

Vision FOR THE FUTURE

UNIVERSITY OF ROCHESTER | FLAUM EYE INSTITUTE

2023, VOL. 1

Our Vision is Your Vision.



Director's Message

We're back! While our most recent issue is slightly delayed, please don't take that to mean that we have been stagnant. There has never been a time to be more proud of your Flaum Eye Institute. We saw a record number of patients last academic year — growing 5%, up to 105,000 visits and 5,600 surgeries. We officially opened a satellite clinic in Batavia with the acquisition of Batavia Ophthalmology and Dr. Eric Wu's practice; we recruited another 11 faculty over the last academic year, bringing our total to 60; and we performed our first gene therapy treatment for a form of retinal degeneration! Our new interns have begun and are off to a flying start. Our residency program has been revamped — opening the only urgent eye-care center in the region in order to improve patient access while simultaneously improving resident clinical education and equitable care. Just three years ago we had one fellow per year, and this coming year we will have six! (A fellow is a trainee who has completed their residency and is doing further studies in an ophthalmological sub-specialty such as retina, cornea, pediatrics, or neuro-ophthalmology). But we haven't only been busy clinically; our researchers are knocking it out of the park. This is the first year in the history of FEI that our researchers have cracked the top 20 nationally in research funding dollars from the NIH. We welcome a new scientist, Juliette McGregor, who leads a \$6 million Audacious Goals grant to study ways of restoring vision through stem cell transplantation and transforming ganglion cells into photoreceptors. Collynn Woeller received his first R01 grant, and Jesse Schallek received a Career Development Award, which is an RPB grant. Susana Marcos, director of the Center for Visual Science, is bringing together the departments of Ophthalmology, Optics, and CVS like never before, creating a vision-research environment like no other in the country.

We are also very proud of our faculty, many of whom have been promoted or have received new leadership roles.

COVER: Fluorescence Adaptive Optics Ophthalmoscopy reveals expression of an optogenetic therapeutic in the living eye. This treatment confers light sensitivity to the retina despite the loss of photoreceptors and is currently in clinical trials. In this image the optogenetic actuator is present in the cell membranes of retinal ganglion cells in the macula.

We have been recognized through our recruitment and expansion as creating the most diverse workplace in the University. Dr. Juliette McGregor was named the first Feldon Scholar, and Dr. Steve Feldon, our previous chair, was selected to deliver the prestigious Hoyt Lecture at the American Academy of Ophthalmology this coming year.

Finally, we have never been more involved in our community. Dr. Ramchandran, director of population health, was able to finally get past COVID and get his team out to the community to provide school eye screening and exams; adult screening and exams partnering with Lifespan; and, now, screening for diabetic retinopathy in rural areas.

Last, and certainly not least, I would like to thank you, our patients. We understand the sudden growth in our department has created a space crunch and longer-than-usual wait times, but help is on the way. Not only have we opened a satellite in Batavia, we are scheduled to open a new 10,000-square-foot clinic in Webster at the end of September, one in Pittsford in the late fall, and one in downtown Rochester in the early winter. Some of this is because of donations from thankful patients like Joanne Lobo, who supported our pediatric ophthalmology center in Webster; a former resident, Dr. Karl Marchenese, and his wife, Urai, who are supporting a new endowed chair in ophthalmology; and Mr. and Mrs. Todd Bullard, who are supporting our population-health effort.

Good days are here, and there are good days ahead! Thank you for your support and for trusting us with your care.

Sincerely yours,



A handwritten signature in black ink, appearing to read 'D. DiLoreto, Jr.', written in a cursive style.

David DiLoreto, Jr., MD, PhD
Director, David and Ilene Flaum Eye Institute
Chair, Department of Ophthalmology
University of Rochester School of
Medicine & Dentistry



Marcos hits the mark

New CVS Director Susana Marcos, PhD, keeps the world's spotlight for optics and vision research shining on the University of Rochester.

On July 1, 2021, acclaimed optics and vision researcher Susana Marcos, PhD, became the inaugural David R. Williams Director of the Center for Visual Sciences (CVS) as well as the Nicholas George Professor of Optics at the University of Rochester. She also holds a joint appointment as professor of ophthalmology at the Flaum Eye Institute.

The search for a new director to head one of the world's most celebrated vision research programs was exhaustive. The person selected had to meet the high bar set by a long line

of extraordinary scientists who were former directors. The chosen candidate would also be the first to hold the David R. Williams Directorship, named for outgoing program head David Williams, PhD, who has been honored with almost every accolade in vision research and is a National Academy of Sciences member.

After dozens of interviews with University presidents, deans, chairs, and a host of faculty, the dust settled and Marcos emerged as the ideal leader. Supported by two endowments — as the Williams Director and as the

Nicholas George Professor of Optics — Marcos accepted the University's offer. She left her native Spain and her position there as the director of the Institute of Optics and professor of research at CSIC (Spain's top research institute and the #7 public research institution in the world).

"In looking for a new CVS Director and in order to carry on the legacy of prior directors, especially David Williams, we needed to find a vision scientist who could unite all CVS members, in spite of the diversity of approaches and scientific questions they pursue,"

Continued on Page 2

Marcos, continued.

said FEI Associate Chair for Research and James V. Aquavella Professor of Ophthalmology **Krystal Huxlin, PhD**. “This is a very difficult task as CVS has grown. Susana stood out because she was clearly an expert in physiological optics, but she had also integrated neuroscience into her work, and she studied clinically relevant problems. She was someone who could understand and speak the languages of a great majority of our diverse CVS membership.”

“I was so pleased with the selection,” said **David Williams, PhD**. “Susana is an infusion of energy, enthusiasm, and creativity at a critical time in the history of the Center for Visual Science — the perfect person to bring our community together in new initiatives. Look for an increase in the number of large-scale collaborative projects that take CVS well beyond its current status.”

Her own work is multifaceted and involves understanding the interplay of structural, biomechanical, and optical properties of the eye, their impact on retinal image quality, and the limits they impose to visual function and perception.

Why did you choose a career in science and what led you to vision research?

My interest in science developed in high school through a terrific physics and math teacher who sparked my

At the one-year mark of her taking the reins at the Center for Visual Science, *Vision for the Future* caught up with Dr. Marcos to learn more about her path to Rochester and to check on the status of her evolving plans for vision research at the University of Rochester:



Susana Marcos, PhD

curiosity and encouraged students to think out of the box.

My undergraduate studies in physics led me to the field of optics. I found the eye the most fascinating optical system one can think of, so I undertook a PhD in visual optics. I really enjoy the interdisciplinary nature of vision research, being in the cross-roads of so many areas. I also felt that I could apply my optical engineering background to develop instrumentation to better understand basic visual mechanisms and improve ocular diagnostics and treatments, too.

Describe your background prior to becoming director of the Center for Visual Science.

I graduated in physics in 1996 from the University of Salamanca, Spain, one of the oldest universities in Europe. In my PhD work, I developed

the ocular speckle interferometry technique. It is an imaging technique that allows resolving cone photoreceptor cells in the human fovea (the part of the retina that turns the light we see into signals for the brain to process as vision). After this, I was a postdoctoral researcher for three years at Harvard's Schepens Eye Research Institute. I went back to Spain in 2000 to join the faculty of the Institute of Optics (National Research Center) and I became full professor in 2004. I was director of the Institute of Optics (2008–2012), director of the Center for Physics, president of the Advisory Board of the Spanish Research Agency, and director-at-large of the Optical Society of America (now Optica). I am an author of close to 200 publications in peer-reviewed journals, a co-inventor of 21 patent families, have supervised 22 defended PhD theses, and delivered over 250

lectures internationally. I have received numerous recognitions from the international societies and the highest research awards in my home country. I have also co-founded two spin-off companies, Pleoptika, Inc. and 2EyesVision, SL.

Who have been influences/mentors in your career?

My PhD advisor, Professor Pablo Artal, who introduced me to the field of visual optics; my postdoctoral mentor, Professor Stephen Burns, who along with professors Ann Elsner, Eli Peli, and Rob Webb — all at the Schepens Eye Research Institute at Harvard — introduced me to a much more multidisciplinary approach to vision research. I consider them all not only mentors but part of my family. Then there is David Williams, who, incidentally, is a co-author of my first peer-reviewed publication. I definitely consider him a mentor today as I step into his shoes as the David R. Williams Director of the Center for Visual Science.

What was attractive about coming to Rochester to do vision research?

There are so many things. First, there is the unique combination of excellence in vision research at the Center for Visual Science and the extraordinary optics hub at the Institute of Optics, and then the

Rochester area in general. There is also a very collegial atmosphere at the University of Rochester. On top of this, there is the commitment of University donors (John Bruning and Nicholas George's advisees) to create an endowment to strengthen the opportunities for growth.

What are your personal research goals and projects, and how do you feel Rochester will help you achieve them?

I would like to continue pursuing research on the mechanisms of development and treatment of the most prevalent eye conditions: presbyopia, myopia, and corneal disease. These projects entail development of novel optical imaging instrumentation, optical design, quantitative image processing, and visual psychophysics and require access to human patients. These will benefit tremendously from the thriving clinical faculty (ophthalmology and optometry) and excellent facilities at the Flaum Eye Institute, the affiliation with the Institute of Optics (with over-the-top expertise in optics and photonics), collaborations with vision scientists from various University departments who make up CVS, affiliation with the Center for Data Science, and a solid network of resources at the University and beyond. All these elements will

help me in developing technologies that can make a difference in peoples' lives.

Describe the strengths you saw in the Department of Ophthalmology /Institute of Optics and the other departments that play a part in CVS.

I am thrilled by having dual faculty appointments at the Flaum Eye Institute and at the Institute of Optics. Both departments are energetic, have very engaging leadership and culture, prominent faculty, and motivated trainees (residents and undergrads and graduate students, respectively). The strengths of CVS are its multi-disciplinary research themes, its national and international reputation as a top vision research center, the fact that its academic diversity crosses the Medical Center and academic campus, and its consolidated programs (in particular, the core and training grants). This aligns us with several strategic priorities at the University of Rochester and at the national level, creating important opportunities for synergetic collaboration across the component organizations that make up CVS. The applied nature of the research developed at CVS also presents opportunities to attract industrial partnership and tech transfer.

What have been your biggest accomplishments since coming to Rochester?

As the director of CVS, I have made concerted efforts to obtain feedback from the entire CVS membership and draft the basis of a strategic plan that aims at serving the interests of the entire vision community. I have established lines of internal communication and launched new programs to increase the external visibility of CVS at all levels (research communities, potential industrial partners and the general public). I am thrilled to have welcomed three new CVS faculty members (all from FEI) and hope for the membership to continue growing. It was personally gratifying to see record participation of 135 people at a recent CVS retreat.

In my own laboratories, I have launched the development of an adaptive optics visual simulator and high-resolution ocular imaging technology. Two major projects in full swing (funded by the Center for Emerging and Innovative Science and the Goergen Institute for Data Science) address experimental simulation of multifocal contact lenses for myopia control and optimizing imaging-based methods for intraocular lens selection for cataract surgery. These projects involve researchers from diverse backgrounds (ranging from residents and clinical and research

faculty at FEI to graduate students from the Institute of Optics, to researchers at the Goergen Institute for Data Science, international collaborators, and companies).

Describe your role in managing such a large research enterprise and your role in mentoring, collaborating, and promoting vision research in Rochester?

