

# Vision *for the* Future

UNIVERSITY OF ROCHESTER

FLAUM EYE INSTITUTE

AUTUMN 2014 NEWSLETTER

## Endowing a Dream

In November 2013, the University of Rochester Meliora Campaign reached the \$1 billion mark in its goal to raise \$1.3 billion. A gift of more than \$4 million made to the Flaum Eye Institute pushed the campaign over the threshold. The pledge came from FEI’s **James Aquavella, M.D.**, establishing two endowed professorships. This incredible act of generosity helped to solidify Aquavella’s dream of a world-class eye institute in Rochester and paid tribute to his late wife Catherine “Kay” who also shared his goal. *Vision for the Future* caught up to the busy clinician scientist who spoke about the gift and of its importance to him.

### Was there a particular impetus for this transformative act?

One can’t point to a single thing. It has been an evolution. For more than 40 years, Kay and I shared a commitment to each other and to advancing the medical specialty of ophthalmology — with its power to transform people’s lives. During this time, both of us had been involved in establishing an eye institute in Rochester. When **Steve Feldon** was hired by the University to build an eye institute 13 years ago, I was excited. I already had a long and productive relationship with the University of Rochester doing corneal research. I immediately joined the full-time faculty, because I thought it was the perfect opportunity to merge our resources and create a premiere center of excellence in ophthalmology.

The plan to create a research professorship in ophthalmology began



FOR MORE THAN 40 YEARS, **JAMES AQUAVELLA, M.D.**, HAS WORKED TO BRING NEW THERAPIES FROM THE CONCEPTUAL STAGE TO PATIENT CARE.

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DR. STEVEN S.T. CHING AND DR. HOLLY HINDMAN.

## Bon Voyage!

The FEI faculty practice said farewell to **Steven S.T. Ching, M.D.**, who practiced in the corneal and external disease service for more than 30 years. Several send-off events culminated with a dinner held at the Rochester Academy of Medicine where friends, colleagues, former students and patients gathered to salute his contributions to FEI and the department of ophthalmology.

Ching’s skill as a surgeon and teacher will be missed, as will his compassion for his patients. His legendary demeanor drew a following of patients and students who have acknowledged him through gifts to

FEI in his honor. Chief among them is the late Adeline Lutz, who donated her \$7 million estate to help establish the Flaum Eye Institute.

In celebration of Ching’s contributions to patient care and education, the “Adeline Lutz Distinguished Professor of Ophthalmology” — the title which Ching held — has been renamed the “**Steven S.T. Ching – Adeline Lutz Professor of Ophthalmology**”. Ching also received the title of Professor Emeritus and will remain a vital part of the resident alumni council. He and his wife Mary plan to split their time between Rochester and Ching’s home State of Hawaii.

The University of Rochester Flaum Eye Institute (FEI) continues to pursue its commitment to excellence in patient care, research, education, and technological innovation. We recently celebrated **Steven S.T. Ching's** retirement after more than 30 years of dedicated service in caring for patients and teaching. His career-long commitment to FEI is symbolized in the renaming of the Adeline Lutz Distinguished Professor of Ophthalmology to the Steven S.T. Ching — Adeline Lutz Professorship. Steve has left behind a strong and dynamic cornea service, having trained his successors: **Holly Hindman, M.D.** who was recently promoted to Associate Professor, and **David Shiple, M.D.** (page 3) who joined FEI this past July.

In this issue, we also celebrate an incredible gift from our colleague, **James Aquavella, M.D.**, and his late wife **Catherine**. Together they made a gift of more than \$4 million to establish two endowed professorships (cover), cementing their enduring legacy. Words cannot describe our gratitude to them.

We continue to pursue the leading edge in medical care. FEI recently became the first in the region to offer laser assisted cataract surgery to its patients (page 6). Our Catalys® system is our promise to deliver the very best in visual outcomes and patient comfort related to premium cataract surgery. A complete update to our operating rooms furthers our commitment to lead the way in advanced surgical care. We also recently hired **Tara Vaz, O.D.** She will join us as an expert in PROSE, a customized contact lens system capable of providing increased visual acuity and comfort to persons suffering from some of the most debilitating ocular surface and corneal diseases.



Basic and clinical science continue to move forward. **Rajeev Ramchandran, M.D, M.B.A.**, recently received two grants, expanding his work that uses telemedicine screenings to detect and prevent eye disease. He teams up with **Silvia Sorensen, Ph.D.** who recently joined FEI (page 3) to develop and implement new population-based health strategies aimed at keeping healthy millions of eyes throughout the region. FEI research Director **Krystel Huxlin, Ph.D.** also received a new grant (page 10) that supports FEI's goal of developing the next generation of laser vision correction. The entire research team continues to distinguish itself through publications in leading scientific journals and presentations at scientific meetings.

We welcome our most recent class of residents and a new cornea fellow (page 8). This completes our transition from a program with nine residents to one with 12. The expansion allows FEI to provide even greater opportunities for our trainees to learn and practice medical and surgical ophthalmology. Speaking of education, FEI Advisory Board member **Ron Billitier** made an exciting announcement related to our educational mission. Proceeds from his annual **Vision Dinner** fundraising event will now fund an endowed visiting lectureship named in his honor. The endowed lectureship enables us to bring the most respected clinicians and scientists to Rochester to further the education of our residents, fellows and regional community of ophthalmologists.

During our recent faculty and staff town hall meeting, I had the privilege to share our recent achievements and vision for the future with nearly 200 dedicated individuals that make up the Flaum Eye Institute. Thanks to the generosity of our advisory board, donors, industry partners, and patients, we will continue to make this an academic center of excellence recognized throughout the region, the nation and the world as a place for preventing and curing blinding disease.

