

Vision *for the* Future

UNIVERSITY OF ROCHESTER

FLAUM EYE INSTITUTE

SPRING 2012 NEWSLETTER

THE CURTAIN RISES

About twenty years ago, Sharon Lubitow became involved in what has become a lifelong passion: designing costumes for the drama club of the Lyons, NY, middle and high school. "My sixth-grade daughter became involved in theater and so did I," said Lubitow. "But she eventually graduated from high school and drama club; I didn't. Since then I've been working with the greatest kids you'll ever meet. And, thanks to the care of **Dr. Mina Chung** and **Dr. Yousuf Khalifa**, I hope to continue this for years to come. There was a time that I had my doubts."

At about the same time she joined the drama club, Lubitow was diagnosed with diabetes. With the help and advice of her primary care physician, she managed the disease by eating carefully and exercising regularly. This strategy worked well for years until she derailed her regimen by working longer hours.

"I was the textbook 'nothing's going happen to me type' until it happened," Lubitow said. "With the additional hours I was putting in, I found less time for things like exercise and was grabbing those quick junk food meals, too. Eventually, I had that uh-oh moment where I learned that I wasn't indestructible."

Even though she was seeing her PCP regularly and visiting her ophthalmologist, Lubitow said that "the link between my diabetes and diabetic retinopathy never really came up until there it was. It started with blurriness and grayness, and truthfully I thought it was age. Fortunately I was sent to the (Flaum) Eye Institute."



"In 2004 when Sharon first visited my office she suffered from severe retinal ischemia," said FEI retinal specialist **Mina Chung, M.D.** Retinal ischemia is an abnormal reduction of retinal blood supply resulting from blood vessel blockage. "This is a common occurrence in diabetic retinopathy and can result in swelling of the retinal tissue due to excess fluid build-up and, in some instances, worsens to

the point where new, weaker blood vessels grow to take the place of the blocked ones. They in turn leak blood into the back of the eye, clouding the visual axis and causing blindness."

Since being diagnosed, Lubitow has received an extensive course of treatment over several years. A precision laser was used to shut down the blood vessels leaking into her eye by cauterizing them. In addition, she received several injections into her vitreous (the fluid part of the eye

(CONTINUED ON PAGE 7)

INSIDE

- 2 Director's Message
- 4 Advancing the Vision
- 5 FEI in the Community
- 6 Diabetic Retinopathy
- 8 Eye on the News
- 9 Clinical Trials
- 10 Education Update
- 11 CME Calendar
- 12 Welcoming New Faces

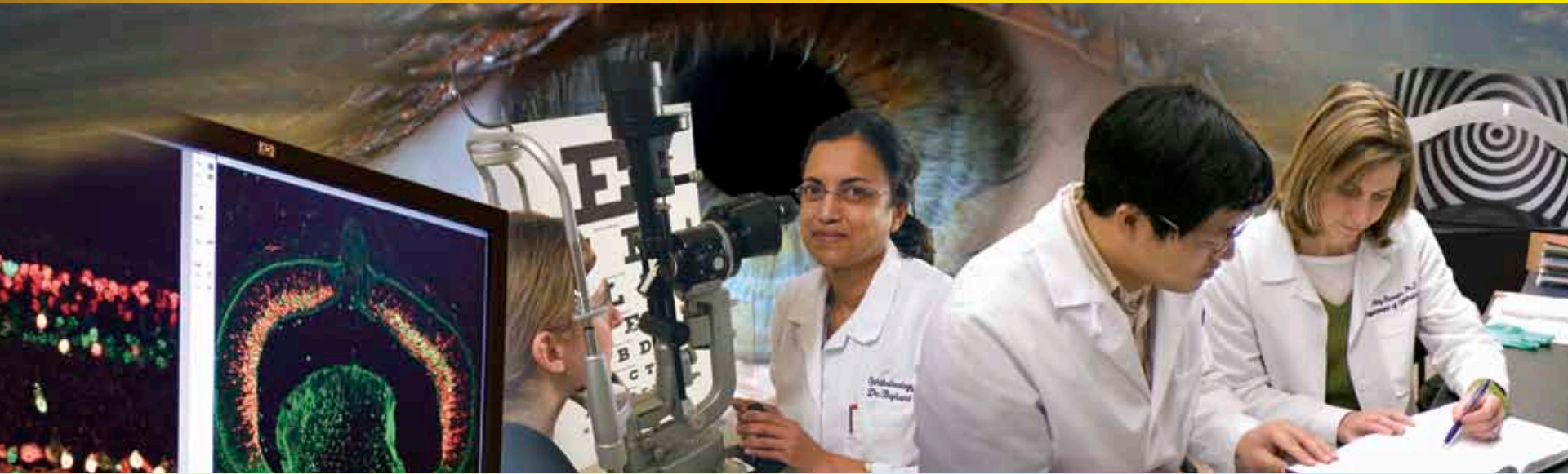
Excubator Improves Eye Care While Spurring Economic Growth

When the University of Rochester recruited **Steven Feldon, M.D., M.B.A.** as Chair of Ophthalmology, a deciding factor for Feldon was Rochester's fertile environment for commercial collaborations. Besides being headquarters for Bausch + Lomb, Rochester is home to numerous small to mid-size companies involved in eye care, optics, or imaging technology. Since its founding, FEI has been at the center of a number of successes in commercializing eye care technology. This includes the collaboration between FEI, B + L and the Center for Visual Science that resulted in customized laser vision correction technology (LASIK), safely used on millions of eyes throughout the world.