I perceive myself as a researcher contributing to the success of CVS with my own work and technology transfer activities. As a director, I expect to honor the legacy of the center and take it to a next level, as we reach the seventh decade of CVS since its foundation. I will be a facilitator for new initiatives including training programs, collaborations within the University and at the national and international levels, and engaging philanthropists and industry. I will let CVS shine with its own light as “CVSers” unravel the most intriguing mysteries of vision and put those results to the service of society.

What is your vision for CVS and vision research in Rochester; what will it look like in 5, 10, and 20 years from now?

I envision a CVS with stronger collaborative initiatives between its members and external programs to attract diverse human talent and diversified funding. I also envision CVS being the worldwide leader in a

number of research areas, including:

- Advanced instrumentation for disease diagnosis and surgery platforms
- Vision restoration using optogenetics and stem cells
- The eye as a window for evaluation of systemic health-biomarkers
- Myopia correction and control
- Novel contact and intraocular lenses for presbyopia
- Big data in eye care and visual neuroscience
- Multisensory integration
- Augmented and virtual reality in healthcare
- Visual rehabilitation and training
- The impact of vision on mental health and visual disturbances in mental conditions

Leadership in these areas will attract infrastructures, large scale research programs, and the involvement of industry. CVS will have a technology transfer branch with cores in engineering, corporate outreach, clinical evidence, and entrepreneurship that will promote the research excellence produced in those areas into technologies and clinical management strategies that will create a lasting impact on society.

FEI is excited to have Marcos aboard. Follow the progress and join in the conversation on social media at @MarcosLabUR and @CVSUoR

Special delivery: Vision Van rolls into underserved neighborhoods

Undetected, easily correctable vision problems often hinder the academic potential of children. This is most prevalent in communities where there is limited access to eye care, school health resources are spread thin, and families are economically marginalized. With one of the highest urban poverty rates in the nation, Rochester is no exception. Children who do not see well are slipping through the cracks.

FEI began addressing this inequity seven years ago when it established its Glasses for Kids program. Supported by the Glover-Crask Charitable Trust, Glasses for Kids invited school-aged children to come to FEI's Strong Memorial Hospital location one Saturday per month for a specialized eye screening. Most of these kids were referred by their schools because they had failed the state-mandated vision screening, but many had not yet seen an eye doctor because of access issues. During the sessions, most of the children who came received a free pair of glasses on the spot.

The program proved very successful — until COVID put a pause on public health screenings at Strong Memorial Hospital. Volunteers, including members of the Eye Institute's Lions Club, performed nearly 400 vision screenings, dispensing 299 pairs of glasses during a three-year period. But something was missing from the equation.

"First, we realized that one Saturday per month wasn't going to satisfy community demand," **Steven Feldon, MD**, and former FEI chair said. "And even though we have a city location, we are not central to Rochester. This poses challenges to families from distant neighborhoods who rely on public transportation. Then there's the obstacle that not everyone can come on a Saturday morning."

Feldon asked FEI's population-health team and advisory board to look at possible solutions to meet the demand for services while addressing some of the access issues associated with a region the size of Rochester. Over and over, a mobile clinic came to the forefront. Eye institutes in cities such as Miami, San Diego, and Los

Angeles had done it, and the University of Rochester's Eastman Dental School had already shown that it could successfully deliver mobile care through its Smile Mobile.

"The question was not one of if we were going to do it, but one of how big it should be and how to pay for and execute the plan." Feldon continued. "As we were considering models, the Mother



Meghan King, Brooke Donaher, OD and Adrian Alyemehu with Vision Van.



Brook Donaher, OD examines patient at Lifespan.

Continued on page 6.

Cabrini Health Foundation 2019 request for proposals came across my e-mail. This was the perfect opportunity to fund our efforts.”

The Mother Cabrini Health Foundation is one the largest of its type in the U.S. and is devoted exclusively to the residents of New York State. It provides grants to improve the health and wellbeing of vulnerable New Yorkers, bolster the health outcomes of diverse communities, eliminate barriers to care, and bridge gaps in health services.

Feldon, with assistance from FEI Outreach Director Meghan King, wrote a detailed proposal describing FEI’s current efforts in supporting vision health of underserved children and the need to expand these services. They explained how a van — fully equipped with everything needed to provide complete eye exams — could deliver this equipment to schools, where children would then receive care. Those needing spectacle correction would be given glasses, made and delivered to the schools, a short time after the exams. A goal of seeing 300 children by December 2021 was set. The Cabrini Health Foundation said yes, and nearly \$150,000 was allocated at the end of 2019. The grant allowed that when the van wasn’t being used for school screenings, it could be deployed to other locations to see children or adults in underserved neighborhoods.

With a blueprint in hand, the team set to work under King’s direction. A vehicle was selected and purchased to be outfitted for the job. FEI technical and clinical staff made recommendations as to what equipment was necessary for the van. King, who was already working with Rochester and Greece central schools and some charter schools, began working out legal and logistical issues to ensure that children would be safely seen and have full permission from their guardians. As March 2020 approached, all was falling into place with screenings to start during fall 2020. Then the program hit a wall — COVID.

“It was a shock” King said. “The whole concept of the Vision Van was dependent on performing screenings and exams at schools. When the districts sent the kids home and switched to remote learning, we had no idea how long we would be delayed.

Even when schools went to part-time hybrid learning, we couldn’t make it work. There was little enough time for classroom instruction, and screenings would’ve exposed the children and our doctors and staff to unacceptable health risks.”



Meghan King, MD

Understanding the impossibility of the

situation, the Cabrini Health Foundation extended the grant to the end of 2022 to complete the 300 exams. In the meantime, the team tested the van and the equipment by providing full eye exams to limited groups of seniors who are clients of Rochester’s Lifespan agency.

Toward the end of the 2021 school year, local districts began bringing children back to class as vaccination rates went up and infection rates declined. The team made plans to get back into action. To expedite matters, FEI sent teams of technicians and outreach personnel to seven schools across two districts and Rochester charter schools to help the short-staffed nurses conduct state-mandated screenings that weed out the kids with passing vision from those who need exams. Between the seven schools, 1,664 pre-k to eighth-grade students were seen, and 729 were identified as benefiting from an eye exam.

“By the time school started in fall 2021, we were ready to start bringing the van to the schools and deploy our optometrists, technicians, and opticians to do the exams and make glasses,” King said. “It’s a complex process, because once we identify the children who need exams, we have to report the results to the school and then have them get permission from guardians to administer care. In November 2021 we had our first day, starting slowly with seven students. Five of them received eyeglasses.”

With agreements in place between FEI and the schools, the schedule of exams ramped up, including visiting Rochester Prep Elementary. It is one of three elementary schools in a system of seven charter schools teaching children from kindergarten through high school. King and Rochester Prep Elementary Associate

**VISION VAN
BY THE NUMBERS**
(as of August 1, 2022)

Schools served
7

Children screened
1664

Total child eye exams
93

**Pairs of glasses
dispensed**
44

**Children referred
for more complex
vision issues**
12

Director of Special Education Jessica Mullens worked together to bring the van to one of its K–4 campuses on three dates this past March.

“Meghan was wonderful with the initial launch and very responsive in setting up the visits,” Mullens said. “All the Flaum people, including the doctors and support staff, were so kind and caring. To date, between 25 and 30 kids received glasses. I was lucky enough to be the one handing out the glasses when they were delivered,” Mullens continued. “The children’s faces beamed when they received them. Without this program, I know that some of these children wouldn’t have received exams and still be without glasses. We hope to add additional campuses to the program at the elementary and middle school levels.”

An expansion of the program is exactly the aim of King, Feldon, and current FEI Chair David DiLoreto. With a new school year underway, the program should have no problem meeting the initial target of 300 exams. There are plans to serve more urban schools and investigate opportunities in rural districts where there are also challenges to accessing eye care.

In the meantime, King and the team continue looking at ways to make the program sustainable — like the Eastman Smile Mobile is.

“We have been able to establish the Vision Van as a separate insurance-billing location,” King said. “By law, most children who attend school have access to health care coverage, including vision care. There is a good possibility that some of the costs of operating this service can be legitimately funded by insurance benefits.”

King also noted that additional private philanthropy from organizations such as Glover-Crask, combined with insurance billing and contracting with municipalities, could perpetuate the program for years to come. If it gets large enough, dedicated full-time professional staff and self-contained vehicles are also a possibility.

“There is a lot of work involved in loading and unloading the van each time we set up a temporary clinic,” King said. “The idea of a self-contained vehicle, like a converted bus or an RV, is appealing. Right now we are looking to expand what we have, and if the demand becomes large enough so that there is critical mass for

a self-contained vehicle, we’ll find a way to make it happen. It is certainly in the realm of possibility.”

As of writing, the Vision Van is preparing to complete, and exceed, the child examinations agreed to in the Cabrini Health Foundation grant during the current school year. In addition, the program is seeking more schools to serve. At present, eye examination services are available only via a signed agreement with the University of Rochester due to regulatory issues. But the Eye Institute is still available to provide less intensive screenings through its population-health team. To learn more about the program or contract for full services, please contact Meghan King at (585) 276-7311.

Bullard Fund grant helps underwrite Vision Van and eye care access issues

A recent grant to FEI—which will help sustain community eye care access projects such as the Vision Van—was made through the Leah Lillian Bullard Memorial Fund, managed by the Rochester Area Community Foundation. The grant was assigned to FEI’s Platt Vision Health Access Fund, established by FEI Associate Professor of Ophthalmology Christine Platt, MD, PhD, and her husband, Barry Platt, PhD, to underwrite projects that protect and preserve the sight of our most vulnerable.

H. Todd Bullard and his wife, Darnella, established the fund in memory of their daughter, who died in infancy. Bullard is a partner at the law firm of Harris Beach and has previously served on the Community Foundation’s board. The Bullards are advocates for affordable housing and champions for African-American participation in philanthropy.



H. Todd Bullard



Minority Mentorship program student-participants and volunteers / mentors

New program generates interest in unfilled roles for minorities in science and medicine

Research shows that minorities are historically underrepresented in medicine, the sciences, and technology careers. This can have an effect on everything from healthcare outcomes to lost economic productivity.

Associate Professor of Ophthalmology and glaucoma specialist **Karen Allison, MD**, recently launched a program to address these inequities. The Minority Mentorship provided opportunities for local high school students from underrepresented minorities to explore careers in healthcare, research, and technology. Six students, all juniors or seniors, participated in a week-long agenda. Topics covered a wide range of career options — from laboratory research to clinical care to pharmaceutical sales. Other skills, such as interpersonal communications and navigating the college admissions process, were also addressed.

More than a dozen mentors, ranging from technicians to surgeons, participated. On the first day of the sessions, students were paired into teams and chose a topic for a research project related to areas of expertise being presented. The week culminated when teams formally presented their work to a jury, with awards given to the best.

“It was exciting and rewarding,” Allison said. “I’d like to thank the students and volunteers who gave their time and talent to make the program a success. In future years, I hope that we can grow to include participants from districts throughout our region and perhaps offer participants a cash stipend.”

Admission to the program was selective. To participate in the Minority Mentorship, students had to complete an application and submit grades, write a personal statement, and get letters of recommendation from teachers or other mentors.