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

## FEI in the Community

*FEI continues to extend a friendly hand into the region, bringing eye healthcare and education to the community with lectures and screenings. FEI would like to thank all the faculty, staff, students and volunteers who helped out at the following events:*

**MAY 21:** Cornea specialists **James Aquavella, M.D.**, and **Holly Hindman, M.D.**, addressed the Rochester chapter of the Sjögren's Disease Support Group at Pittsford Public Library. Sjögren's is a chronic autoimmune disease that can cause dry eye and a host of other health issues.

**JULY 26:** **Vanessa Desmore** and **Kelly King** attended a health and information fair sponsored by the Rochester-based Foodlink agency. The team educated attendees about eye health, including the value of diabetes management. They also performed eyeglass adjustments.

**SEPT. 6:** **Harold Ross, M.D.**, residents **Morgan Renner, M.D.**, **Catherine Liegel, M.D.**, **Abdualrahman Hamad, M.D.**, and **Amit Sangave, M.D.**, joined a group of more than one dozen medical students to conduct glaucoma screenings at the Annual Rochester Women's Health Fair at the Public Market. Nearly 40 people were screened for glaucoma and other diseases affecting the eye. Each screening took 10 minutes. Patients were given test results and advice about next steps to take. Not only do vision screenings help some of Rochester's most vulnerable citizens, they help introduce medical students to careers in ophthalmology.

### IF YOU ARE INTERESTED IN...

*inviting one of our faculty members to speak about eye health topics, starting a support group related to eye disease or scheduling a glaucoma or other type of screening, please contact Steve Kofron at 585-275-3977. We'll do our very best to accommodate your request.*

# New Faculty



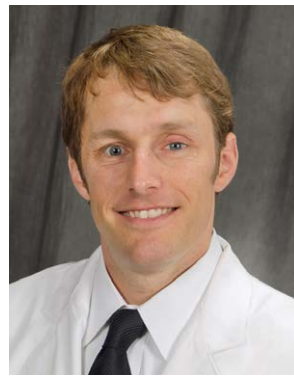
## Population-Based Care Makes Headway

Silva Sörensen, Ph.D. joins as Research Associate Professor. Sörensen, came to FEI from The University of Rochester's Department of Psychiatry, and plays an integral role in FEI's population health management strategy. This concept in health care seeks to improve the overall wellness of large groups of people by addressing social, environmental, cultural and physical concerns that may place populations at risk for developing or worsening eye disease. Sörensen works with a multi-disciplinary team that includes **Rajeev Ramchandran, M.D., M.B.A.** The team seeks to better understand eye-related health care needs and devise strategies to prevent potential vision problems from becoming vision threatening. This approach has the dual benefits of reducing costs of medical or surgical eye care and improving the quality of life for individuals within the population.

Sörensen brings a wealth of experience to population-based health. She is the primary investigator in a National Institute on Aging project to test an intervention aimed at improving quality of life for people with macular degeneration. She has also been involved in numerous community outreach activities throughout the region to improve health, with a special focus on the elderly. As part of the FEI team, Sörensen will build networks and programs that protect and improve the health

of persons suffering from eye disease and related conditions.

Sörensen is a graduate of Antioch College, the technical University of Berlin and received her doctorate in Human Development and Family Studies at Pennsylvania State University. She completed a fellowship at the University of Rochester Department of Psychiatry through a National Research Service Award and a postdoctoral fellowship in Social Gerontology at the University of Victoria, Canada.



## New Cornea Surgeon

**David Shiple, M.D.**, in July joined the clinical faculty of the Flaum Eye Institute as Assistant Professor of Ophthalmology in the Cornea/External Disease service. He completed his residency training at the University of Virginia and his cornea/external disease fellowship at the Flaum Eye Institute. He is actively involved in patient care at our main campus and at our satellite offices.

As a cornea specialist, Shiple provides clinical services related to the cornea, the ocular surface and the rest of the anterior segment of the eye. These include the latest techniques in surgical corneal transplantation, management of corneal dystrophies, the care and treatment of inflammatory and infectious disease, dry eye, LASIK, as well as routine and complicated cataract surgery.



## Stem Cell Researcher Joins FEI to Study Retinal Degenerative Disease

**Ruchira Singh, Ph.D.**, joins the basic science research faculty at the Flaum Eye Institute as Assistant Professor of Ophthalmology. Her research focuses on using patient-derived human induced pluripotent stem cells for studying retinal diseases and developing treatments. Singh is investigating how biological defects and environmental exposures – like smoking – combine to lead to blindness. She is interested in learning why patients' own cells become dysfunctional and die in retinal degeneration and then using that knowledge to develop new drugs that slow, halt, or reverse disease

Singh finished her undergraduate training in computer science in India before graduating with her Ph.D. in physiology from Kansas State University. She then completed her postdoctoral training in pharmacology at Yale School of Medicine, and stem cell research training at the University of Wisconsin-Madison. Her diverse research training has allowed her to develop and use new scientific techniques for studying complex human diseases. Her recent work at University of Wisconsin-Madison led to the development of the first patient-derived cellular model of an inherited retinal degeneration, Best disease. This provided new insights into the causes of Best disease, which primarily affects children and leads to vision loss.



## New Clinician Heads Specialized Contact Lens Project

**Tara Vaz, O.D.** joins FEI's well eye care team and the contact lens service as Senior Instructor. Vaz spent more than 13 years in clinical, scientific and research environments. She has extensive clinical experience in private practice and as an Assistant Clinical Professor at the State University of New York, State College of Optometry. Vaz was also a Principal Research Optometrist at Bausch + Lomb, where she provided clinical research support for vision care product development.

