University of Missouri School of Medicine. **Frank Lee, D.O.**, took the skills he learned during his corneal fellowship to the multi-specialty Nevada Eye and Ear private practice in Las Vegas. All four residents matched to outstanding fellowships where they will pursue sub-specialty training. **Angela Bessette, M.D.**, headed to the Cleveland Clinic to begin a retina fellowship. **Katharine Liegel, M.D.**, moved to St. Louis where she will complete her training in Pediatric Ophthalmology at Washington University. **Morgan Renner, M.D.**, joined the University of Michigan, Ann Arbor, where she is a glaucoma fellow. **Anushree Sharma, M.D.**, began her cornea fellowship at University of California, Los Angeles's Jules Stein Eye Institute. We are proud of them and confident that they will successfully carry the FEI banner.

Moving in day

The entire faculty and staff always look forward to July 1st and the beginning of the academic year when a new group of residents arrive, eager to begin their training in ophthalmology. This year brings four outstanding doctors to Rochester. **Brandon DeCaluwe, M.D.**, joined our residency program after completing his first year in internal medicine at Wayne State University, where he also received his medical degree. **Joon-Boom "Albert" Kim, M.D.**, got used to Rochester winters after completing his internal medicine year at the University of Rochester Medical Center. Kim is a graduate of Atlanta's Emory School of Medicine. **Kevin Kirk, M.D.**, arrived in Rochester after completing his transitional year at Indiana University Health's Ball Memorial Hospital. Kirk completed medical school at the University of Utah. **Brittany Simmons, M.D.**, a graduate of the University of Illinois School of Medicine completed her transitional year at Advocate Illinois Masonic Medical Center and looks forward to settling into the resident practice. We are highly selective in identifying our residents, and we have high expectations of them. **Luis Leo-Alvarado, M.D.**, also joined the staff as our new retina fellow. He completed his medical degree at Puerto Rico's Ponce School of Medicine and did his ophthalmology residency at Rutgers Medical School in New Jersey.

SAVE THE DATE

61st

Rochester Ophthalmology
Conference

MARCH 18 - 19, 2016

More than 250 physicians, ophthalmology residents, optometrists, medical students and allied health professionals descended on the University from destinations as far away as Ottawa for the Annual Rochester Ophthalmology Conference. This year's meeting included a dynamic *Snell Lecture* about stem cell therapy delivered by **Timothy Stout, M.D., Ph.D.** (Professor and Chair at Baylor University and Director of the Cullen Eye Institute). **Todd Margolis, M.D., Ph.D.** (Professor and Chair at Washington University St. Louis) delivered the inaugural *Billitier Family Distinguished Professor Lecture* which also drew rave reviews. Providing two superb presentations was **Warren Hill, M.D.**, who received Flaum Eye Institute's *Lifetime Alumnus Achievement Award*. FEI extends sincere thanks to all the guest speakers and FEI faculty for an outstanding program. We are also grateful to the attendees, exhibitors and underwriters who support this meeting. **Please mark your calendars for March 18-19, 2016** and stay tuned as we announce a new series of speakers for the conference and our monthly visiting professor series.

NEW FACULTY

Retinal imaging scientist joins faculty



Jesse Schallek, Ph.D., recently joined FEI's research faculty as Assistant Professor of Ophthalmology. He also has appointments in the Center for Visual Science and the Department

of Neurobiology & Anatomy. During the past five years, he collaborated closely with FEI as a Postdoctoral Research Associate at the University of Rochester's Center for Visual Science (CVS). There he worked with CVS Director **David Williams, Ph.D.**, and members of the Advanced Retinal Imaging Alliance to develop innovative technology to better understand retinal disease. Schallek's research specifically uses Adaptive Optics Scanning Laser Ophthalmoscopy to image the integrity of the tiny blood vessels that nourish the living retina and support the neural cells that allow us to see. Studying the role played by the vasculature in eye diseases like diabetic retinopathy and age related macular degeneration could provide insight into curing blindness or result in earlier detection of treatable illnesses that affect the eyes and other parts of the body.

Schallek completed his undergraduate degree in Bioengineering and his doctorate in Neuroscience at Syracuse University. Since his arrival at the University of Rochester, he has distinguished himself through numerous scientific publications and presentations as well as awards and grants from the Association for Research in Vision and Ophthalmology and the National Institutes for Health.

PROMOTIONS

■ **Zoë Williams, M.D.**, has been promoted to Associate Professor of Ophthalmology & Neurology by the University of Rochester School of Medicine and Dentistry.

■ In January 2015, **Dorothea Castillo** became practice manager for FEI's Finger Lakes Center in Geneva. She is responsible for local operations at this growing location and for coordinating the Center's activities with those at the University of Rochester Medical Center.

NEW FACES



■ **Homise Johnson, C.O.M.T.**, joined FEI as Clinical & Technical Operations Manager where she oversees the diagnostic service at the Flaum Eye Institute. Diagnostic technicians provide front-line patient care and support clinical faculty by providing initial evaluation for over 60,000 patient visits and performing more than 7,000 imaging, diagnostic testing and therapeutic procedures each year. Johnson was most recently at University of Miami's Bascom Palmer Eye Institute, where she was a Pediatric & Adult Strabismus Ophthalmic Technologist Specialist and the imaging and diagnostics team leader for the Pediatric and Neuro-Ophthalmology clinics. She brings to FEI more than 20 years of experience in ophthalmology and management.