During the past 10 years, the Flaum Eye Institute's research enterprise has grown tremendously. Accordingly, FEI maintains a portfolio of dozens of patented new technologies related to eye care and vision correction. However, many of these inventions are for products and medical devices that aren't consistent with the strategies of pharmaceutical giants that typically license innovations from the University of Rochester — like the HPV vaccine that prevents cervical cancer. To ensure that these new technologies see the light of day, Feldon has spearheaded the formation of a unique enterprise to link FEI inventors with area companies and accelerate the pace of successful product development.

The Excubator is a for-profit venture partially owned by the University of Rochester and

(CONTINUED ON PAGE 5)



VISION

The Flaum Eye Institute is a world leader in preserving and restoring vision, providing the most advanced research, education, and technology development, coupled with compassionate, expert, patient care.

MISSION

The Flaum Eye Institute will garner and maintain a position of leadership in ophthalmology and vision science by applying the principles of continuous learning and by developing internal collaborations as well as productive external partnerships.

Our Mission Revisited.

Our celebration of 10 years of continuous growth takes center stage as we make plans for the next decade of patient care and innovation in ophthalmology. As a first step in our transformation to a “learning organization” as outlined by Peter Sengue in The Fifth Discipline, I am pleased to report a major milestone. With great thought, collaboration and care, we have revised our vision and mission statements to better reflect our organization’s current and future directions.

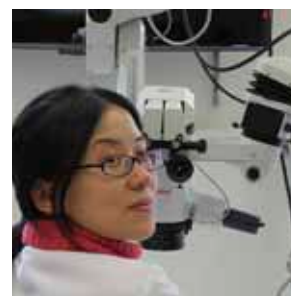
I would like to thank the FEI Advisory Board, the faculty and staff of FEI for their input and support in developing the statements shown above. Next we will turn our attention to the creation of a values statement to serve as a scaffold for creation of a new strategic plan.

In this issue of Vision for the Future, I am pleased to announce a major expansion of our educational program.

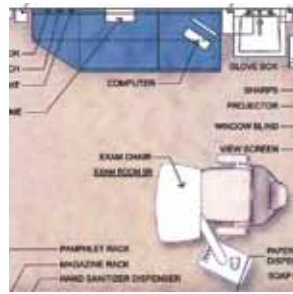
The Accreditation Council for Graduate Medical Education has given us permission to add a fourth resident to each of our three-year training programs (see page 10). Within three years, this change will give us a complement of 12 ophthalmologists-in-training, allowing us to better serve some of the region’s most disadvantaged, while providing a better learning environment. In conjunction with this announcement,

we cut the ribbon on a newly remodeled wet lab space where trainees practice skills needed for the operating room using state-of-the-art equipment (see page 10). I’m most appreciative of the philanthropists and corporate supporters, whose gifts of funds and equipment have made this wonderful facility possible.

On the cover and on page 5 you’ll learn more about our new concept to advance technologies developed in our laboratories and convert them into diagnostic instruments and treatments that help preserve and restore vision. Excubator, LLC is a new business



model that partners with local, successful companies to bring new technologies developed at the Flaum Eye Institute to the marketplace. Dollars from federal SBIR grants will fund the projects. Spear-



headed by FEI Advisory Board member **Aaron Klein**, this enterprise promises to serve as a springboard for FEI scientists and area entrepreneurs to cement long-lasting and mutually beneficial collaborations.

In this issue of Vision for the Future, we have a special focus on diabetic eye disease. As the incidence of Type 2 diabetes increases, greater attention is given to the associated vision disorders that go along with this disease. The FEI retina team of **Mina Chung, M.D.**, **David DiLoreto, M.D., Ph.D.**, **David Kleinman, M.D.** and **Rajeev Ramchandran, M.D.** (as well as retina fellow **Gareth Lema, M.D., Ph.D.**) has become a conduit for the latest research about new strategies to diagnose, track and treat diabetic retinopathy. You'll also meet a diabetic patient who shares her story and her inspiring recovery from near blindness.



We continue to provide outreach to the community with screenings, physician lectures, and patient support groups. Our Graves' Disease support group, led by FEI patient **Patricia Marino, Ph.D.**, continues to expand, and we anticipate it will become a model for other groups related to diseases affecting vision. If you are interested in becoming involved with

our community outreach efforts as an organizer or participant, see page 5 for contact information.