In addition to providing well eye care including regular exams, pre- and post-operative cataract services, spectacle and contact lens fitting to FEI patients, Vaz is leading FEI's new PROSE service. PROSE is a specialized contact lens that is customized to help restore visual function to people suffering from complex corneal problems including keratoconus, severe dry eye, neurotrophic keratitis, corneal dystrophies, and more. Vaz and the PROSE clinic will also support the research of **Geunyoung Yoon, Ph.D.**, who is collaborating in an NEI sponsored study to help improve the vision of persons suffering from corneal disease.

## 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, 2013 and June 30, 2014. 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](http://eyeinstitute.urmc.edu) and clicking on "Ways to Help."

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## Billitier Vision Dinner Takes New Aim



STEVEN FELDON M.D., AND  
 RON BILLITIER

Thanks to the efforts of Advisory Board member **Ron Billitier**, September is always a special time on the FEI fundraising calendar. Each fall, Billitier's *Vision Dinner* delights more than 100 guests providing outstanding company, excellent fare and superb wines. 2014 was no exception as a lively group

descended on Tournedos Restaurant in support of a worthy cause.

This year, the event changed focus, raising funds for FEI's educational mission. In previous years, the dinner helped to underwrite research and clinical needs. This change heralds a goal to create an

endowed fund in support of a distinguished visiting professor at FEI's annual meeting. Appropriately renamed the *Billitier Family Visiting Professor*, the lecture will feature prominent scholars from the ranks of ophthalmology's most prestigious institutions. Not only will this lecture provide valuable opportunities to residents from FEI, SUNY Buffalo and SUNY Upstate, it provides needed updates to practicing eye care providers from the entire community.

Through corporate and table sponsorships, donations and a silent auction, including signed sports memorabilia, close to \$40,000 was raised. A live auction of a wine dinner at Tournedos also highlighted the evening. FEI gratefully acknowledges all those who came in support of eye care and especially recognizes Bob and Lynn Fallone of Tournedos and the Billitier family for the hard work and generosity that makes this such a special evening.

# FEI INTRODUCES THE NEXT GENERATION

## Nearly everyone who lives long enough

will develop cataracts. Simply put, a cataract is a clouding of the eye's natural lens that reduces vision. When a cataract gets dense enough to affect a person's quality of life, it is removed. Cataract extraction may be the most common procedure performed in the world. Recovery from surgery is quick and great outcomes are more predictable than ever.

Recently, however, cataract surgery has undergone a transformation. The use of specialized lasers has made this already reliable procedure one of incredible precision, resulting in better visual outcomes. Moreover, this new technology also reduces post-operative inflammation, making recovery faster and more comfortable with fewer complications. This advance comes just in time to serve aging Baby Boomers who have high expectations for visual performance after surgery.

Earlier this year, FEI became the first ophthalmology practice in the region to offer laser assisted surgery to its patients with cataracts. In addition to this new technology, it has added other equipment to its operating rooms, making it among the nation's most advanced treatment centers in the country.

Central to FEI's advanced cataract suite is the Catalys® Precision Laser. Catalys® replaces two critical steps that were previously performed manually, eliminating the use of bladed instruments. The result is cataract surgery that is gentler and far more precise than even the most skilled hands can perform. This precision also allows doctors to more accurately position special premium lenses in the eye after a cataract is removed — or make vision correcting incisions in the cornea — so that patients may have much less need for glasses after surgery.

"This is a giant step forward in patient care," **Christian Klein, M.D.**, said. Klein, an Assistant Professor of Ophthalmology, is a great proponent of the technology. "Many patients now developing cataracts are the same people who saw the advent and growth of refractive procedures like LASIK and PRK. They are used to the idea that ophthalmologists can make them see with less dependence on contacts and glasses. For many, we can achieve this."

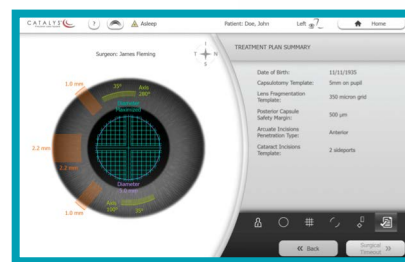
The system uses sophisticated imaging equipment to create a 3-D image of the eye. This map guides a femtosecond laser that makes a symmetrical ring along the surface of the cataract and then breaks the cataract into tiny cubes. The laser simultaneously makes precise

incisions through the cornea where the surgeon then removes the cataract and replaces it with a clear plastic lens. The laser also gives the surgeon the option to correct astigmatism by changing the shape of the cornea. This and the use of special replacement lenses may reduce patient need for glasses after surgery.

In addition to the laser treatment, the cataract surgical suite has added a new piece of equipment that makes surgery safer and better than ever. Called Callisto®, the device stores pre-operative measurements and transmits these files to the operating room. These measurements are used to project a precise image onto the surgical microscope in the operating room so that the surgeon knows exactly where to place the artificial lens to achieve the best possible result. It also contains identifying information about a patient's iris and alerts the surgeon if the patient's eye does not match the data. This system can be used with either laser assisted or traditional cataract surgery.

The FDA approved laser cataract technology does come with a price tag. Medicare currently does not reimburse for the laser procedure. However, many opt to pay out-of-pocket for it because it offers great predictability. When used in combination with multi-focal or astigmatic correcting replacement lenses, the possibility exists for minimal spectacle correction for patients well into their 80s.