FEI in the community

FEI continues to provide important information about eye care and community services through live educational programs, support groups and screenings. Future events can be found on our Friends of The Eye Institute Web page at www.foei.urmc.edu or by visiting our Facebook page. Besides school screenings conducted by our Vision Van, the outreach team was busy. This included a return to doing public health events after an easing of Pandemic restrictions:

AME MEMORIAL ZION CHURCH

April 2, 2022:

Retina specialist and population health expert Rajeev Ramchandran, MD, led a group of volunteers to Memorial AME Zion Church to conduct a "Know UR Numbers" event. Besides vision screenings that included glaucoma and diabetic eye disease, stations were set up to check blood pressure, blood sugar, provide dental counseling, give nutrition advice, and conduct a fall-risk assessment. More than 30 participants completed the entire screening circuit. Volunteers included medical students, ophthalmology residents, medical specialists from other UR Medicine departments, and FEI glaucoma specialist Karen Allison, MD.

GENESEO

August 27, 2022:

Ramchandran and the eye health outreach team was at it again, this time in Geneseo. There they participated in the Geneseo Parish Health Ministry's annual health and wellness fair. A team of medical students and FEI resident Derick Ansah, MD, conducted general vision screenings and checked nearly 20 participants for diabetic eye disease and glaucoma. The team was invited back for another screening at a future date to be determined.



FEI screening team takes a break at AME Memorial Zion Church

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 screening, please contact Meghan King at (585) 276-7311. We'll do our very best to accommodate your request.

Marchenese gift establishes endowed professorship

University of Rochester School of Medicine 1974 graduate and 1979 ophthalmology resident graduate Karl Marchenese, MD, and his wife, Urai, in February formally established an endowed professorship at the Eye Institute. The Karl and Urai Professorship in Ophthalmology will in the future be awarded to an outstanding clinician or scientist to support their patient care or research efforts.

Endowed professorships perpetually memorialize the person(s) for whom they are named. They also provide vital departmental support in defraying salaries and other costs of the person holding the appointment. This helps institutions recruit clinicians and scientists of the highest caliber.

“Karl has been a long-time supporter of FEI through the resident-endowed fund, and we are honored and humbled by Urai and Karl’s generosity,” David DiLoreto, MD, PhD, said. “A professorship means the world to all of us. This gift will forever bond this

University and department with their personal legacy.”

For health and safety reasons, a virtual ceremony was held to acknowledge the gift. Representing the University of Rochester were DiLoreto; CEO of UR Health Mark Taubman, MD; former FEI Chair Steven Feldon, MD; and Steven Ching, MD, who is a long-time friend and classmate of Marchenese and who was a FEI faculty member.

During the ceremony, Taubman presented the University of Rochester Medallion to the Marcheneses. The award is one of the highest honors that the University can bestow upon those who have made significant contributions to the U of R through philanthropy, service, or scholarship.

“Endowed professorships spark innovation and creativity,” Taubman said. “They routinely go to the best and brightest people and provide them annually with secure funding that lets them explore out-of-the-box ideas that wouldn’t be underwritten through traditional channels. That both Stephen Hawking and Isaac Newton shared the same professorship is an example to their importance throughout the history of academia.”

Marchenese is a native of the Finger Lakes Region, with family roots in the city of Geneva. An excellent physician and highly skilled surgeon, he founded and grew the Eye Care Center, located

in Canandaigua, New York, building it into a thriving multispecialty practice. He is a past president of the New York Ophthalmology Society, which inducted him into its hall of fame for his many accomplishments, including introducing innovations to the practice of ophthalmology in New York.

As noted by Ching, Marchenese balanced his business acumen with “remarkable altruism” that stretches beyond his support of the University of Rochester and the local community. This includes bringing general medical care and eye care to islands in the Southern Philippines. Here he helped grow a “thatched hut clinic” into a grant-funded medical facility with physicians and social workers providing services to thousands of families in need.

The Karl and Urai Marchenese Endowed Professorship in Ophthalmology was established through a charitable remainder trust gift. It will maintain the Marcheneses through life, when it then reverts to the University. To learn more about these types of gifts please contact Diane Quinlisk at diane_quinlisk@urmc.rochester.edu.

During production of Vision for the Future, Karl Marchenese passed away. We extend our deepest sympathy and support to Urai and the Marchenese family. We will provide an update to alumni and friends of Karl in our next issue.



A CURSE BECOMES A BLESSING

“Not a day passes in which I do not give thanks for Dr. Aquavella. I think of him every time I read, drive my car, or do anything that requires clear and sharp vision.”

– Jody Watters

Jody, and at least 18 others in her family, suffer from what her great-aunt Viola referred to as the “Sterling Curse.” The curse to which she referred is lattice corneal dystrophy type 1. FEI cornea specialist, James Aquavella, MD, has been treating Jody, and six other descendants of the Sterling family, for a total of 56 years. This relationship began when her cousin and then-Colgate Rochester Divinity School student, Gail Parsons, first saw Aquavella in 1966. Recently Jody, a former banking professional and retired registered nurse, made a significant gift to the Eye Institute in Aquavella’s honor for making their curse less of a burden.

Lattice corneal dystrophy type 1 is a relatively rare condition — perhaps sixteen out of one million people develop it. But, it is inheritable. FEI Director of Ocular Genetics Alex Levin, MD, MHSc., explained that the disease is autosomal dominant. This means that a child has a fifty-fifty chance of receiving the defective gene from a parent.

“Because of a high likelihood of inheriting lattice corneal dystrophy type 1, the number of Sterling family members with it may appear statistically to stretch the limits of normal population dynamics,



Continued on page 12.

Blessing, continued.

but this is pretty common in autosomal dominant diseases,” Levin said. “It’s just unlucky that someone in the family developed the gene mutation at some point.”

Lattice corneal dystrophy type 1 is progressive, usually affecting both eyes. It is characterized by a buildup in the cornea of abnormal proteins called amyloids. These deposits form crisscrossing patterns in the middle layer of the cornea that are often detectable by doctors early in a patient’s life. As patients age, the condition worsens.

“The deposits cause clouding in the middle layer of the cornea, scattering light and making vision poor,” Aquavella said. “Later, it begins to affect the superficial layers of the cornea. At its worst, eruptions or erosions penetrate the corneal surface, causing excruciating pain and leaving scars.”

Patients with recurrent corneal erosions demonstrate a faulty, loose adherence of the corneal surface to the underlying middle layer, which can be sheared off upon awakening with the opening of the eyelids. Jody can attest to the discomfort.

“A number of my family had recurrent corneal erosions so painful that they couldn’t tolerate light or open their eyes for days. My mother, who also has the disease, told me that I had my first episode at approximately nine months old.



She heard me crying inconsolably from my crib and found me with my eyes squeezed shut. Upon prying my eyelids open, she knew that I had the dystrophy. Throughout many erosions, I had to isolate myself in a dark room, trying to sleep to escape the pain. It’s beyond discomfort, like hot razor-sharp shards of glass in your eye. When the pain finally subsided and I could open my eye(s), my vision would be blurred for several days, as if I were looking at things from under water.”

Treatment for lattice corneal dystrophy type 1 has evolved through the years, and Aquavella has been at the forefront of therapy.

“Monitoring the amyloid deposits is the first line of care,” Aquavella said. “When the corneal surface becomes involved, we may prescribe therapeutic contact lenses or patch the eye to protect it. But progression is inevitable. Depending on the severity of the erosions and subsequent scarring, we may use a laser to polish the surface of the cornea and improve vision. When the disease is at its worst, a full or partial-thickness corneal transplant is required.”

Aquavella stated that laser therapy may be a good option up to a few treatments, but the endgame is almost always transplant. Unfortunately — even though the transplanted donor cornea does not contain the defective gene — new amyloid deposits can occur in the graft, making the prospect of more erosions and additional transplants very real. This was the case with Jody’s cousin, Bob Sterling, who had between 12 and 14 natural tissue transplants. Jody, who had three, estimated that the family has had more than 37 in total.

Fortunately for Jody and other members of the Sterling family, Aquavella became involved in the development of artificial corneal transplants — called keratoprosthesis. After years of research and collaboration with Harvard University’s Claes Dohlman, MD, the Boston keratoprosthesis (type 1 Kpro) was approved in 1992. Aquavella performed his

first Boston Kpro transplant in 2001. He began using the procedure with adults, and eventually he performed some of the world's first Kpro procedures on infants and children born with corneal opacities for whom natural corneal transplants had poor prognoses.

"Keratoprosthesis works well in the case of corneal lattice dystrophy," Aquavella said. "Because the device is biologically inert plastic, new amyloid depositions can't form and vision remains clear without the possibility of failure. Although Kpro comes with its own set of challenges (requiring visits for cleaning, the chance for post-operative infections, and an increased risk for developing glaucoma), we've learned to expertly manage and anticipate these problems."

In August 2006, Aquavella told Watters that due to repeated natural tissue transplant failures she should consider keratoprosthesis. She contacted her cousin, Karl Sterling, who had had his first Kpro earlier that year. Jody subsequently had devices implanted in both eyes — during separate surgeries — in 2007. After her first procedure, she developed a severe inflammatory response that Aquavella medically managed, and the result was incredible. She stated that the surgery was transformational.

"Even to this day, I see 20/20 to 20/25, and sometimes 20/15," Jody said. "In comparison, my best vision after natural tissue corneal transplants was initially very good but eventually diminished to approximately 20/60 to 20/70. Moreover, I no longer experience recurring corneal irritation and blurred vision. Dr. Aquavella's skill and compassion has changed the trajectory of my life and that of other members

of my family. This includes my mother, who was effectively blind by age 47 and had natural tissue corneal transplants with Dr. Aquavella. Where another ophthalmologist wouldn't even consider a procedure, he successfully performed bilateral transplants in 1969, reassuring and supporting her throughout. Because of him, she was able to go back to school and become gainfully employed. I only wish for her sake that Kpro had come earlier"

A FOOTNOTE OF IRONY FROM JODY:

"Since having my Kpros, my formerly brown eyes are now blue-gray, which continues to elicit exclamations, especially from cashiers at checkout, about how beautiful my eyes are; one of my home care patients always greeted me upon arrival with 'Hello, Blue-Eyes'!"

"I often contemplate the accomplishments of Dr. Aquavella," Jody continued. "The number of lives he has touched directly and indirectly is inestimable. Not only have I benefited from his research, expertise, and highly skilled care for 53 years, he has also been an understanding presence in navigating the challenges of living with a rare dystrophy which others could neither see nor understand. I have long felt compelled to find a tangible expression of gratitude – not only for myself, but also on behalf of the other six inheritors of the "Sterling Curse" whom he treated and whose life trajectories he largely improved, if not changed altogether. This gift has been offered as a testament to the legacy of excellence he created, and it has been a privilege and honor to have the opportunity to do so."

Jody's estate gift was made to the FEI Corneal Research Fund. This fund helps to support the development of new therapies in the treatment of corneal disease, such as improvements to keratoprosthesis, and to disseminate information through educating other corneal specialists about the latest techniques to protect and restore vision.

To learn more about supporting research at FEI, please contact Diane Quinlisk at 585-733-1818 or diane_quinlisk@urmc.rochester.edu.

McGregor named inaugural Feldon Scholar

When **Steven Feldon, MD**, transitioned from director of the Flaum Eye Institute to become the Medical Center's director of Biomedical Research Development, he left many legacies. One of these was the Steven E. Feldon Scholar Award. Funded by philanthropy from friends, family, and colleagues, the endowment's purpose is to help recruit and retain outstanding early and mid-career scientists by providing them with start-up funds for lab equipment or personnel.