In order to serve you better, we are implementing important enhancements to our patient care mission. We are excited to welcome new members to the FEI team. Husband and wife duo **Christian Klein, M.D.**, and **Sarah Klein, O.D.**, will join the faculty in July, enhancing our

comprehensive ophthalmology and optometry services. We also welcome **Joseph Gabriel**, who will join us in an administrative capacity, serving as director of information systems and

associate department administrator. Joe will immediately be helping us transition to a new outpatient electronic record. We are in remodeling mode again (page 10) as we convert office space into new lanes and diagnostic rooms, improving patient service and access.

Our basic scientists will present their research at the annual Association for Research in Vision meeting in May. Also, **Jennifer Hunter, Ph.D.**, just received a \$1.7 million grant (page 8) from the National Institutes of Health that will be used to further study the causes and potential treatments for retinal disease. Other new research grants to our faculty

are awarded or pending.

I am extremely proud of the progress we have made during the last 10 years and look forward to even more success as we embark on the next decade. Again, I offer thanks to our Advisory Board, the faculty and staff at FEI and, most of all, to our patients and donors whose confidence in our mission makes this all possible.

Sincerely,

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

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



ADVANCING THE VISION

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

The David and Ilene Flaum Eye Institute is most grateful to its donors for their generous gifts and ongoing support. We are especially appreciative to the friends, patients, alumni and faculty who contributed to our Eye Institute Annual Fund. The Annual Fund is an essential source of funding that will help continue our groundbreaking work in vision care and research. This year, your donations had a direct impact on patient care, helping us recruit new faculty and purchase new equipment for our clinic and research laboratories.

The following donors have contributed in various ways to FEI between September 1, 2011, and February 29, 2012. Gifts can be designated to the Annual Fund and mailed to: **Desirae Jourdan**, Director of Advancement, FEI, 210 Crittenden Blvd., Box 659, Rochester, NY 14642.

Or make a gift online by going to eyeinstitute.urmc.edu and clicking on **"Support the Eye Institute"**.

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Bausch + Lomb, Research to Prevent
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Trust, David & Ilene Flaum, and
the late Lynn & Walter Lutz for
their sustaining support.*

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www.EyeInstitute.urmc.edu

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Excubator (CONTINUED FROM COVER)

a group of private investors, including FEI Advisory Board member **Aaron Klein**. Its purpose is to introduce area optics and technology companies to new product opportunities invented by FEI faculty. Small Business Innovation Research (SBIR) grants from the National Institutes for Health obtained through a joint venture between the local company and the Excubator will provide funding for individual projects through the prototyping stage. Even though SBIR funding is very competitive, it is less competitive than NIH research grants.

“The Excubator is a great vehicle for area companies and our researchers,” Feldon said. “Many of the inventions of University faculty are for mid-market products that might generate \$5 million to \$50 million in annual sales. Large corporations with the resources to develop these technologies require products capable of generating hundreds of millions, if not billions, of dollars. Conversely, small and mid-sized firms might be interested in these types of inventions, but high up-front costs and lack of familiarity with the market are deterrents to licensing.

Feldon continued to say that the Excubator reduces much of the up-front risk for companies (with fewer than 500 employees) because there aren’t any up-front fees to license an FEI technology. Once an agreement is in place, the Excubator works to secure SBIR funding to cover costs associated with developing a working prototype. If SBIR funding proves insufficient to bring a product into full production, bringing in private investors is an excellent option. Having a working prototype in hand and having the benefits of vetting by the NIH Study Section mechanism reduces investor risk, thereby decreasing the equity sharing necessary to make a venture deal attractive.

“The Excubator should have great appeal to area firms involved in optics and technology development,” Feldon continued. “These companies have tremendous expertise in engineering, marketing and manufacturing. What they lack are full-time research staffs and knowledge of the SBIR funding process. The Excubator takes the

most viable ideas from FEI’s technology portfolio and matches it with companies best able to commercialize it. Since Excubator partners and FEI scientists are expert at grant writing, they have an excellent chance at getting startup funding for the project. NIH SBIR funding lowers the risk threshold for these companies to expand their product lines by virtually eliminating early heavy initial private capital investment.”

Patent holders from FEI who use the Excubator also benefit. Just as with traditional licensing arrangements, the inventor receives royalties from sales of products as they become accepted into the market. If they want, they can also take a stake in the joint venture between the Excubator and the partner company developing their technology — a higher risk, but with potentially greater rewards from profits on sales of the resulting product. Because the Excubator screens the companies that are invited to participate in a project, the technology has a better chance for development and marketing.

“The Excubator is forming partnerships with experienced companies who are interested in working with exciting, high-impact technologies,” Feldon said. “We are fortunate at FEI to have many friends who want to see the Flaum Eye Institute and local companies grow and add jobs. They certainly can open the doors to the business partners that we need to make this model work.”

The University of Rochester holds a 25 percent stake in the Excubator and will share in the profits generated by the joint ventures. These dollars will be funneled back to FEI and other departments or centers that generated the technology. In the end, Feldon hopes the enterprise will be profitable to the stakeholders while accelerating the growth of technology transfer into useful products and ideas that will further the FEI mission of preserving and restoring vision.