**To learn more about our new technology please visit [www.cataract.urmc.edu](http://www.cataract.urmc.edu).**



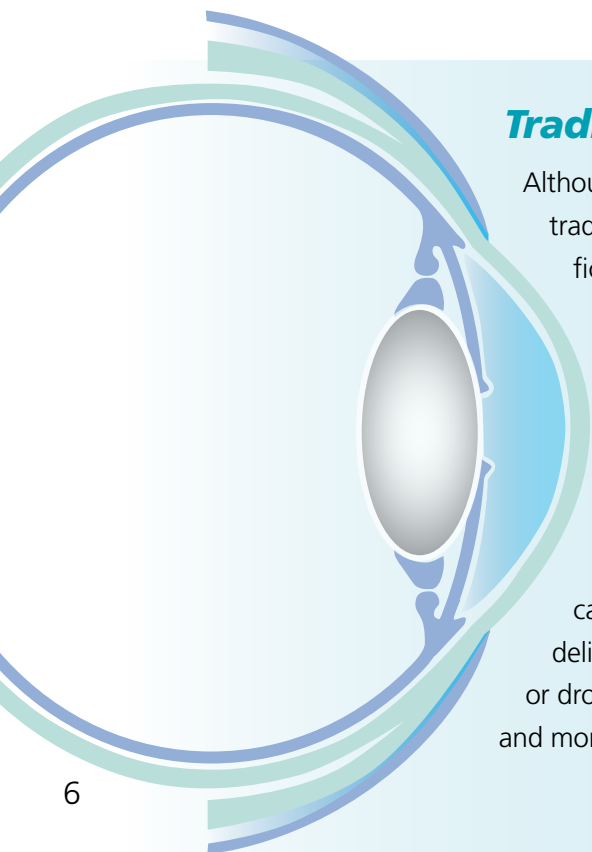
## Traditional cataract surgery: safe, effective, better than ever

Although laser cataract surgery represents the pinnacle of care and offers patients some distinct advantages, traditional cataract surgery will be here for years to come. Traditional cataract surgery — called phacoemulsification — is fully covered by Medicare, Medicaid and private insurance. It reliably delivers excellent results.

FEI's commitment to traditional cataract surgery is second to none. The Callisto® system used in the laser cataract suite is also available to patients who undergo non-laser cataract surgery. It offers the same benefits of highly accurate lens placement and the safety of iris registration.

In addition to the Callisto® device, FEI recently added two Centurion® phacoemulsification units to its operating rooms. These machines represent the latest advance in cataract surgery that is performed with bladed instruments and uses ultrasound technology to break up the cataract.

Centurion® gives FEI surgeons even more control and improved efficiency during traditional cataract surgery. The new system automatically and continuously adapts to changing conditions in the eye delivering more consistent intraocular pressure and lowering energy introduced to the eye. Dramatic spikes or drops in intraocular pressure can result in more stress to the eye and may contribute to longer healing times and more post-operative discomfort.



# CATARACT SURGERY

**Retired teacher Robert Luce** noticed that his vision was worsening. The subtle changes that were affecting the devoted amateur photographer's hobby were also beginning to spill over into other parts of his life.

"My vision just wasn't good with contact lenses anymore," Luce said. "My ophthalmologist at Flaum tried adjusting them and I even went back to glasses, but it didn't work. I especially avoided driving at night because of the glare."

Like many middle-aged adults, Luce had developed cataracts. He had finally reached the point where the cataracts were beyond a nuisance and were making life difficult. Fortunately, cataracts are the most common form of treatable blindness.



ROBERT  
LUCE

Hundreds of thousands undergo surgical removal of cataracts each year. In this procedure the eye's cloudy natural lens is replaced with an artificial lens, restoring clear vision to the patient.

Luce's procedure was a little less ordinary, though. He is one of the first FEI patients — and one of the first in the region — to have laser assisted cataract surgery. **Yousuf Khalifa, M.D.**, explained the option to him during a routine cataract evaluation.

"My doctor told me about this new laser technique and I decided to give it a try," Luce continued. "We went with mono-vision."

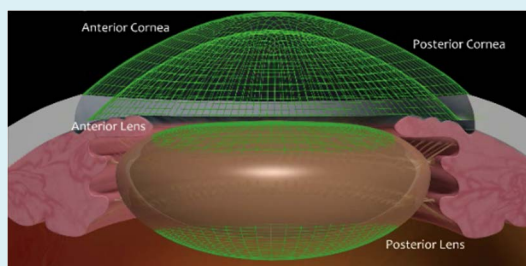
In Luce's procedure, one eye was optimized for distance vision and the other was left under-corrected. This offered a good compromise, allowing him to drive a car while preserving enough near vision to see a computer screen without heavy dependence on glasses. In many cataract procedures, both eyes are corrected for distance vision, which nearly always results in patients needing glasses to see things within arms-length.

The Catalys® laser improves these types of procedures because it affords extra precision in placing the lens and creates a pristine pocket where it will sit. As with most laser cataract procedures, there was little inflammation or swelling. Luce enjoyed a short recovery and achieved excellent vision within days.

"It really is amazing how colors are so much more vivid and everything is so much brighter," Luce said. "I really didn't realize how much the cataracts were bothering me until they were removed. It really is an incredible procedure and I've had no trouble whatsoever, no pain, nothing, and I'm quite pleased."



CATALYS®  
Precision Laser System



## *FEI Addresses Diabetic Eye Screening Through eRecord*

The National Eye Institute reports that the incidence of eye disease will skyrocket as America struggles to treat an increasing population of diabetics. In addition, already overburdened primary care offices must now ensure that these patients are routinely screened by an eye doctor. As accountable care providers, this is one of the many ways in which primary care providers' (PCPs) performance will be measured by insurers.