Newly appointed Assistant Professor of Ophthalmology **Juliette McGregor, PhD**, is the award's first recipient. McGregor's work involves understanding and imaging eye diseases that cause blindness and validating therapeutic techniques to restore that lost vision (see Audacious page 21).

"I am proud to be the first recipient of the Feldon Scholar Award," McGregor said. "After careful consideration, I decided to spend the funds on a specialized image-cataloging software. It has already provided a great benefit, as it allows my collaborators to easily search from among thousands of images related to our work together. It saves me, and them, an incredible amount of time and makes sharing crucial information easy."

"I was pleased to see that Juliette was able to put the funding to such good use," Feldon said. "This is exactly what we intended this endowment to do. I hope that the award was an incentive for Juliette to join the faculty, and I hope it will serve the same purpose for future recruits."



Steven Feldon, MD and Juliette McGregor, PhD

The David and Ilene Flaum Eye Institute is most grateful to its donors for their generous gifts and ongoing support.

We are especially appreciative of the friends, parents, alumni and faculty who contributed to our annual fund. The annual fund is an essential source of support 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 to FEI in meaningful ways between 6/1/21 and 6/30/22:

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FEI research team adds dynamic scientists

The arrival of **Susana Marcos, PhD**, raised the Eye Institute's research profile to new heights. The recent addition of two more investigators, **Juliette McGregor, PhD**, and **Michael Telias, PhD**, elevates the group into an even higher orbit. Both received their appointments during the 2021–2022 academic year and are already drawing attention from the vision research community.



Juliette McGregor, PhD

McGregor is no stranger to FEI. The assistant professor of ophthalmology and Feldon Scholar has been at the University of Rochester since 2016. She started as a postdoctoral research fellow and was promoted to research associate at the University of Rochester Center for Visual Science, where she collaborated with many FEI researchers. McGregor completed her undergraduate and graduate studies in the United Kingdom at the University of Cambridge. She did her undergraduate degree in physics, a master's in neurobiology, and a doctorate in physics. She remained in

England before coming to Rochester, doing postdoctoral research involving super-resolution microscopy.

Since her arrival in Rochester, McGregor has been involved in numerous projects developing and using adaptive optics scanning laser ophthalmoscopy to image and understand the health and function of light gathering photo receptors in the living eye. Her work in this area recently culminated in a National Eye Institute Audacious Goals Grant, where she and her team will be using adaptive optics to evaluate the effectiveness of vision restoration techniques.

Telias joined the research faculty as assistant professor of ophthalmology. Most recently he was a postdoctoral scholar in the Department of Molecular and Cell Biology at University of California, Berkeley, where he did extensive work related to inner retinal remodeling in degenerative blinding diseases. He completed his undergraduate degree in biomedical sciences at Hebrew University of



Michael Telias, PhD

Jerusalem and his doctorate in cell and developmental biology at Tel-Aviv University. Telias is also a member of the Center for Visual Science and has an appointment with the Del Monte Institute for Neuroscience.

Telias' research focuses on two main areas. The first involves understanding the molecular and physiological mechanisms of cellular remodeling that occur during and after retinal degenerative disease. Defining these pathways may uncover therapeutic targets (see page 20) to block or reverse the damage that occurs in blinding diseases such as age-related macular degeneration and retinitis pigmentosa. His other research is aimed at understanding the mechanisms involved in Fragile X Syndrome. This inheritable condition is a leading cause of intellectual disability and autism. For these investigations he collaborates with the Del Monte Institute's Intellectual & Developmental Disabilities Research Center.

Both early-career scientists have compiled impressive lists of publications and have developed unique approaches to visualizing cellular activities that occur in blinding disease.

National Eye Institute funds research in the fight against thyroid eye disease

FEI Assistant Professor of Ophthalmology **Collynn Woeller, PhD**, studies thyroid eye disease (TED). This autoimmune condition affects approximately one million Americans — mostly middle-aged persons with a condition called Graves' disease — in whom the thyroid becomes overactive. In TED, the tissues surrounding the eye become inflamed, and unwanted amounts of fat and scar tissue form. This excess tissue has nowhere to go inside the eye socket, so it pushes on the eyes, making them protrude; and it may also put pressure on the optic nerve, which sends visual signals to the brain. This causes problems ranging from discomfort and cosmetic disfigurement to serious visual complications and even blindness.



Collynn Woeller, PhD

There is no definitive cure for TED, just treatment. Until recently, this included surgery to remove the excess tissue and correct the position of the eyes and the eyelids, steroids to reduce inflammation, and medications to control thyroid hormone. All of these interventions have risks and side-effects, and none of them address the

underlying disease process.

For years, scientists, including Woeller, have been unraveling an intricate biochemical process behind what causes TED. Many of these discoveries relate to upstream molecular pathways that trigger cells called fibroblasts to transform into specialized cells called adipocytes or myofibroblasts. These cells compose the unwanted fat and scar tissue that characterize the disease.

Recently, the FDA approved a drug — called teprotumumab — that interrupts this process. It does so by blocking an insulin-like growth-factor receptor (IGF1R) that encourages the formation of myofibroblasts. Even though it is successful in 80 percent of cases, this expensive therapy has to be administered through multiple intravenous infusions, and some patients relapse after treatment stops. To better understand TED and potentially develop less expensive and easier to administer therapies, the National Eye Institute (NEI) recently awarded Woeller's lab \$1.9 million to investigate a pathway that may be at the heart of regulating the disease (R01EY031398 01).

"Our focus is on a protein called the aryl hydrocarbon receptor (AHR)," Woeller said. "AHR is a ligand-activated transcription factor that regulates a set of genes in orbital fibroblasts to control inflammation and scar tissue formation. We think that if we can control the

AHR pathway, we can stop the disease from progressing."

In a laboratory setting, the team proved that they can activate AHR using specific small-molecule ligands in living fibroblasts that were cultured from tissue surgically removed from patients when they were treated for TED. Small molecules that activate the AHR can prevent these cells from turning into the unwanted scar-forming myofibroblasts. Further experiments also showed that a second transcription factor linked to smoking may compete against AHR and may limit its ability to control myofibroblast growth in TED. Woeller pointed out that smokers are eight times more likely to develop TED.

"We are very excited about targeting AHR to limit fibroblast activation in TED," Woeller said. "Our grant aims to define the molecular pathway(s) by which AHR blocks orbital fibroblast activation in culture. We also hope to better understand the molecular role cigarette smoke plays. All we know now is that smoking increases the risk of developing disease. If our hypotheses are correct, there are a host of ligands which can selectively activate AHR. Several of these activators are inexpensive FDA-approved and over-the-counter medications that can be taken orally; some are used to treat common conditions like acid reflux. If the science supports it, we may have a novel and viable therapeutic target to treat TED. Additionally, given the

desirable safety profiles of some of these compounds, they may be given as prophylaxis to patients who are at high risk for developing TED.”

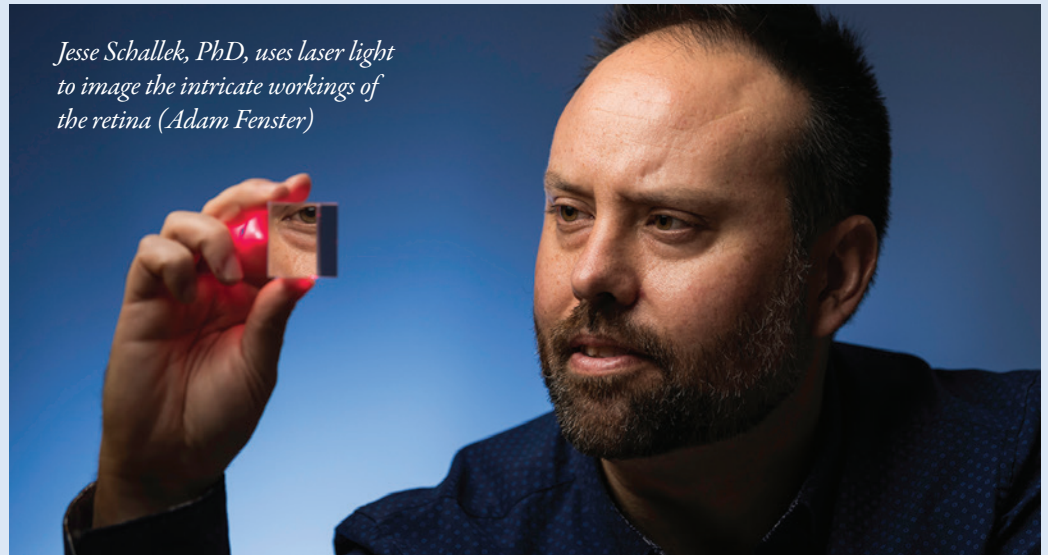
New funding from research to prevent blindness

Since receiving its first Research to Prevent Blindness (RPB) grant more than 45 years ago, University of Rochester and its vision scientists have received more than \$4 million in funding from the organization whose mission is to preserve and restore vision by supporting research to develop treatments, preventives, and cures for all conditions that damage and destroy sight.

Recently, RPB — founded by ophthalmologist-turned-media magnate Jules Stein — awarded FEI a pair of grants to continue innovative and exploratory vision research.

Ophthalmology Chair and FEI Director David DiLoreto, MD, PhD, accepted an RPB Institutional Award. These annual grants of \$115,000 are given to a handful of institutions to be used at the discretion of the chair. Unlike individual investigator grants, funds can be earmarked by DiLoreto based on research priorities. The grant will automatically renew each year for five years as long as DiLoreto is chair.

“We’re grateful to be selected,” DiLoreto said. “These unrestricted funds offer the ultimate flexibility that



Jesse Schallek, PhD, uses laser light to image the intricate workings of the retina (Adam Fenster)

other research grants can’t provide. They can be used to support personnel, research equipment, or both. In the past at FEI, Institutional Award dollars have been used to spark scientific insights that may have languished without them. These ideas may then go on to receive more traditional funding and result in important publications and, ultimately, sight-saving technologies. In many ways,

these awards are the venture capital of vision research.”

Moreover, having an Institutional Award opens the door for FEI to compete for RPB’s larger individual awards, which go to investigators doing cutting-edge research. Such is the case for Jesse Schallek, PhD. Some of his earliest research, supported by an Institutional Award under former chair Steven Feldon, MD, resulted



Jesse Schallek, PhD, poses with 3D-printed model of the retinal vasculature (Adam Fenster)

RPB Grant, continued

in Schallek receiving additional funding from RPB through a Career Development Award. This grant supported Schallek's development of imaging technology used to investigate changes to the vasculature in the living retina at the cellular level. This work then resulted in larger grants from the National Institutes of Health, and Schallek's research has advanced our understanding of what happens to vision in diabetes and during inflammation. Not only could this technology help treat and cure blinding disease, it could help doctors earlier detect diabetes and other systemic conditions.

Schallek was again recognized by RPB with a Career Advancement Award of \$150,000. These one-time grants assist outstanding early-career vision scientists in pursuit of ongoing research of unusual significance and promise. They are available to candidates who have already received their first National Institute's for Health R01 funding and are collecting new data to apply for a second R01. Schallek is using his award to image and identify, inside the living eye, specific kinds of immune cells by using a state-of-the-art camera and time-lapse recording software that his lab invented. The technology may someday help ophthalmologists, and doctors from other areas of medicine, better treat inflammatory disease.