FEI in the Community

FEI continues extending a friendly hand into the region to bring healthcare and education through community based lectures and screenings. FEI would like to thank all the faculty, staff, students and volunteers who helped out at the following events:

NOVEMBER 16TH, 2011: The Rochester City School District’s Office of Adult and Career Education Services (OACES) invited **Rajeev Ramchandran, M.D.**, to deliver a presentation about eye health to a group of 40 at its offices located in the Northeast neighborhood of the city.

FEBRUARY 2ND, 2012: marked the third meeting of a patient run support group for persons suffering from Graves’ Disease. The meeting was chaired by patient **Patricia Marino, Ph.D.**, and endocrinologist **Stephen Hammes, M.D.**, discussed systemic manifestations of hyperthyroidism and how doctors diagnose and treat this condition.



IF YOU ARE INTERESTED IN...

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

Diabetic Retinopathy Takes Center Stage

The epidemic of diabetes may be the single largest challenge facing health care in the United States. According to the American Diabetes Association, more than 25.8 million Americans or roughly 8.3 percent of the population have the disease. For eye care providers, diabetic retinopathy (DR) is the leading cause of new cases of blindness among working aged adults, and 28.5 percent of diabetics beyond the age of 40 are estimated to have DR.

For FEI's **Rajeev Ramchandran, M.D.**, and **David DiLoreto, Jr., M.D., Ph.D.**, diagnosing and treating diabetic retinopathy has taken center stage. Ramchandran is one of the region's foremost advocates in providing screening services for eye diseases in diabetic patients. DiLoreto is FEI's lead investigator for the Diabetic Retinopathy Clinical Research Network (DRCR), a group of retina specialists throughout the United States conducting clinical trials that focus on the use of new therapies for DR. *Vision for the Future* recently visited with them to understand diagnosing and treating the disease and what the future might bring to lessen its impact.

What is the underlying mechanism of diabetic retinopathy?

"Diabetes is characterized by an individual having high blood sugar levels," Ramchandran said. "This can result from a body's inability to produce insulin (as in type 1 diabetes) or because cells in the body that should be processing blood sugar do not respond to insulin (type 2 diabetes). Type 1 diabetes, sometimes called juvenile diabetes, is usually diagnosed in childhood; type 2 diabetes is almost always diagnosed in adults, but is being seen in younger individuals due to the epidemic of obesity. In either case, the excess sugar carried by the red blood cells can attach to the lining of blood vessels and cause them to leak or become blocked. The organs that rely on the blood supply from these vessels eventually die off."

In the early stages of diabetic retinopathy, tiny blood vessels that nourish the retina (the back part of the eye that turns light entering the eye into electrochemical signals that the brain translates as vision) can swell or eventually become damaged and leak into the surrounding retinal tissue. This stage of the disease is called non-proliferative and, in its mildest form, patients experience little or no change to their vision. However, as the non-proliferative stage worsens, enough fluid can leak into the central part of the retina causing swelling (edema) which can make vision blurry, dark or distorted.

"When patients can't get control of their blood sugar levels, the disease can progress to the very serious proliferative stage," Ramchandran said. "In proliferative diabetic retinopathy new abnormal blood vessels grow inside the eye to try and supply the retina with the oxygen that it needs. These blood vessels tend to be weak and can bleed inside the eye obstructing vision. In some cases the new blood vessels may also block drainage channels in the eye leading to dangerously elevated intraocular eye pressure or cause a retinal detachment as the blood vessels grow abnormally and 'pull' on the retina. All the scenarios are very serious and can lead to permanent blindness."

How is diabetic retinopathy detected?

"Unlike other organs, we can see directly into the eye," Ramchandran said. "This makes it one of the first places in the body where we can observe complications of diabetes. Depending on the stage and severity of the disease, a trained eye care professional can observe quite a lot during the course of a dilated eye exam. Once we see evidence of diabetic retinopathy, we use specialized diagnostic tools to understand the extent of the disease and help us chart a course of treatment. These tests might include retinal photography and fluorescein angiography to pinpoint leaky blood vessels and look for other symptoms. Optical coherence tomography might also be used to

determine the amount of macular edema (swelling)."

Ramchandran is also involved in projects using telemedicine to detect and follow diabetic eye disease, especially in populations that don't have regular access to eye care. "There are many suffering from diabetes, such as the inner city and rural poor, including the migrant farm worker population, who have access to only the most basic level of primary care. Now we can put specialized digital cameras for imaging the eye and retina in these basic clinics and train staff how to use them. They transmit the images they collect to a reading center where a trained retinal specialist interprets them and recommends the appropriate management. The level of diabetic retinopathy correlates well with control of blood sugar. Educating patients on their risk of blindness depending upon their level of retinopathy can be an important motivator for diabetic patients to take better care of their diabetes. Providing retinal screening exams via telemedicine is cost effective compared to the expense associated with letting diabetic retinopathy progress."