To help some PCPs better track their diabetic patients' eye health, FEI recently revamped its process when these patients are referred. If a diabetic patient is sent for an eye exam, FEI technicians and doctors are now recording the date of the exam in the PCP dashboard of UR Medicine's electronic record system. This easily viewed field immediately alerts UR medicine and affiliated doctors if their patients have been screened. Similar strategies are being developed for primary care physicians outside of UR Medicine's e-record software.

In conjunction with this new process, FEI recently developed educational brochures addressing diabetic eye health. Targeted at the primary care level, the pamphlets educate patients about the relationship between diabetes and eye disease and the importance of receiving annual exams. It also encourages them to follow their primary care doctors' instructions for managing their disease. The brochures are available at primary care offices throughout the region.

**Patient Care: (585) 273-3937**  
**LASIK: (585) 273-2020**  
**Clinical Trials: (585) 276-8734**  
**Research Laboratories: (585) 273-2609**  
[www.EyeInstitute.urmc.edu](http://www.EyeInstitute.urmc.edu)

## Better by the Dozen

FEI's residency program welcomed four new ophthalmologists-in-training this July. For the first time, there are a total twelve residents in the program. This achievement for the University of Rochester and FEI highlights the confidence of the Accreditation Council for Graduate Medical Education's in the program. FEI has been allowed to expand due to increased patient volumes, above average surgical opportunities, and enhanced training facilities that includes the Kitaro® surgical simulation system.

### Joining our second- and third-year residents is an outstanding first-year group including:

**Abdualrahman Hamad, M.D.** ■ Hamad received his undergraduate degree from the University of Florida, where he also completed a Masters in mechanical engineering. He received his medical training at Wayne State University in Detroit, and completed his transitional internal medicine internship at the University of Rochester.

**Lynn Hassman, M.D., PhD.** ■ Hassman received her undergraduate degree from Evangel University in Springfield, Missouri, and she received her medical degree and doctorate in microbiology from the University of Virginia. She completed her internal medicine internship at Case Western Metro Health Hospital.

**Tyler Ofstad, M.D., PhD.** ■ Ofstad holds a bachelor's degree from Stanford University. He attended medical school at the University of California, San Diego, where he also received his doctorate in neurosciences. He comes to FEI via Providence Sacred Heart, where he completed his internal medicine internship.

**Christopher Tanzie, M.D., PhD.** ■ Tanzie is a graduate of Brigham Young University who went on to complete his medical degree at University of Kansas. He also received a doctorate in Anatomy and Cell Biology from Kansas University's Stowers Institute for Medical Research and completed his internal medicine rotation at Texas A&M.

Also joining FEI is new cornea fellow **Frank Lee, D.O.** He comes to FEI from Touro University Nevada College of Osteopathic Medicine where he completed his medical degree and residency in ophthalmology. Besides learning corneal disease management and refractive surgery from FEI's world renowned faculty, he will also assist in the training of the residents.

*We wish them great success as they embark on their careers in ophthalmology.*

In related news, **Benjamin Hammond, M.D.**, became director of FEI's residency program. As a former FEI resident he brings great perspective and looks forward to further enhancing resident training and providing opportunities for growth. **Matthew Gearing, M.D.**, continues to support the residency as the Associate Director of the program.

## 2014 Flaum Eye Institute's Visiting Professor Series

Ophthalmologists, physicians from other medical specialties, optometrists and allied health professionals are invited to attend. There are no fees to attend — except for the annual conference — and each Saturday lecture carries 4.0 hours of ACGME Category I credit. These CME credits may be applicable toward other professional certifications to maintain licensure in New York State or anywhere in the U.S.A. Please check with your corresponding accreditation council to determine how many credits transfer.

Grand Rounds begin at 8 a.m. in the FEI clinic area located on the third floor. Free event parking in the Eye Institute lot at 210 Crittenden Blvd. is available.

### OCT. 25

**Norah Lincoff, M.D.**

#### NEURO-OPHTHALMOLOGY

Professor of Neurology,  
University of Buffalo School of  
Medicine and Biomedical Sciences

### NOV. 15

**Bitá Esmali, M.D., F.A.C.S.**

#### OCULOFACIAL PLASTICS/ORBIT

Professor of Ophthalmology,  
University of Texas,  
MD Anderson Cancer Center

### DEC. 20

**Agnes Wong, M.D., Ph.D.**

#### PEDIATRICS

Chief, Dept. of Ophthalmology  
and Visual Sciences,  
The Hospital for Sick Children and  
the University of Toronto

SAVE THE DATE

60<sup>th</sup>

Rochester Ophthalmology  
Conference

MARCH 20 - 21

Please join us for our two-day annual meeting  
and get the latest updates from across  
the subspecialties.

*Snell Memorial Lecture*

**Timothy Stout, M.D., Ph.D., M.B.A.**

#### RETINA/VITREOUS

Chair of Ophthalmology  
Baylor College of Medicine,  
Cullen Eye Institute

*Billitier Family Distinguished  
Visiting Professor*

**Todd Margolis, M.D., Ph.D.**

#### CORNEA/UVEITIS

Chair of Ophthalmology  
Washington University St. Louis



## ARVO UPDATE ■ A large contingent of Flaum Eye Institute faculty, collaborators, residents and fellows presented at the Association for Research in Vision (ARVO) conference held in Orlando.