Common drug may improve or recover vision “lost in the noise”

In many blinding diseases, vision loss is caused by a gradual reduction in the number of photoreceptor cells at the back of the eyes. Located in the retina, photoreceptors process light information into electro-chemical signals that the brain processes as images. Several hereditary eye diseases, like retinitis pigmentosa (RP), as well as age related macular degeneration, are characterized by photoreceptor loss.

FEI scientist, Michael Telias, PhD, recently discovered that Antabuse (Disulfiram) commonly used to treat alcoholism, could be effective in improving the performance of still intact photoreceptors in a model of retinitis pigmentosa. He is studying whether administering this drug to RP patients may improve existing vision or slow vision loss altogether. He also thinks that the same principle may be useful in treating other diseases. He recently reported his findings in the journal *Science Advances*.



Michael Telias, PhD

“In eye diseases where there is photoreceptor loss, the nerve cells that carry visual information to the brain remain intact,” Telias said. “But these nerve cells – called retinal ganglion cells (RCGs) – undergo a related change when photoreceptors die, making them less effective at stimulating the brain. This accelerates vision loss.”

Telias explained that as RCGs change, they become “hyperactive,” firing up to eight times more frequently than they would in healthy eyes. This increased activity results in static or background noise that overwhelms useful visual signals from intact photoreceptors. Telias likens the effect to ringing in the ears that tinnitus patients experience.

In earlier research, Telias demonstrated that the maladaptive remodeling of RCGs, and their ensuing hyperactivity, is triggered in the presence of a common compound called retinoic acid (RA). In a complex process, called a signaling pathway, RA is increased as photoreceptors die and disappear, causing the abnormal development of hyperactivity in the RCGs, and resulting in the unwanted noise.

Telias thought that if they could interrupt this process, RCGs would revert to behaving normally and hyperactivity would decline. This theoretically

minimizes the interference with intact photoreceptors so that they have a better chance of sending clear visual signals to the brain. To prove this, he introduced the RA blocking drug disulfiram to an *in vivo* model of photoreceptor loss to see what happened.

“To our delight, it proved effective,” Telias said. “In our model, disulfiram measurably reduced RCG hyperactivity while also improving visual performance. Since the drug is FDA approved and has an excellent safety profile, we feel that there will be few hurdles to test this concept through a clinical trial which we hope to start by the end of the year.”

Telias stated that this approach could not only be helpful in improving function to persons experiencing vision loss from photoreceptor degenerative diseases like retinitis pigmentosa, but it could also be a key tool in vision restoration.

“Many vision restoration therapies, like electrical implants, gene therapy or optogenetics, rely on restoring photoreceptors or stimulating RCGs,” Telias said. In almost every instance, these treatments will be administered to patients who have already experienced significant remodeling of their RCGs because of RA signaling. If we can stop, or even reverse the effects, we believe that the potential for good vision improves as we eliminate the noise.”

Grant awarded to speed development of sight-restoration therapies

One day soon, scientists and doctors hope to make vision restoration commonplace. Some of the early efforts — such as gene therapy to replace missing proteins or artificial prostheses that electrically re-stimulate the visual system — are available at FEI. But regenerative therapies that aim to directly replace light-gathering photoreceptors that are lost in diseases, such as macular degeneration, are still in their infancy. If proven successful, these treatments could benefit a huge number of patients for whom a full understanding of the cause of the disease remains elusive. Transplanting immature photoreceptors and encouraging them to integrate into the retina offers the potential for high-quality restored vision, but is a tremendous technical challenge. Moving these therapies forward toward the clinic requires optimizing them early on to identify and overcome barriers to restored function.

**Audacious:
showing a
willingness
to take
surprisingly
bold risks.**

This question of, “does it work?” Has has been a focus of attention by the National Eye Institute (the vision division of the National Institute’s for Health) through its Audacious Goals Program. Ten years ago, NEI launched the initiative to supercharge the pursuit of sight-restoring therapies. FEI has played a key role during this groundbreaking research due to its position as a world leader in imaging the eye using a technology called adaptive optics scanning laser ophthalmoscopy (AOSLO). Employing sophisticated instruments developed at the University of Rochester, AOSLO allows researchers to see the structure of the living eye in clear and minute detail. Following recent advances at the U of R, AOSLO can now also reveal retinal function at the cellular scale. This opens the door to using this technology to determine if new experimental sight-restoration techniques work.

Continued on page 22.

Audacious, continued.

Because of their expertise in this area and previous success with photoreceptor transplantation and optogenetic therapies, FEI Assistant Professor of Ophthalmology Juliette McGregor, PhD, and collaborators, recently received \$5.7 million from NEI over five years to gauge the effectiveness of photoreceptor replacement therapy using advanced retinal imaging (U24EY033275-01). McGregor's Audacious Goals Initiative consortium spans the University of Rochester, the University of Wisconsin Madison, and the University of California Berkeley. Together they aim to establish how to improve cell transplantation, survival, integration, and function — addressing topics as diverse as modulating the immune system, and engineering retinal tissue scaffolds along the way.

McGregor and her Rochester team will use technology developed at the U of R to purposely disable photoreceptors, creating a pre-clinical model of retinal degeneration. FEI surgeons will then introduce high-quality photoreceptor precursor cells into the damaged retinas. The cells are produced by University of Wisconsin's David Gamm, MD, PhD, an expert in photoreceptor replacement therapy. It will then be up to McGregor, using AOSLO, to determine if the donor photoreceptors survive, become integrated into the host retinas, and confer restored light sensitivity. Berkeley's Teresa Puthusser, OD, PhD, an expert in retinal degeneration models and retinal remodeling in disease, will determine if the treatments can be optimized when previous disease has caused changes to the remaining retinal architecture (see also Telias article, page 20). This will be

crucial, as many diseases that damage photoreceptors — such as macular degeneration — develop progressively over many years, and reactivation of these tissues is by no means a done deal.

"This consortium project brings a range of expertise to bear on the major long-standing challenge in regenerative medicine — restoring neuronal connectivity," McGregor says. "Building on developments in retinal imaging made here at Rochester over the past decade, we are now in a position to detect restored function at the cellular scale and advance the most promising therapies. As an early career researcher, I am particularly delighted that my team has been chosen by NEI to take on this Audacious Goal and work toward delivering high-quality restored vision to patients."

FEI Chair David DiLoreto, MD, PhD, is a surgeon on the team and echoes McGregor's excitement. "As a scientist, the ability to collaborate with colleagues across the nation to advance your field is all that one could ask for," he says. "As chair of the department, I am thrilled that Juliette joined our faculty to perform this groundbreaking work and use our world-class imaging team to offer new insights into retinal transplantation. She truly is a star on the rise."

Juliette McGregor, PhD and David DiLoreto, MD, PhD, discuss vision restoration techniques. (Adam Fenster)



Upstate New York's first eye cancer treatment center opens

A cancer diagnosis is always a shock. When a tumor is found inside the eye, it can magnify the seriousness: A cure could result in blindness. Ocular oncologists specialize in the diagnosis and treatment of cancers inside the eye and, sometimes, the supporting structures. They walk a tightrope of care, pulling out all the stops to preserve life while trying to save useful vision. These hyper-focused ophthalmologists are as rare as the tumors they treat — fewer than 100 practice in the United States.

Until recently, ocular oncology was a specialty that was referred outside of FEI. The nearest treatment centers are in metropolitan New York, Philadelphia, and Cleveland. But the arrival of Vikas Khetan, MBBS, has changed this. Khetan is a fellowship-trained retina specialist. He became interested in ocular tumors when he was doing his retina fellowship in Chennai, India, in 2004. This prompted him to seek additional training in pediatric and adult ocular oncology at the University of Toronto. He returned to India where he practiced retina and ocular oncology before coming to Rochester. His addition to the team is another capstone in FEI Chair David DiLoreto's strategy to build a leading destination for complete eye care.

"Every year we send about 15–20 patients to Cleveland or Philadelphia," DiLoreto said. "Even though eye cancers are relatively rare, we estimate that there are about 50 cases per year in our region. And this is just a fraction of the total

number of eye tumors out there that are non-cancerous but still need proper diagnosis and monitoring. This new service is going to be helpful to families and individuals (and their referring doctors) who can now receive the most up-to-date treatments within a two-hour drive from their homes."

Khetan treats many eye cancers, including the most common form — intraocular melanomas. These tumors generally occur in adults over 50. People with light-colored skin and eyes are at higher risk than most. The majority of cases start in the choroid, a layer at the back of the eye just behind the retina. The choroid's job is to nourish and provide oxygen to the eye through a dense network of blood vessels. Many symptoms of intraocular melanoma can be mimicked by other eye and health problems, so it is important for persons over 50 to receive routine eye exams.

Khetan also treats retinoblastoma. This rare condition affects children: Only about 300 cases are diagnosed each year in the United States. Although the cancer generally occurs spontaneously during a child's development, through a gene mutation, survivors of retinoblastoma can pass this gene to offspring. The average age at retinoblastoma diagnosis is 18 months, and it nearly always presents before age 4. Like other eye cancers, symptoms can be confused with a host of other problems, but can include a white pupil instead of the normal black color, misaligned eyes, different colored irises, or an enlarged pupil. Parents or pediatricians noticing these should consult an eye specialist.

Continued on page 24.

Ocular Oncology, continued.

“Intraocular melanomas, retinoblastomas and other tumors are easily detected by an optometrist or ophthalmologist during an eye exam,” Khetan said. “This is because the eye is a clear window. When an irregularity is seen, patients are then referred to an ocular oncologist to confirm the diagnosis. If it is cancer, we can then determine the course of treatment.”

Technology ocular oncologists use to confirm eye cancers might include ultrasound, MRI, or angiography (when a dye injected into the patient’s bloodstream reveals abnormalities through photographs taken of the back of the eye). In rare cases biopsies are performed, through which a doctor surgically collects abnormal cells and sends them to a pathologist for analysis. The purpose of these tests is to determine whether a tumor is cancerous and, if it is, understand the extent of the threat it poses (called staging) in order to guide treatment decisions.

The goal of treatment for intraocular cancer is always eradication. Intraocular melanomas and retinoblastomas are fatal if undiagnosed or not treated appropriately. However, advances in cancer treatment, including more targeted therapies, have become increasingly successful at preserving vision without compromising survival rates.

“Not long ago, many children with retinoblastoma would lose at least one eye,” Khetan said. “And enucleation (surgical removal of an eye) was also a first-line option for patients with aggressive intraocular melanomas. But now we have many choices. These include locally targeted treatments, including Brachy therapy. This is where we surgically implant a small disc in the eye that is seeded with radioactive material that can destroy cancer cells. It is removed after a few days and can be very effective at shrinking or eliminating a tumor while preserving useful vision. We also have surgical resection of tumors, laser therapy, cryotherapy, chemotherapy, and beam radiation. Used judiciously, their side-effects on vision can be minimized. Enucleation is still an option, but we reserve it for the most difficult to control cases.”



“The good news,” continued Khetan, “is that with early diagnosis and treatment, the survival rates from ocular cancers are becoming better with each generation of treatment technology. If detected early, children with retinoblastoma have a 99 percent survival rate in the developed world. The numbers for adults with ocular melanoma are also excellent as we have learned how to predict the aggressiveness of these tumors and treat them appropriately.”

Kehtan also participates in patient care with doctors at the Wilmot Cancer Institute as part of an interdisciplinary team. Patients with late stage and metastatic cancers sometimes develop ocular-related complications and secondary tumors. This happens most commonly with breast, lung, or prostate cancers, but can occur with many forms of cancer. His experience and passion in ocular oncology provides a crucial piece to Wilmot’s armamentarium.