COURTESY, NATIONAL EYE INSTITUTE

What are current treatments for diabetic retinopathy?

"Fortunately we have many treatment options for diabetic retinopathy," said DiLoreto. "Our approach depends on how far the disease has progressed. For someone with diabetic macular edema (swollen central retina), we still might use lasers to seal leaking blood vessels that are causing the retinal swelling. However, it has been recently shown that a class of drugs (anti-VEGF) that are used in treating patients with wet age-related macular degeneration are very effective at reducing the swelling, too. These medicines are injected directly into the eye and have been shown to provide better visual outcomes than laser alone. In some instances, like in severe, diffuse, macular edema, we might inject a steroid into the eye."

If things worsen and new blood vessels grow and begin to leak as the disease becomes proliferative, the standard of care is to use a second type of laser therapy called pan-retinal photocoagulation. This treatment proves successful in reducing or stopping the growth of blood vessels but is not without consequences. Retinal tissue must be sacrificed to preserve vision and it may result in the loss of some peripheral and night vision. In some instances of proliferative diabetic retinopathy, a retinal surgeon may also perform a vitrectomy to remove blood leaking

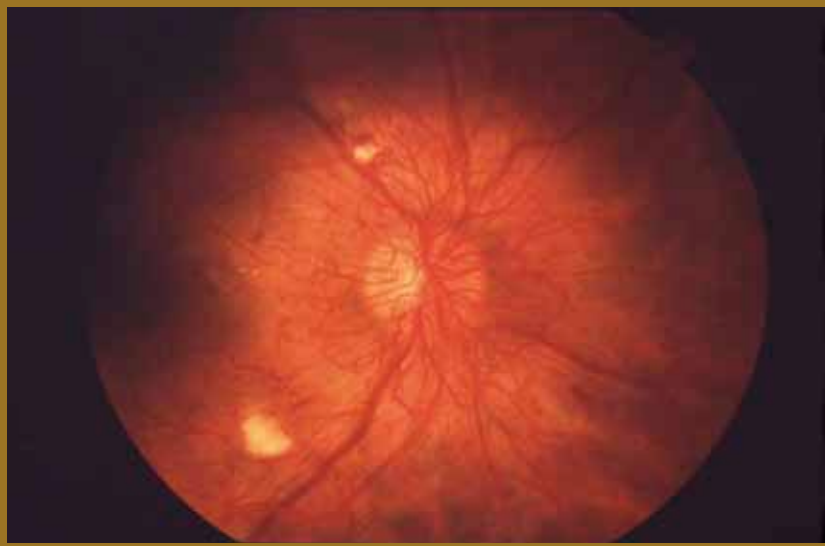
into the eye that is obscuring vision and perhaps reattach a retina that has pulled away from the back of the eye due to the traction caused by the abnormal growth of new blood vessels.

Are there any new treatments on the horizon?

"FEI is a center in the Diabetic Retinopathy Clinical Research Network (DRCR)" said DiLoreto. "DRCR is comprised of 109 sites across the United States conducting cutting-edge clinical research on diabetic retinopathy, diabetic macular edema and associated conditions. Recently concluded clinical studies are looking to determine the effectiveness of injectable anti-VEGF in treating proliferative diabetic retinopathy versus pan retinal photocoagulation. We are also looking at the effectiveness of having a retinal specialist counsel patients on controlling their blood sugars. This may be the best medicine of all."



Diabetic Macular Edema



Proliferative Diabetic Retinopathy

What is the best advice you can give to patients with diabetes?

"Simple," said DiLoreto, "the number one treatment is to get the underlying diabetes under control. This means managing blood sugar levels and getting blood pressure and cholesterol under control with the help of your primary care team. Patients also need to make a real effort to adopt the healthiest lifestyle possible. We know the changes we're asking them to make in eating and exercising aren't easy. But, numerous studies show how important it is, and any effort made in this direction makes a difference. Diabetic retinopathy isn't easy to treat, but the good thing is that vision loss from it is preventable and may be treatable, especially if caught early."

(CONTINUED FROM COVER)

THE CURTAIN RISES

that gives it shape) to help reduce swelling and inflammation. Once the leaking blood vessels had been controlled, surgery was performed. The globules of blood that had previously leaked into her vitreous were removed and this helped to clear her vision. As Dr. Chung worked to get Lubitow's disease under control, her vision fluctuated. At its worst, she could only count fingers at a distance of one foot, and with the other eye she could see 20/100.

"At that point I started using a cane for safety. I love to walk but Lyons is one of those quaint old villages where sidewalks are old and uneven and don't stay in repair. Even worse than the sidewalks was the fact that it became hard for me to recognize faces. In a town where everyone knows one another, not acknowledging a neighbor can have its social consequences," she laughed.

But her walking continued and, with treatment, her vision improved. Chung credits much of this success to Lubitow making major lifestyle changes to achieve control of her diabetes.