Thousands of vision researchers from academia and industry from across the world come to this meeting to learn about the latest advances in diagnosing and treating vision threatening disorders and diseases. During this year's meeting, 37 posters and papers were presented by the University of Rochester. Of special interest to many attendees was some of FEI and the Center for Visual Science's groundbreaking work in high-resolution imaging using adaptive optics. Highlighted presentations from the meeting included:

■ **Jinxin Huang, Ph.D.** and fellow collaborators including **James Aquavella, M.D.**, presented: *Investigation of Tear Film Dynamics — Towards Understanding its Clinical Relevance*. For this project, the team developed an advanced nanometer-class imager that simultaneously estimates the thickness dynamics and the volume of several components of the tear film layer. Using sophisticated mathematical modeling, the system is able to analyze the tear film with a thickness of as little as 20 nanometers, with one nanometer precision — a human hair is approximately 100,000 nanometers thick. The team proposes to use this device to image the human tear film in vivo and quantify associated optical aberrations induced by the tear film dynamic-thickness in-between blinks and investigate their impact on visual performance. Understanding this relationship could be used to improve vision for persons suffering from dry eye.

■ The Center for Visual Science's **Jesse Schallek, Ph.D.** collaborated with **Keith Parkins** and **David Williams Ph.D.** to present: *In Vivo Retinal Blood Flow Cytometry and Velocimetry*. Blood flow cytometry traditionally requires a blood draw followed by a time consuming process that requires skilled human guidance. The team demonstrated a proof-of-concept in vivo flow cytometer that uses an adaptive optics scanning light ophthalmoscope (AOSLO) to, within seconds, image, classify, count, and report the velocity of thousands of blood cells in the living retina. Their approach enables an absolute measure of blood velocity and variations corresponding to the cardiac diastolic and systolic cycle and provides the first steps toward reducing the need for ex vivo blood analysis by using a non-invasive strategy.

■ FEI resident **Amit Sangave, M.D.**, along with FEI's **Vanessa Desmore, Lisa Latchney, William Fischer, M.S.** and **Rajeev Ramchandran, M.D., M.B.A.**, presented: *Pupil Size and Quality of Retinal Photos in Tele-I-Care: A Diabetic Retinopathy Surveillance Project*. Remote imaging is becoming an increasingly popular way to screen diabetics for associated disease where there is little access to ophthalmic care. The group evaluated retinal photographs, taken by a non-mydratic fundus camera, from more than 150 study subjects. It compared the quality of the images recorded to each patient's pupil size and discovered that there was a moderately correlated relationship between a patient's pupil-to-iris ratio and the quality of the resulting photographs. They concluded that pupil size is an important parameter for ensuring high quality fundus imaging in diabetic retinopathy surveillance programs and that current screening methods favor people with larger pupils. Small pupils may warrant further, more involved examination and may render non-mydratic fundus photography less useful.

*Resident travel to the conference was generously funded by a grant from Rochester Area Foundation's (RAF) Snell Fund which seeks to support the education of ophthalmology residents at the University of Rochester.*

■ **Linda Wilbur, C.O.E.**, recently joined FEI as practice administrator for the faculty group located at the University of Rochester Medical Center. She will oversee the clinical administrative staff to foster an optimal patient experience. Among her responsibilities will be the call center, the faculty practice administrative staff, medical records and check-in and check-out. Wilbur is a graduate of Rochester Institute of Technology and is an American Society of Ophthalmic Administrators Certified Ophthalmic Executive.

■ **Sarah Mariotti** also joined the administrative team. She will lead FEI in its training and staff development efforts. Mariotti comes to FEI from the University of Rochester Medical Center's Human Resource Department where she was involved in the development of HR programs and initiatives including staff recognition programs. She brings more than ten years of administrative experience to FEI.

FEI faculty and residents share their findings with colleagues across ophthalmology and vision science. Scholarly publication is at the heart of making new discoveries and education. A recent sampling of FEI publications include:

### *Development of Retinal Amacrine Cells and Their Dendritic Stratification.*

Balasubramanian R, Gan L.

Current Ophthalmology Reports; September 2014

### *Fluorescence adaptive optics scanning laser ophthalmoscope for detection of reduced cones and hypoautofluorescent spots in fundus albipunctatus.*

Song H, Latchney L, Williams D, Chung M.

JAMA Ophthalmology; September 2014

### *DLK-dependent signaling is important for somal but not axonal degeneration of retinal ganglion cells following axonal injury.*

Fernandes KA, Harder JM, John SW, Shrager P, Libby RT.

Neurobiology of Disease; September 2014

### *Beyond blindsight: properties of visual relearning in cortically blind fields.*

Das A, Tadin D, Huxlin KR.

Journal of Neuroscience; August 2014

### *Inhibitory effects of PPAR $\gamma$ ligands on TGF- $\beta$ 1-induced corneal myofibroblast transformation.*

Jeon KI, Kulkarni A, Woeller CF, Phipps RP, Sime PJ, Hindman HB, Huxlin KR.

American Journal of Pathology; May 2014

### *Noninvasive two-photon microscopy imaging of mouse retina and retinal pigment epithelium through the pupil of the eye.*

Palczewska G, Dong Z, Golczak M, Hunter JJ, Williams DR, Alexander NS, Palczewski K.

Nature Medicine; July 2014

### *The immunopathology of giant cell arteritis: diagnostic and therapeutic implications.*

Liegel K, Feldon S, Williams Z.

Journal of Neuro-ophthalmology; March 2014

## Grants Recognize Focus on Population-Based Care



FEI retina specialist **Rajeev Ramchandran, M.D., M.B.A.** is a leading advocate for vision health, especially when it comes to diabetic related eye disease. Ramchandran heads FEI's *Tele-I-CARE* initiative, which uses telemedicine to screen people at risk for losing vision from diabetes. In a pilot project funded by the Greater Rochester Area Health Foundation (and in cooperation with Rochester General

Hospital, and Rochester Institute of Technology) *Tele-I-CARE* placed special cameras into primary care offices in disadvantaged neighborhoods. These cameras transmit pictures of diabetic patients' eyes to retina specialists at FEI who advise the primary care offices how to treat patients.