“We are so excited to have Vikas here,” DiLoreto said. “For patients facing cancer, diagnosis and treatment becomes a months-long string of appointments. By having his expertise in our region, we believe that we are improving the lives of people. Now they can focus on getting well without having to worry about costly and time-consuming travel. This isn’t just a win for the Eye Institute, it’s a win for upstate New York.”

In addition to heading FEI’s Ocular Oncology Service, Khetan is a member of the retina service and a collaborator with the pediatric ophthalmology team. With additional training in ocular genetics, he has expertise in hereditary eye diseases and is playing a key role as the lead surgeon who will administer gene therapies to patients with hereditary and genetic eye diseases. All ocular oncology services are performed at the Eye Institute’s Strong Memorial Hospital campus. Interested patients and referrers may call 585.273.3937 to arrange a consultation.

Access Batavia!

FEI's vision is that any person seeking eye care should have access to the widest spectrum imaginable of services — regardless of geography, income, race, or access to medical insurance. This tenet is demonstrated through FEI's population health services, safety net programs, and outreach (like the signature Vision Van).



Eric Wu, MD

Recently, **Eric Wu, MD**, and his Batavia Ophthalmology team joined the Eye Institute through a practice acquisition. The move augments FEI's ability to deliver ophthalmic services closer to home for many patients who might be referred to Rochester. This brings the number of FEI locations to 11, spanning Geneva to Alden, New York. Wu's practice includes a main office in Batavia, which was relocated to 45 Liberty Street in downtown Batavia, and a satellite operation west of Batavia in Alden. Both will continue to serve patients.

Wu, who completed his medical degree and ophthalmology residency at the University of Pittsburgh, became a solo practitioner when his partner, ophthalmologist Peter Paulus, retired. He started thinking about joining FEI when a contract-employed ophthalmologist working for him decided to leave the area. Ophthalmology Chair David DiLoreto and FEI Senior Administrator Joseph Gabriel were pleased that he did.



"Eric is a perfect fit for us," DiLoreto said. "He is a highly skilled cataract surgeon who was trained at a top-tier residency program. We're really excited about what he adds to our faculty through his clinical and teaching skills. We are also happy that his back-office and patient-facing medical staff remained part of the team. Together, they immediately give us a strong reputation for quality care west of Rochester."

Gabriel estimates that the acquisition will add more than 10,000 annual visits. Some of these patients are ones Wu was already referring to doctors at FEI's main location for highly specialized treatments not provided by his office. There are already plans to staff the Batavia office with some of these missing specialties, such as pediatrics, retina, and glaucoma, expanding the availability of care closer to home for many. Wu, who is a one of a small number of full-time ophthalmologists in the region, is thrilled to have the company.

"My primary reason for joining Flaum is ensuring continual care for patients in and around Batavia for years to come. The University of Rochester has been caring for eyes for more than 100 years and will be here for generations to follow. As the business of medicine becomes more complex and the cost of keeping up with technology increases, this acquisition allows me to do what I love best – practice ophthalmology."

With an expanding number of locations and clinical faculty of more than 40 providers, FEI is committed to being a premiere regional center for patient care and clinical research. Our new Batavia offices are located at 45 Liberty Street in downtown Batavia and at 13500 Broadway in Alden. Appointments can be made by calling 585-344-0933, and a list of current services available there can be found at www.eyeinstitute.urmc.edu.

Regional need for specialty ophthalmology spurs clinical expansion

Excluding the New York metropolitan area and including parts of Northern Pennsylvania, the geography served by FEI would rank among the top 20 states in population. Yet for many living in this region, a diagnosis of acute eye disease, a rare vision-threatening condition, or the need for limitedly available treatments or testing can be problematic. It may mean going great distances, spending thousands in travel, to receive specialty ophthalmology care. But with the arrival at FEI of more than one dozen specialists since late 2020, this is becoming a concern of the past.

“Recent additions to our roster have put FEI among the top tier in its ability to provide the most advanced care,” FEI Director David DiLoreto, MD, PhD, said. “Now anyone in the region with the most simple to the most complex conditions should feel assured that they have nearby access to compassionate and talented doctors capable of treating their problem.”

This expansion includes augmenting current services such as glaucoma, retina, and general ophthalmology, while adding specialties limited in capacity or new to the region such as uveitis and ocular oncology. With a growing number of satellite offices, communities lying between larger urban areas can also expect enhanced levels of care.

Recently added clinicians include:

Karen Allison, MD, joined the glaucoma service. She offers care to patients suffering from glaucoma and associated conditions. This includes performing the latest minimally invasive glaucoma procedures and complex cataract surgery. Allison received her medical training at Robert Wood Johnson Medical School and completed her ophthalmology residency at SUNY Brooklyn, where she was chief resident. She then completed a glaucoma fellowship at Ochsner Medical Institutions in New Orleans, after which she entered private practice. In 2001, she founded Allison Glaucoma Consultants in metropolitan New York,

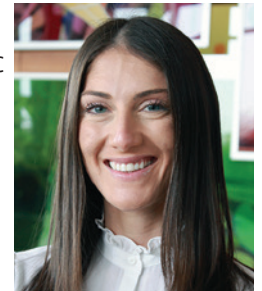


Karen Allison, MD

where she was CEO until joining the Flaum Eye Institute. Her research interests include glaucoma clinical trials, and she is active in promoting minority participation in medical careers and improving access to eye care for underserved populations.

Maria Costello, PA-C, joined the Oculoplastics Service, working with **Mithra Gonzalez, MD**. In addition to co-managing complex cases involving functional and cosmetic facial restoration, she independently

treats a variety of routine ophthalmic problems. Costello received her bachelor's degree as a physician's assistant from St. John's University.



Marie Costello, PA-C

She was recruited to the Eye Institute, where she completed a year-long internship in oculoplastics and ophthalmology under the tutelage of Gonzalez. She is one of a handful of physician's assistants in the U.S. to have formal ophthalmic training.

Matthew Haynie, MD, is the Eye Institute's most recent arrival. The FEI resident-class of 2021 graduate spent a year at Duke University completing a fellowship in pediatric ophthalmology. Haynie will see patients at the Strong Memorial Hospital and Batavia locations. He has an interest in pediatric cataract surgery and treats a



Matthew Haynie, MD

wide variety of childhood eye conditions, such as amblyopia (lazy eye) and performs surgery for crossed eyes (strabismus) on adults and kids. Haynie completed his undergraduate work at Brigham Young University and received his medical degree from UC San Diego before coming to Rochester.

Wen Fan Hu, MD, PhD, along with Amde Shifera, MD, PhD, make up FEI's re-designed Uveitis Service. Hu offers expert medical and surgical care to patients suffering from inflammatory and infectious eye diseases. These might include complications of autoimmune and immunosuppressive disorders. Hu also performs routine and complex cataract surgery on patients who may need special care due to their inflammatory eye disease. She received her medical training at Harvard University, where she also earned a doctorate in neuroscience. She remained at Harvard to complete her residency in ophthalmology at Massachusetts Eye and Ear Infirmary and then went on to complete a



Wen Fan Hu, MD, PhD

fellowship in uveitis at the Moran Eye Center through a prestigious Heed Ophthalmic Foundation fellowship.

Vikas Khetan, MBBS, recently arrived to establish the region's first ocular oncology service. He also plays a vital role on the retina team, as its dedicated pediatric retina surgeon, and within the ocular genetics group of the pediatric service, where he is the primary surgeon performing gene therapy. He came to FEI after being in practice for 15 years at Sankara Nethralaya,

a tertiary eye care center in Chennai, India. He completed his MBBS and internship at JSS Medical College in Mysore,



Vikas Khetan, MBBS

India, and received his diploma in ophthalmology from Kasturba Medical College in Manipal, India. He then completed a fellowship in vitreoretinal diseases at the Medical Research Foundation in Sankara Nethralaya, India, before coming to North America to continue his training. First he did a dual fellowship in pediatric and adult ocular oncology through the University of Toronto. He then traveled to Wills Eye Hospital in Philadelphia to complete a fellowship in ocular genetics. Khetan's research interests include retinoblastoma and ocular genetics.

Janice Lee, MD, provides much-needed support to the Comprehensive Ophthalmology Service. Lee is a seasoned ophthalmologist and expert cataract surgeon. She received her medical degree from Albert Einstein College of Medicine and completed her ophthalmology residency at Long Island Jewish Medical Center, where



Janice Lee, MD

she was chief resident. Prior to coming to Rochester, Lee practiced general ophthalmology in Bayside, New York, and Torrance, California.

Estaban Santiago, MD, recently finished his cornea fellowship and joined the faculty. He did his medical training at Argentina's



Estaban Santiago, MD

Institute of Health Sciences and completed his ophthalmology residency at Universidad Maimonides in Buenos Aires. He practiced cornea and anterior segment surgery in Argentina for four years before traveling to Canada to complete a cornea fellowship at the University of Ottawa. In August 2021, he began a second fellowship at FEI to meet New York State medical licensing requirements. Throughout his fellowship, he has been more like a faculty member, performing complicated corneal procedures, including pediatric corneal transplants.

Amde Shiferra, MD, PhD, joined FEI as chief of its Uveitis Service, establishing the region's most comprehensive center for inflammatory eye disease. Shifera provides medical care to patients suffering from uveitis and complications of autoimmune diseases. He received his medical

Continued on page 28.



Regional Need, continued.

degree from Addis Ababa University in Ethiopia. There he practiced general medicine until 1999. He relocated to the United States and completed a PhD



Amde Shifera, MD, PhD

in Microbiology and Immunology (at Albert Einstein College of Medicine) and postdoctoral research fellowships (at Albert Einstein College of Medicine and UC San Francisco). He then went on to do his residency in ophthalmology at University of Florida, Gainesville. After residency, he did a fellowship in uveitis and ocular inflammation at Oregon Health Sciences University before joining the faculty of Johns Hopkins University, where he spent five years.

Celeste Wyman, ScM, joined the

genetics counseling team. The Johns Hopkins graduate supports individuals and families with hereditary and genetic eye diseases



Celeste Wyman, ScM

and conditions that have ocular involvement, such as Down's syndrome. Before coming to Rochester, she was a genetic counselor at the National Eye Institute (this should fit,

FEI becomes a hub for gene therapy

A recently FDA-approved gene therapy for patients with an inherited form of vision loss is now available at the Flaum Eye Institute. The treatment, LUXTURNA™ (voretigene neparvovec-rzyl) was developed by Spark Therapeutics.

The University of Rochester is one of only 12 Institutions in the United States, and the first in New York, offering the treatment for patients with a blinding retinal condition caused by mutations in both copies of their RPE65 gene. This diagnosis can only be confirmed through genetic testing. Patients with RPE65 retinal degeneration can be blind at infancy (Leber congenital amaurosis) or, if symptoms start later (retinitis pigmentosa), get progressively worse as they age – often leading to blindness within the first two decades of life.

“Luxturna could improve the ability to see for patients who have lost, or are losing, their eyesight,” said Dr. Alex Levin, Lutz-Ching Professor of Ophthalmology, Director of Ocular Genetics at the Flaum Eye Institute, and Chief of Pediatric Genetics at Golisano Children’s Hospital. “Patients who undergo this gene therapy often see benefits within four weeks. We believe that one treatment may last for many years.”