"I am so impressed with her 'can do' attitude," Chung said. "A lot of people with diabetes give up because it's such a chronic condition; it can become disheartening for people to deal with on a day-to-day basis. Instead, Sharon became a vegan and got a lot healthier. Her perseverance has been exemplary."

With her diabetic retinopathy under control, Chung recently referred Lubitow to FEI's **Yousuf Khalifa, M.D.** who performed cataract surgery on both of her eyes. This final step has given her even clearer vision and has been transformative.

"I've certainly had a lot of experiences with diabetic retinopathy and lived to tell," she said. "It's been an eight year journey and it has been a joy working with Dr. Chung. She is so patient and takes the time to get to know her patients. Every time I visit FEI, I feel like I'm going to see a friend. Since the cataract surgery, I now see as well as I have in a very long time. Both I and the drama club are grateful for what the Flaum Eye Institute has done for me. The kids have seen me at my worst and know I wouldn't be doing this (designing costumes) if it weren't for the care I have received."

To celebrate Lubitow's vastly improved vision, the drama club is making a special gift to FEI. Each year, the club identifies a community organization and donates the proceeds from its annual musical production: this year they are performing *Anything Goes*.

"It's not a lot of money," said Lubitow. "But it truly comes from the hearts of my kids, and from me. All of you at Flaum Eye Institute don't realize how many you touch. As patients, we're unbelievably grateful. I hope that you know that when you make us better, you make families and communities better. By letting us go back to our lives and do stuff, you affect the people we're connected with in such a positive way. I am just so happy to be where I am."

The Lyons' Drama Club recently donated \$354 to FEI through a fundraising project that coincided with the production of "Anything Goes." In addition, FEI received a framed photograph taken during curtain call from the show's final performance, and it was signed by each of the cast and crew members. We are very grateful for these gifts and salute the compassion and generosity of these young adults, their families and Sharon.

Grant Addresses Age-Related Macular Degeneration

Age-Related Macular Degeneration (AMD) is a major cause of blindness in those over the age of 55. No effective treatment yet exists for its dry form and the origins of the disease still remain poorly understood. This gap in understanding represents a critical barrier in the development of treatments for dry AMD. FEI clinician/scientist **Mina Chung, M.D.**, has been awarded a \$750,000 grant by the **Thome Foundation** to use Fluorescence Adaptive Optics Laser Scanning Ophthalmoscopy (FAOSLO) to determine which cells in a living patient's retina are the first to



MINA CHUNG, M.D.

be damaged by AMD. Understanding the earliest indicators of AMD could not only enable earlier diagnosis, it may also provide quicker endpoints in studying the efficacy of new treatments. The

Thome Foundation is committed to providing for the dignified treatment of older adults and supporting medical research on diseases and disorders affecting them.

FEI Clinician/Scientist Receives ARVO Foundation Award

Holly Hindman, M.D., was one of five recently selected by the Association for Research in Vision and Ophthalmology (ARVO) to receive the 2012 ARVO/Alcon Early Clinician-Scientist Research Award. The awards are presented in recognition of significant research being presented at the annual ARVO meeting. Dr. Hindman's application was selected from hundreds and the award will support her travel to the conference where she will present the winning abstract *Ocular Wavefront Aberrations and Corneal thickness Post-DSAEK, A Prospective Study*. Dr. Hindman's research involves looking for better ways to improve patients' visual clarity after corneal transplantation, refractive surgery and injury.

National Eye Institute Awards FEI Scientist Nearly \$1.7 Million to Understand Important Processes that Sustain Human Vision

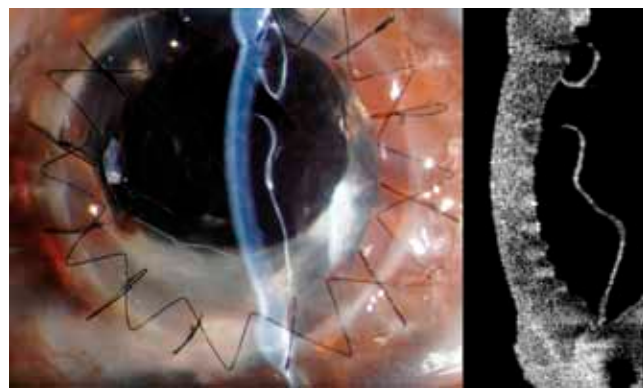
The living retina is a complex structure comprised of multiple layers of cell types responsible for converting light energy into chemical signals that the brain decodes as vision. Governing this are two important processes that need to be sustained; the regeneration of photopigment used by the rods and cones that become bleached when they absorb physical light (like a camera flash recharging) and cellular metabolism which is required by every living cell to produce energy. However, imaging these important molecules in a living eye is impossible with traditional technology. FEI's **Jennifer Hunter, Ph.D.**, has developed a novel way of using two-photon fluorescence adaptive optics scanning laser ophthalmoscopy (AOSLO) to clearly image these molecules in the living eye. The five year RO1 grant will allow her laboratory to further develop an AOSLO instrument and refine methodology for reliably imaging both the structure and function of multiple layers of the retina. Not only will this capability provide insight into normal cell mosaics and their biochemical processes, it also has the potential to improve understanding of many blinding diseases that affect those processes such as Stargardt's disease, macular degeneration and Leber's hereditary optic neuropathy. FEI has become the world's premier center for this type of imaging and the new instrument will bring to 5 the total number of AOSLOs housed in FEI's translational research laboratories.