Ramchandran's work recently gained notice and additional funding from two sources. The NIH's National Institute for Aging awarded him more than \$230,000 to study the feasibility of using telemedicine for early detection of eye disease among seniors. It is generally accepted that only 60% of the insured Medicare population with diabetes have annual eye exams. *Tele-I-CARE for Seniors: A Tele-ophthalmology Vision Health Surveillance Service* proposes to bring remote vision screening services to independent and assisted senior living facilities. The goal is to detect and prevent costly vision loss to this vulnerable population by providing timely interventions and customized education. For this project, Dr. Ramchandran is collaborating with **Dr. Silvia Sörensen**, a gerontologist researcher, who has recently joined the Flaum Eye Institute.

In another partnership with community primary care providers and Dr. Sörensen, Ramchandran received a \$50,000 University of Rochester Scientific Advisory Council grant that extends his work in diabetic eye screening. To better educate at risk diabetics about the potential for vision loss, the innovative approach proposes to show patients photographic evidence of their disease-related eye damage. Ramchandran hopes that these photographs, in combination with education, may serve to motivate diabetics to begin making changes that will protect their eyes and improve their overall health.

## Grant Funds Futuristic Laser Vision Correction



FEI Research Director **Krystel Huxlin, Ph.D.**, and a team including the University of Rochester's **Wayne Knox, Ph.D.** (Optics), and **Jonathan Ellis, Ph.D.** (Mechanical Engineering), have been working on their patented technology that changes how physicians perform laser refractive surgery (commonly called LASIK). They received a 2-year \$250,000 University of Rochester Scientific Advisory

Council award to further develop this technology. Called Intra-tissue refractive Index Shaping (IRIS), the process uses a femtosecond laser to change the refractive index of either corneal tissue or artificial lenses, thereby changing their focusing power. Unlike LASIK, the process does not remove any tissue and does not require flap cutting.

The research goal funded by the grant is to develop a clinically applicable version of the technology, determine the longevity of the changes to the cornea, and document the safety of the process. Success in the endeavor will allow the group to form new collaborations leading to commercialization of the invention.

## Faculty & Staff Updates

- **Holly Hindman, M.D.**, was recently promoted to Associate Professor of Ophthalmology. A member of FEI Cornea Service, she has distinguished herself through research and patient care. She has established a specialized patient care service with **James Aquavella, M.D.**, that will focus on dry eye and ocular surface disorders.
- **Christine Hammond, Ph.D.**, joined FEI's Phipps/Feldon Laboratory as Research Assistant Professor of Ophthalmology studying inflammatory disease response, especially in the area of thyroid eye disease. Hammond studied environmental science at Allegheny College then obtained her M.S. and Ph.D. in toxicology from the University of Rochester School of Medicine & Dentistry.
- FEI neuro-ophthalmologist **Zoë Williams, M.D.**, was elected by the American Academy of Ophthalmology's Board of Trustees to serve as a committee member on the Basic and Clinical Science Course (BCSC) Section 5 neuro-ophthalmology committee. The committee is responsible for ensuring that resident education standards reflect the most current, evidenced-based medicine.
- Strong Memorial Hospital has announced that **Carole Williams, R.N.**, has reached the level 3 nursing designation. Level 3 nurses are accountable for expert care to patients with complex needs. As a level 3 nurse Williams has gained increased responsibilities that may include staff orientation, patient care coordination, and formal and informal educational activities that support evidenced based care and outcomes.
- FEI professor and Center for Visual Science Director **David Williams, Ph.D.**, was named a member of the National Academy of Sciences in recognition of his distinguished and continuing achievements in original research. The honor is one of the highest given to a scientist in the United States. Williams was one of 84 scientists selected for 2014. He has pioneered new technologies that are improving the eyesight of people around the globe, from the legally blind to those with 20/20 vision.

■ Part of FEI's learning organization initiative provides training to its employees. It enhances their careers and helps FEI perform at top levels. Recently a group of clinical technical staff completed certification programs administered by the Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO). Congratulations to all who received the following designations:

**Ophthalmic Coding Specialist**  
(O.C.S.)

**Wendy Boprey-Bond**

**Optical Coherence Tomography**  
(O.C.T.)

**Terence Schaefer**

**Certified Ophthalmic Assistant®**  
(C.O.A.)

**Pat Byer**

**Marie Francis**

**Theresa Keyser**

**Brittany Richardson**

**Liz Rogers**

**Cheryl Ruff**

before Kay's death. We had been fortunate to be involved in some of the most exciting clinical research related to corneal disease. We knew that we wanted to make a contribution to the University — especially to ophthalmology — that would be enduring; endowing two professorships was the ideal way to accomplish this.

**Could you describe the professorships?**

The James Aquavella Research Professorship recognizes a scientist or clinician scientist who is focused on translating basic scientific discoveries into useful medicine. The professorship will be awarded at the discretion of the Chair and may be used to retain or recruit a scientist or clinician scientist from disciplines related to areas of strategic emphasis at FEI.

The Catherine Aquavella Distinguished Professorship will be reserved for a clinician scientist involved in corneal research: a role that I have played here for years. It will attract the brightest minds who are interested in developing new therapies that address corneal disease. It is something that I wanted to do to honor my wife's name which had become synonymous with patient care and advancing the practice of ophthalmology.

**How did you decide on professorships?**

First, endowed professorships are incredible tools to recruit and retain the brightest minds. For FEI to succeed in the long term, it needs researchers at the top of their fields who are opinion leaders, like some of our current faculty. Not only can they compete at the highest levels for government and private research funding, they also provide strategic direction and serve to mentor junior faculty, research fellows and students. A named professorship is a source of pride and prestige to the people who have them.