During the procedure, which is performed as out-patient surgery, FEI retina doctors deliver a harmless virus, containing a normal copy of the RPE65 gene, beneath the retina of an affected patient. The virus infects the diseased cells, called photoreceptors, and they start making a missing protein that results in improving vision.

In clinical trials, the treatment worked best in patients who were under 12 years of age but anyone with the gene mutation Luxturna targets might benefit from it.

Luxturna is the first gene therapy drug for a genetic condition that has been approved in the United States. It is for any patient with a confirmed biallelic RPE65 mutation-associated retinal dystrophy. Candidates must have sufficient viable retinal cells to be considered for treatment. This is confirmed by FEI’s gene therapy team through testing.

“The exciting thing about Luxturna is that it shows how gene therapy can work,” Levin said. “This is just the start. We’re looking to expand the application of gene therapy to other genetic retinal conditions that cause vision loss. We plan to be offering additional treatments during the next few years as the field expands, either as FDA-approved or through clinical trials.”

Patients, or their families, interested in LUXTURNA™ should talk to their doctor to learn if this treatment is appropriate for them.

THE TRADITION CONTINUES

When the academic calendar flips on July 1, it is punctuated by departing residents and fellows who will be fondly remembered. It also heralds the arrival of new trainees who are continuing their academic journeys at the Eye Institute.

Graduation saw the departure of three senior residents. They were celebrated during a small ceremony limited in attendance to the residents, their families, and faculty because of health and safety protocols. Many staff, friends, and residents were able to view the celebration via a webcast.

Recently appointed Residency Director Rachel Wozniak, MD, PhD; former Director Ben Hammond, MD; and Department Chair David DiLoreto, MD, PhD, presented the graduates. They highlighted their accomplishments and wished them continued success as they move on to the next chapters of their careers:

Tina Douglas, MD, is completing a fellowship in oculoplastic surgery at a private practice in San Diego, where she plans to learn how to surf in her spare time.

I'm definitely going to miss the resident clinic and the people who made it what it is, she said. Wendy (Winslow), Dr. Dushay, Dr. Platt, and Dr.



Tina Douglas, MD

Boghani... It truly became a second home and gave me a sense of belonging within the Eye Institute. She encourages her junior classmates to try everything once, and foster your relationships here because even though most of you will leave Rochester after graduation, those relationships will continue to carry you through your first years in practice or fellowships.

Alaina Geren, MD, headed to Dallas, where she is completing a cornea fellowship at UT Southwestern.

I will miss the trees and the natural beauty of the Northeast. I love the outdoors, and it's been fun being able to ski in the winter and hike and camp in the summer in



Alaina Geren, MD

such pretty areas. I'll also miss all of my co-residents and faculty and staff here. She encouraged incoming residents to appreciate how much you've learned along the way already, and don't put too much pressure on yourself to learn everything all at once. You'll be surprised by the end of your first year how much you've gained.

Tony Kang, MD, said goodbye to Rochester as he traveled to nearby Cleveland, where he began a fellowship in medical retina



Tony Kang, MD

I will miss all of my co-residents and all of the staff at Flaum who have helped me throughout this journey. Thank you so much everyone! I will also miss living within walking distance to a Wegmans.

We also note that cornea fellow **Esteban Santiago, MD**, remained in Rochester and joined the faculty as associate professor of ophthalmology. FEI is thrilled to have him as part of the team.

As much as the seniors are missed, a dynamic new group begins. It is comprised of four first-year ophthalmology residents — all of whom have been completing a one-year internal medicine internship at the University of Rochester — and four new arrivals who will begin their internal medicine internships before joining the residency program full time in July 2023. Together, both groups are the most diverse in the program's almost nearly one-hundred year history.

FEI welcomes the class of 2025 residents. All four ophthalmologists-in-training spent the last year acclimating to Rochester while completing an internal medicine internship at the University of Rochester School of Medicine. Each received the American Academy of Ophthalmology's 13-volume Basic Clinical Science Course as a gift presented by the FEI Alumni Council. The series is foundational to resident education, and its cost is underwritten by the FEI Alumni Endowment Fund. We are pleased to present:

Eileen Mayo, MD, originally hails from the suburbs of Philadelphia, where she graduated cum laude with an undergraduate degree in neuroscience. She developed a passion for ophthalmology while working as a research coordinator at Wills Eye Hospital for two years prior to entering Sidney Kimmel Medical College at Thomas Jefferson University. While in medical school, she was co-director of a program providing monthly vision screenings at a homeless shelter. She enjoys reading short stories, jogging, and meditation.



Eileen Mayo, MD

Joseph Okudolo, MD, began his journey to ophthalmology in Lagos, Nigeria. He moved to Canada and wound up completing undergraduate and master's degrees in biomedical science at the University of Guelph before pursuing his medical studies at Sidney Kimmel Medical College. He has a strong interest in research



Joseph Okudolo, MD

— publishing in areas related to telemedicine and glaucoma — and is also interested in international health, spending time in Ghana as a volunteer for Unite for Sight. A builder of custom computers, Okudolo also enjoys snowboarding and soccer.

Felix Omoruyi, MD, grew up in Jamaica and was an accomplished athlete prior to beginning college: He served as a captain on the Jamaica Youth 18 National Soccer Team. He moved to Texas, where he went to Austin College, graduating summa cum laude with a degree in biochemistry, and then attended medical school at Texas Tech University. Omoruyi has counseled high school students contemplating medical careers and also helped to bring medical care to the uninsured. He enjoys reading, weight lifting, and recreational sports.



Felix Omoruyi, MD

Alec Thoveson, MD, is a native of Dallas and graduated with a degree in biology from Texas A & M. He spent two years at a children's hospital, focusing on orthopedic research, before returning to Texas A & M to study medicine. In medical school he developed an interest in ophthalmology

while conducting diabetic retinopathy research. Outside of work he enjoys yoga, travel, and volunteering for Habitat for Humanity.



Alec Thoveson, MD

Four recent graduates of medical school recently arrived to begin a special one-year internship in general medicine. Because so much of ocular disease relates to systems of the body, residents begin their four years by studying internal medicine for a year before turning their focus to the eyes.

Stephanie Beldick, MD, MSc, is from Toronto and studied life sciences at McMaster University before earning a Master's in Neuroscience at the University of Toronto. She then went to Thomas Jefferson University to complete her medical degree at Sidney Kimmel Medical College.



Stephanie Beldick, MD, MSc

Manasi Joshi, MD, is from Houston and has undergraduate degrees in anthropology and policy studies from

Rice University. She completed her medical degree at Baylor College of Medicine. Away from her studies, she enjoys plant and tree identification.



Manasi Joshi, MD

Kalah Ozimba, MD, hails from Phenix City, Alabama. She graduated magna cum laude in chemical engineering at Howard University before attending medical school at the University of Alabama. Kalah is a certified lifeguard.



Kalah Ozimba, MD

Greg Sanda, MD, is a native of Boston. He received his bachelor's degree in biology from Wake Forest University before receiving his medical degree from Emory University.



Greg Sanda, MD

In addition to completing rotations in internal medicine and in various departments throughout the school, all will be frequent participants in the Ophthalmology Department, where they will integrate their training as to how it relates to the eye.

Flaum Eye Institute Visiting Professor Series

The Flaum Eye Institute Visiting Professor returns with an in-person/online hybrid format. Ophthalmologists, optometrists, and allied health care professionals are invited to join us in welcoming the most accomplished, nationally recognized eye care professionals to the University of Rochester for continuing medical education. In addition to the visiting professor lecture and resident case presentations, each session also features an FEI research spotlight, a short lecture by our own science faculty, or collaborators from throughout the University of Rochester. The visiting professor series is held on Friday afternoons.

Agenda for Visiting Professor Sessions

| | |
|-----------|-----------------------------|
| 2:00 p.m. | Introduction |
| 2:05 p.m. | Research Spotlight |
| 2:30 p.m. | Resident Case Presentations |
| 3:40 p.m. | Visiting Professor Lecture |
| 4:30 p.m. | Questions & Answer Session |

For information on how to receive credit, call (585) 275-7666. For questions about the series, call Residency Coordinator Patty DeBurro at (585) 273-3954.

November 18, 2022

TBA

December 16, 2022

Visiting Professor, Yousuf Khalifa, MD, Emory University
Topic: Cataract & Anterior Segment
Research Spotlight: TBA

January 20, 2023

TBA

February 17, 2023

Visiting Professor, Amir Kashani, MD, PhD
Johns Hopkins University
Topic: Retina
Research Spotlight
Juliette McGregor, PhD

March 17, 2023

Visiting Professor, Ula Jurkunas, MD, Harvard University
Topic: Cornea
Research Spotlight
TBA

April 21, 2023

Visiting Professor, Dale S. Meyer, MD, SUNY Albany
Topic: Oculoplastics
Research Spotlight: TBA

May 19 – 20, 2023

Rochester Ophthalmology Conference

June 16, 2023

Residents' Research and Alumni Day
Visiting Professor, Matilda Chan, MD, PhD, UC San Francisco

Rochester Ophthalmology Conference turns 66, returns to in-person learning, and introduces Ross Debates

The Rochester Ophthalmology Conference celebrated its 66th year with a return to partial in-person attendance. A simultaneous interactive webcast was also provided, allowing those still concerned about COVID infection rates and alumni diaspora to participate.

Keynote lectures were delivered by two of the most dynamic women in ophthalmology. The National Eye Institute's Director of the Division of Epidemiology and Clinical Applications, **Emily Chew, MD**, was the 66th Snell Memorial lecturer. She presented the latest data about AREDS supplements and their efficacy in treating the progression of macular degeneration.

The recently appointed Associate Dean of Medicine at PONCE Health Sciences in St. Louis, **Mildred Olivier, MD**, was the Dushay lecturer.

Leveling the playing field: Diversity in Ophthalmology, provided a wake-up call to the problems recruiting under-represented minorities to become ophthalmologists and the consequences that this can have for patient care.

Popular format updates to the physician program included a concentrated Myopia Symposium, where the pediatric ophthalmology team discussed how the progression of nearsightedness can lead to other eye disease as patients age, why this happens, and what health care providers can do to reduce its effects.

Also introduced were the Ross Debates in Ophthalmology. These pro vs. con style lectures were established through an



Harold Ross, MD

endowment gift from FEI faculty member Harold Ross, MD, and his wife, Janise. Their purpose is to encourage lively discourse during the Rochester Ophthalmology Conference to foster collegiality and improve patient care through the sharing of evidence-based best practices. The opening debate included FEI's Alex Levin, MD, MHSc, and Matt Haynie, MD.

FEI is grateful for support from those who attended as well as exhibit participation and medical education grants from commercial organizations and foundations, including the Rochester Area Community Foundation, which sponsors the Snell Lecture through the Snell Fund.



Frederick Dushay, MD, Mildred Olivier, MD & David DiLoreto, MD, PhD

Wozniak named residency program director

Corneal clinician-scientist **Rachel Wozniak, MD, PhD**, was recently named FEI Residency Program director. She takes over from Benjamin Hammond, MD, with whom she shared the position as co-director. Hammond will remain in support as associate director.

Like Hammond, Wozniak completed her residency at FEI. She remained to perform her cornea fellowship before joining the faculty and has been ascending the academic ladder since, providing patient care, teaching, performing grant-supported research, and patenting drug technology to better treat corneal infections.