■ **Rick Barrett, M.B.A.**, joined FEI as Clinical Trials Manager. His roles and responsibilities include overseeing FEI's team of 5 research study coordinators and working with FEI faculty to bring cutting edge medical treatments to the region through clinical trials. Barrett ensures that all research complies with guidelines relating to patient safety and privacy and oversees the patient recruitment process. Barrett has more than 20 years of experience related to translational medical research. He has led U.S. and international study teams conducting clinical trials for vaccine development, pain management and the development of novel ocular products. He completed his BS in Medical Technology at SUNY Buffalo and his MBA at Rochester Institute of Technology.

FEI staff "photo bomb" Chicago

Rochester is known worldwide as a hot bed for ophthalmic photographers. Much of this credit goes to the Rochester Institute of Technology and FEI. Through a unique agreement, Biomedical photography students train in clinical settings at the Eye Institute. Fortunately, when these students graduate, some stay in Rochester and join our ranks, providing superb diagnostic photography and imaging.

FEI photographers routinely enter their images in juried competitions sponsored by the Ophthalmic Photographers Society of America. Their work has gained an outstanding reputation for technical proficiency and artistry. It is not uncommon to see many of their images judged highly. At the most recent American Academy of Ophthalmology meeting, the staff received numerous accolades. Our winners included:

■ Taylor Pannell

FIRST PLACE *Surgical Photography Periosteal Flap and Strabismus Correction Image*

SECOND PLACE *Surgical Photography Periosteal Flap and Strabismus Correction Image (2)*

BEST OF SHOW (PRINT DIVISION) *Surgical Photography Periosteal Flap and Strabismus Correction Image*

■ Brittany Richardson

THIRD PLACE (OPTICAL COHERENCE TOMOGRAPHY) *Macular Hole*

■ Rachel Hollar

FIRST PLACE (EXTERNAL PHOTOGRAPHY) *MOHS*

SECOND PLACE (EXTERNAL PHOTOGRAPHY) *Ichthyosis*

FIRST PLACE (GONIO PHOTOGRAPHY) *Double iStent*

HONORABLE MENTION (SLIT LAMP PHOTOGRAPHY) *Growth*

This is the first time an FEI photographer has taken Best of Show. Congratulations to the entire team!

Flaum Eye Institute

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NEWS BYTES

CONTINUED FROM PAGE 11

Ramchandran receives honor

During recent years Rajeev Ramchandran, M.D., M.B.A., has distinguished himself with many accolades related to his interest in population-based care, international medicine and telemedicine, with an emphasis on reducing the impact of diabetes on vision.



STEPHANIE BROWN CLARK, M.D., Ph.D., RAJEEV RAMCHANDRAN, M.D., M.B.A., NAGENDRA NADARUJA, M.B.B.S., AND RICHARD LIBBY, Ph.D.

This recognition has come in the form of support from the University of Rochester, local healthcare foundations and the National Institutes for Health. The Rochester Academy of Medicine recently awarded him its annual community service award. The award recognizes his efforts to establish a link between the greater Rochester community and L.V. Prasad Eye Institute in Hyderabad, India. The purpose of this partnership is to ameliorate health care delivery and access in both communities by sharing best practices and improving the health of populations — especially the underserved.

Ramchandran is a native of Rochester (Pittsford) and a graduate of the University of Rochester School of Medicine & Dentistry. He completed his retina fellowship at the Flaum Eye Institute before joining the faculty.

Hindman appointed to eye bank advisory board

Holly Hindman, M.D., M.P.H., was recently appointed to the Medical Advisory Board of the *Eye Bank Association of America*. Her responsibilities include addressing medical policy for eye banking. As a member of the Board, she will help establish medical criteria for eye donations, review and recommend changes in technical procedures, develop safety guidelines for removal and processing of ocular tissue, and consider criteria for corneal transplantation. Her three-year term began July 1st, 2015.



FACULTY PRACTICE

Comprehensive Eye Care

- Shobha Boghani, M.D.
- Christian Klein, M.D.
- Sarah Klein, O.D.
- Rebecca Nally, O.D.
- Harold Ross, M.D.
- Chester Scerra, O.D.
- Tara Vaz, O.D.

Contact Lens Services

- Sarah Klein, O.D.
- Rebecca Nally, O.D.
- Chester Scerra, O.D.
- Tara Vaz, O.D.

Cornea and External Disease

- James Aquavella, M.D.
- Holly Hindman, M.D., M.P.H.
- Ronald Plotnik, M.D., M.B.A.
- David Shiple, M.D.

Glaucoma/Anterior Segment

- Shakeel Shareef, M.D.
- Regina Smolyak, M.D.

Neuro-Ophthalmology and Orbit

- Steven Feldon, M.D., M.B.A.
- Zoë Williams, M.D.

Oculofacial Plastics

- Steven Feldon, M.D., M.B.A.
- Mithra Gonzalez, M.D.

Pediatric Ophthalmology

- Matthew Gearing, M.D.
- Benjamin Hammond, M.D.

Refractive Surgery

- Kenneth Dickerson, O.D.
- Holly Hindman, M.D., M.P.H.
- Scott MacRae, M.D.
- David Shiple, M.D.

Retina and Vitreous

- Mina Chung, M.D.
- David DiLoreto, M.D., Ph.D.
- David Kleinman, M.D., M.B.A.
- Rajeev Ramchandran, M.D., M.B.A.

Veterans Services

- Shobha Boghani, M.D.
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