JENNIFER J. HUNTER, Ph.D.

Photographic Staff Cleans Up at Academy

It's not the Motion Picture Academy, but each year at its annual meeting of the American Academy of Ophthalmology, the Ophthalmic Photographers' Society presents its own version of "best in picture" awards. These highly specialized imaging professionals do everything from take incredibly detailed photographs of the anatomy of the eye to helping doctors diagnose and track diseases through the use of sophisticated diagnostic equipment. FEI's **Brandi Deats, O.C.T.-C.** and **Rachael Hollar, C.R.A., C.O.T.**, combined to take home 12 awards from among hundreds of entries. Highlighting the accolades was Brandi Deats's "Residual Host Descemet's Detachment Post Perforating Keratoplasty," which took first place in the Optical Coherence Tomography Category. FEI proudly salutes their achievements.



BRANDI DEATS
"RESIDUAL HOST
DESCEMET'S DETACHMENT
POST PERFORATING
KERATOPLASTY"



RACHAEL HOLLAR
"KERATOCONUS"

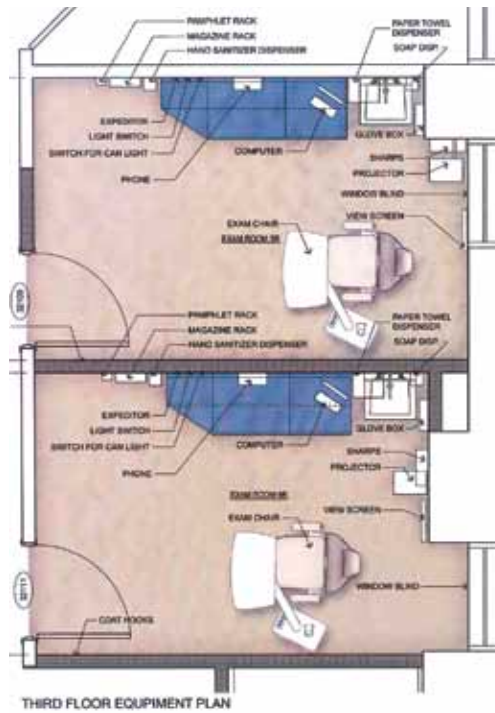
Eye Bank Funds Corneal Wound Healing Study

Assistant Research Professor of Environmental Medicine and FEI collaborator **Collynn Woeller, Ph.D.**, received a \$20,000 grant from the Rochester / Finger Lakes Eye and Tissue Bank to investigate the corneal scarring process. Corneal scarring can occur after ocular injury or transplant surgery and can lead to impairment in vision quality. There is a major knowledge gap in our understanding of how cells called myofibroblasts form in corneal tissues during the healing process and mediate scarring. Furthermore, there are few, if any, effective therapies to prevent scarring in cornea or in other tissues that are transplanted. Understanding the mechanism(s) underlying myofibroblast differentiation is critical to developing new therapies. This research project advances knowledge of the mechanisms underlying myofibroblast development and aims to develop a novel therapy to prevent myofibroblast formation and subsequent scarring.

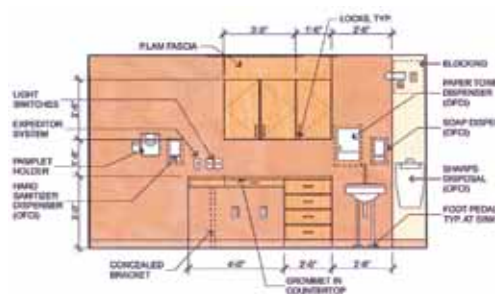
Friends of Strong Buys New Slit Lamp Camera for FEI

The Friends of Strong Memorial Hospital recently made a gift of a Haag-Streit 900 BX photo slit lamp to the Flaum Eye Institute. The \$41,000 instrument will be used in the faculty and resident clinics primarily in the diagnosis and treatment of corneal and external diseases of the eye. Friends of Strong is an organization of volunteers that advances the mission of Strong Memorial Hospital by providing services to patients, families and visitors, promoting the hospital in the community and raising money to support patient needs. To date they have funded more than \$140,000 in equipment purchases related to patient care at FEI.

FACULTY PRACTICE EXPANSION



THIRD FLOOR EQUIPMENT PLAN



Fresh on the heels of the completion of new patient care rooms for the resident clinic, FEI is again poised to expand its clinical operation on the third floor of the Adeline Lutz Pavilion. Starting sometime in May, a construction project will add four exam rooms, six diagnostic rooms and additional patient waiting areas. The new rooms will help lessen traffic in patient care areas at especially busy times and promote enhanced patient privacy. It will also help to accommodate practices of several new clinical faculty members joining FEI during the next few months. Each of the new rooms will be e-Record equipped.