She takes the reins at an exciting time. Not only is FEI's residency program the most diverse it's ever been, the number of clinical faculty — and the specialties that they teach — has experienced historic growth. The research faculty has also expanded, offering trainees the opportunity to participate in scientific discovery and publish their results.

"I am grateful to Dr. Hammond," Wozniak said. "He actually started as director when I was a resident here and led the program with unwavering dedication. I hope to add to his contributions by providing top notch

clinical and surgical experiences driven by the underlying principles of mutual respect, kindness, and hard work."

Wozniak happily noted that during recent years, the program has made changes benefiting trainees and their patients. This includes dissolving the resident-run ophthalmology clinic by incorporating residents, and their patients, directly into the faculty practice where they work side-by-side with faculty.

**"We hope that
this will provide
better access to
underserved patients
who desperately
need eye care"**

"Recognizing some of the inherent inequities in how we were delivering care in the resident clinic versus the faculty practice, we've taken the important steps to now include all patients in our faculty practice. It improves continuity of care and access to subspecialty care for all. It also



Rachel Wozniak, MD, PhD

enhances interaction between patients, residents, and faculty. In place of the resident clinic, we are launching a new urgent eye care clinic. We hope that this will provide better access to underserved patients who desperately need eye care, but don't have a regular doctor to turn to."

With more than 105,000 patient visits to FEI locations each year, more than 5,000 surgeries performed, a growing number of sub-specialty fellowships, and expanding clinical and basic science research opportunities, residency at FEI is reaching the upper echelon of programs.

THE YEAR OF THE FELLOW

In medicine, clinical fellows play an important role. These trainees are licensed medical doctors who have completed specialty residency programs, such as ophthalmology. The purpose of fellowships is to provide additional training to doctors who want to specialize beyond their residencies. In ophthalmology, there are several avenues that resident graduates can pursue, such as retina or glaucoma. Fellows are instructed by doctors who are experienced in the trainee's chosen discipline. While they absorb knowledge of their specialty, they see patients and perfect surgical techniques to become more expert.

Another kind of training program medical institutions offer to clinicians are research fellowships. Although these fellows do not provide direct patient care, they get to shadow clinicians, learning about specialty areas and consulting with their teachers about cases. In many instances, these fellows are experienced international doctors from countries where medical licensing is different than in the U.S. Instead of having to complete additional training to participate in direct patient care, they are able to gain knowledge that they can apply when they return home. They are also frequently called upon to perform important medical research that often results in published papers.

Regardless of whether an ophthalmology fellowship is clinical or research-based, prospective doctors have to apply to a program and be interviewed and accepted. This happens directly for the research positions and through a matching system approved by the Association of University Professors in Ophthalmology (AUPO) for clinical fellows.

In July 2021, FEI welcomed its usual complement of clinical fellows. Estaban Santiago, MD, an experienced cornea specialist from Argentina, started his one-year program. When he finished, he fulfilled New York State's medical licensing requirements and joined the faculty as an assistant

professor of ophthalmology. Mona Camacci started her two-year retina fellowship after completing her ophthalmology residency at Penn State Hershey Medical Center.

Then, during the 2022 academic year, there was an explosion in the number of fellowships available or recently approved through AUPO. When the dust settles, the program will grow from two to seven trainees, making the Eye Institute a destination for subspecialty education:

Pediatric Ophthalmology

AUPO approved a clinical fellowship in pediatric ophthalmology in 2021, beginning a year-long recruitment cycle. Under the tutelage of Program Director **Matthew Gearinger, MD**, and a team of seven other doctors, fellows will receive medical and surgical training in pediatric ophthalmology and adult strabismus (crossed eyes) while also doing rotations in pediatric cornea, uveitis, retina, and neuro-ophthalmology. **Orhan Altunkaya, MD**, recently started as the program's inaugural fellow.

Ocular Genetics

Two research fellowships were established by FEI's internationally renowned ocular geneticist, Alex Levin, MD, MHSc. In addition to studying about rare and blinding diseases linked to genetics, these trainees will also get to observe sight-restoring gene therapy



Alex Levin, MD, MHSc

treatments. **Onichie Okoye, MBBS**, a Nigerian professor of ophthalmology with more than two decades of patient care experience, arrived in late 2021 to begin his program. He will return to Africa as that continent's first physician with formal training in ocular genetics.

The program will host two fellows on six-month rotations throughout the academic year.

Glaucoma

AUPO recently approved a clinical fellowship that will provide a rich medical and surgical experience in glaucoma. Spearheaded by **Karen Allison, MD**, and **Regina Smolyak, MD**, the program will start accepting applications for interviews during the 2023 academic year. Pending a successful candidate selection through the San Francisco Match, the first fellow will arrive in July 2024.

Retina

A second fellow is being added to FEI's AUPO-approved program. Retina-Vitreous fellowships are generally two years long because of the amount of material there is to learn and the extensive surgical training required. Adding an alternate-year fellow ensures that there is always a trainee who is proficient to handle surgical procedures while providing guidance to FEI residents.

Current and recently graduated fellows include:

Mona Camacci, MD, recently completed the first year of a retina and vitreous fellowship. She did her undergraduate studies, earning a dual degree in biochemistry and molecular biology and health and human rights, at Franklin and Marshall College. She then completed a master's degree in equality studies in Ireland through a Mitchell Scholarship. She returned to the U.S. to earn her medical degree at Penn State University College of Medicine in Hershey through a Paul and Daisy Soros scholarship. She remained at Hershey, where she completed her residency in ophthalmology. When she completes her fellowship in 2023, she is considering a career in private practice.



Mona Camacci, MD

Onichie (Ike) Okoye, MBBS

Okoye is completing his ocular genetics fellowship under the tutelage of Alex Levin, MD, MHSc. He attended medical school at Kings College, Lagos, and did his ophthalmology training at University of Nigeria Nsukka College of Medicine.

Since 1999 he has been an ophthalmologist at the University of Nigeria and University of Nigeria Teaching Hospital. He is passionate about ocular genetics and bioethics, believing everything in life has genetic underpinnings and bioethical implications. He said that Rochester has become a second home for him and that his fellowship has been humbling, illuminating, and rewarding. He added that coming to the program has been one of his best decisions in his professional and academic life, and he plans to return to Nigeria to establish an ocular genetics training program there.

Lorena Montalvo, MD recently began her cornea fellowship. She is a resident of Puerto Rico who completed her undergraduate studies at Cornell University. She returned to Puerto Rico to attend medical school at the San Juan Bautista School of Medicine and then completed her ophthalmology residency at the University of Puerto Rico School of Medicine, where she was chief resident. During her residency, she would routinely help treat the most complex cases and staffed the school's emergency department during Hurricane Maria. Montalvo is a third-generation ophthalmologist and enjoys traveling, jewelry making and fitness.



Onichie "Ike" Okoye, MD



Lorena Montalvo, MD

Eye Institute recognized by university president as inclusive workplace



The *Presidential Stronger as One Diversity Awards* recognize departments and individuals throughout the entire University of Rochester system that support the five institutional priorities surrounding equity, diversity, and inclusion and help ensure a welcoming and inclusive environment.

Recently, the University singled out FEI, recognizing it with the *Inclusive Workforce Award*. Since 2019, the Department has focused significantly on the measurable outcomes of diversity and inclusion efforts.

"It's a great honor to be selected," FEI Administrator **Joseph Gabriel** said. "We make a conscious effort to ensure that the department faculty, trainees, and staff reflect the diversity of the people we serve."

This includes an unprecedented recruitment effort of new faculty and trainees who are from historically underrepresented minorities in medicine; the establishment of a diversity, equity, and inclusion team that promotes understanding in culture and gender issues and promotes relationships with other organizations and institutions to provide access to care (like the FEI Vision Van); and opportunities for growth for all those FEI serves.

“We make a conscious effort to ensure that the department faculty, trainees, and staff reflect the diversity of the people we serve.”

Feldon chosen for Hoyt Lecture

FEI professor of ophthalmology and University of Rochester Medical Center Director of Biomedical Research Development **Steven Feldon, MD**, was selected by the American Academy of Ophthalmology and the North-American Neuro-Ophthalmological Society (NANOS) to deliver the 2022 William F. Hoyt Lecture at the Academy's annual meeting in Chicago.

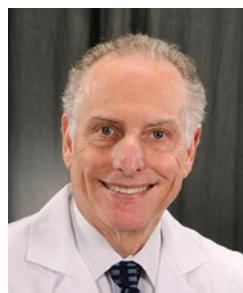
According to the NANOS website, The Hoyt Lectureship is to be awarded for lifetime clinical or research contributions to the field of neuro-ophthalmology and / or unselfish service to neuro-ophthalmology. Additional considerations may be the candidate's renown as a lecturer and / or as an educator in neuro-ophthalmology.

The honor, among the highest one can receive in ophthalmology, recognizes Feldon on all counts. It spotlights his career as one of the leading clinician-scientists in the field of thyroid eye disease, as the former President of NANOS, and as a consummate educator whose protégées have gone onto careers in neuro-ophthalmology and other specialties.

"I feel privileged to join the rolls of those who have delivered previous Hoyt Lectures," Feldon said. "Though

I remain active in research and education in neuro-ophthalmology, I have recently curtailed my clinical activities to focus on the University's translational research enterprise, so this kind of lecture is a capstone opportunity for me."

Feldon said that his presentation will be about the superior colliculus, a structure in the brain involved in vision that he described as "completely ignored by neuro-ophthalmologists." It was the subject of his first foray

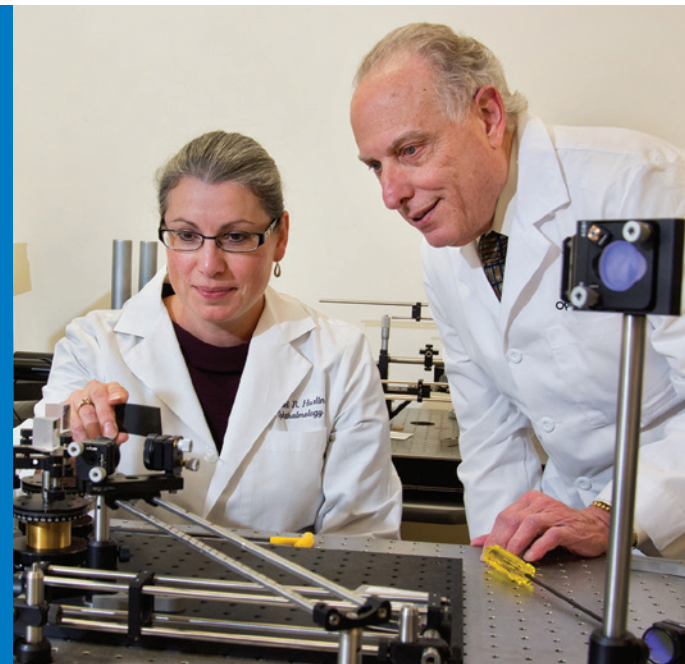


Steven Feldon, MD

into vision research, done during his undergraduate studies at UCLA, and was a springboard for his interest in ophthalmology.

"I think it's kind of fitting to conclude my clinical career speaking about the topic that started it all," Feldon continued. "As clinical neuro-ophthalmologists, we don't know much about what happens when you lose your superior colliculus. But as it turns out, it is really important in normal vision and also in central nervous system disorders. I see this as a fun opportunity to leave my current colleagues, and those to come, with a new challenge to consider."

I see this as a fun opportunity to leave my current colleagues, and those to come, with a new challenge to consider."



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