Income derived from the endowment helps defray some of the costs associated with the professor so that they can better focus on long term solutions to preventing and curing eye disease. Part of the income from the endowment is also reinvested. This can be used to either keep pace with inflation or expand the scope of the organization. In short, endowed professorships have many benefits.

On a personal note, I think endowed professorships are the best way to memorialize someone. Unlike naming a building or laboratory, which are soon forgotten, a

professorship lasts in perpetuity. Every award, correspondence, paper published or presentation by the holder of the professorship serves to honor the person for whom it is named. I can't think of a better way to remember Kay and for what she means to ophthalmology and me.

**Why did you focus on research professorships?**

Research, especially clinical and translational research, has been a passion of mine throughout my career. I have been very fortunate to be involved in some incredible projects, taking ideas and turning them to useful therapies. Artificial corneal transplants, for instance, is one. Kay and I gained inspiration from restoring sight to infants and children who might not otherwise see if we hadn't taken this technology from the laboratory into the operating room.

I believe that FEI already has an edge on these types of endeavors. Many other institutions are currently tied to federal dollars. FEI and the University of Rochester are more comfortable than some of our peer institutions at working with industry or creating unique growth opportunities. We do this by turning intellectual capital into funding streams through innovative ventures. It is my hope that both these professorships will serve to fuel the next generation of innovators who will carry FEI forward after I can no longer serve.

*Aquavella was recently installed as the first Catherine Aquavella Distinguished Professor of Ophthalmology at the University's annual convocation. During his tenure, the professorship will not fund him but will continue building endowment until the next professor is selected. The James Aquavella Professorship is currently unoccupied and will be used at the discretion of the chair to recognize a current faculty member or to recruit a deserving scientist or clinician scientist.*

AQUAVELLA'S CURRENT RESEARCH INVOLVES STUDYING TEAR FILM AS IT RELATES TO DRY EYE.



**A HISTORY OF TRANSLATIONAL RESEARCH:** For more than 40 years, James Aquavella, M.D., has worked to bring new therapies from the conceptual stage to patient care. From introducing American patients to some of the first soft contact lenses to clinical and business innovations, he has always been at the technology forefront. He is currently pioneering new therapies for dry eye disease and heads a unique laboratory that works with government and industry to conduct clinical research in this discipline.

**Aquavella's involvement in clinical research and the introduction of new concepts in ophthalmic care spans more than four decades.**

<b>1968</b>	<b>1970</b>	<b>1972</b>	<b>1976</b>	<b>1980</b>	<b>1982</b>	<b>1985</b>	<b>1987</b>	<b>1988</b>	<b>1993</b>	<b>2003</b>	<b>Current</b>
Collaborated in the use of K-Pro artificial cornea in adult patients	Participated in introduction of the hydrophilic bandage contact lens for cornea disease	Involved in introduction of soft contact lenses for myopia	Involved in use of specular microscopy for examining endothelial cells for eye banking	Early involvement in the concept of ambulatory surgery centers	Published the results of the first cornea transplants performed in an ambulatory center	Investigator in cryo-preservation of corneal tissue for transplant	Pioneered use of collagen shield in corneal wound healing	Clinical researcher for use of excimer laser for corneal disease and vision correction	Evaluated the precision and predictability of the use of picosecond laser in cornea and anterior segment surgery	Performed the first artificial cornea transplant in an infant	Dynamic measurement of the human tear film for studying the causes and treatments for dry eye

**Flaum Eye Institute**

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[www.EyeInstitute.urmc.edu](http://www.EyeInstitute.urmc.edu)  
585 273-EYES

**NEWS BYTES** CONTINUED FROM PAGE 11

**Patient-Family Centered Care Group Spotlights Pediatrics**

FEI's Patient-Family Centered Care (PFCC) committee recently focused its attention on the pediatric wing of the main faculty practice clinic. Patients who visit FEI pediatric ophthalmologists **Matthew Gearing, M.D.**, and **Benjamin Hammond, M.D.**, are greeted by new artwork in the waiting area. In addition, a library of popular children's movie titles on DVD has been added for use in the exam rooms to help families pass the time while a child's eyes dilate.

The artwork was donated by children's book Illustrator, **Jana Christy** of North Adams, Mass. Christy, a Rochester native, was happy to contribute the signed prints. The movies are thanks to the efforts of FEI's **Peter McDowell**. He contacted Kid Flicks, which generously donated 100 DVDs. Kid Flicks collects gently used movies from across the United States and donates them to hospitals and medical centers. The titles were augmented thanks to some FEI employees who added DVDs that their families had outgrown. We are always happy to accept good condition movies as well children's books for our young patients.

PFCC was formed to improve patient experience. If you have any suggestions on how to make your visits better, don't hesitate to make a note on one of our comment cards or patient surveys — we're listening!

**Vision Research Alliance Selects FEI Director to Serve**

The National Alliance for Eye and Vision Research | Alliance for Eye and Vision Research (NEAVR/AEVR), in April, asked **Steven Feldon, M.D., M.B.A.**, to join its board of directors. NEAVR is a non-profit advocacy formed in 1997 and comprised of a coalition of 55 professional, consumer, and industry organizations involved in eye and vision research. NAEVR's goal is to achieve the best eye and vision care for all Americans through advocacy and public education for eye and vision research sponsored by the National Institutes of Health (NIH) and its National Eye Institute (NEI), Department of Defense (DOD), and Department of Veterans Affairs (VA). Feldon joins on NEAVR's board chairs of ophthalmology from Harvard, Johns Hopkins and UCLA.

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