CLINICAL TRIALS

For more information please contact us at: **585-276-8734**

CURRENTLY OPEN:

- ⊙ A Phase I Open-Label, Dose Escalation Trial of QPI-1007 Delivered by a Single Intravitreal Injection to Patients with Optic Nerve Atrophy (Stratum I) and Acute Non-Arteritic Anterior Ischemic Optic Neuropathy (NAION) (Stratum 2) *stratum 1 enrollment complete* (Z. Williams, M.D.)
- ⊙ A Phase I, Double-Masked, Placebo-Controlled Study Evaluating the Safety, Tolerability, Immunogenicity, Pharmacokinetics and Pharmacodynamics of Multiple Escalating Dosages of RN6G in Subjects with Advanced Dry, Age-Related Macular Degeneration (AMD) Including Geographic Atrophy (M. Chung, M.D.)
- ⊙ Prospective Randomized investigation to Evaluate incidence of headache reduction in subjects with Migraine and PFO Using the AMPLATZER PFO Occluder compared to Medical Management (S. Feldon, M.D.)
- ⊙ A Non-Treatment Study of Risk Factors for Nonarteritic Anterior Ischemic Optic Neuropathy (NAION)(Z. Williams, M.D.)
- ⊙ A Prospective Observational Study Comparing the Effectiveness of Treatment Strategies for Open-Angle Glaucoma (S. Shareef, M.D.)
- ⊙ Prompt Panretinal Photocoagulation Versus Intravitreal Ranibizumab with Deferred Panretinal Photocoagulation for Proliferative Diabetic Retinopathy (D. DiLoreto, M.D., Ph.D.)
- ⊙ Effect of Diabetes Education during Retinal Ophthalmology Visits on Diabetes Control (D. DiLoreto, M.D., Ph.D.)
- ⊙ A Randomized Trial of Bilateral Lateral Rectus Recession versus Unilateral Lateral Rectus Recession with Medial Rectus Resection for Intermittent Exotropia (M. Gearinger, M.D.)
- ⊙ A Randomized Clinical Trial of Observation versus Occlusion Therapy for Intermittent Exotropia (M. Gearinger, M.D.)
- ⊙ A Randomized Trial of Levodopa as Treatment for Residual Amblyopia (M. Gearinger, M.D.)

Resident Program Expands to Four

The residency program added two new rooms to its clinic space just in time. This expansion coincided with FEI receiving approval from the Ophthalmology Resident Review Committee allowing it to add a 4th resident to its program each year, increasing the complement from 9 to 12 over the course of three years. This is welcome news for both FEI and the growing number of patients it serves who are uninsured or underinsured. The first class of four, **Katherine Liegel, M.D.**, **Angela Pugliese, M.D.**, **Morgan Renner, M.D.**, and **Anushree Sharma, M.D.** will arrive in July.

"This is terrific for us," commented **Matthew Gearing, M.D.**, director of the residency program. "The additional residents will provide extra coverage at Rochester General Hospital and URMC, serving the under-insured. It will also improve resident education by allowing more time for training in the sub-specialty services (1st and 2nd years), and greater flexibility in surgical training during the 3rd year through additional elective experiences." Kudos go out to the team who prepared the application for the Accreditation Council for Graduate Medical Education (ACGME), including Gearing, FEI administrator **John Meade, M.P.H.**, and residency program coordinator **Patricia DeBurro**.

Third-year Residents Match to Fellowship Programs

FEI continues to match its residents to sub-specialty fellowship programs at prestigious programs. This additional training provides our graduating residents with advanced skills in highly-specialized fields of ophthalmology applicable to both private practice and academic medicine. **Sabita Ittoop, M.D.** will begin a clinical glaucoma fellowship this July at the University of Colorado, Denver. **Syed Mahmood Shah, M.D.** is traveling to Johns Hopkins University where he has been offered a two-year vitreoretinal fellowship at the Wilmer Eye Institute. **Amy Zhang, M.D.** will be a glaucoma fellow at the Henry Ford Health System in Detroit. FEI extends well-deserved congratulations to all.

Extreme Makeover for Wet Lab

ACGME requires that all ophthalmology programs have a teaching facility called a wet lab where residents can practice surgical techniques in simulation, better preparing them for the complexities of eye surgery. Until recently, Flaum Eye Institute has maintained an adequate facility, but not of the standard found at upper echelon training programs. Under the direction of **Yousuf Khalifa, M.D.**, FEI's **Stuart and Betsy Bobry** surgical education center has undergone a dramatic transformation. Helped by numerous donations of equipment and a \$200,000 allocation from the University of Rochester Medical Center, FEI now boasts a world-class training resource.

"Building a resident's surgical acumen starts in the wet lab," said Khalifa. "Someone can have great innate surgical ability, but if they haven't rehearsed the procedures repeatedly, they won't be as prepared when it's the real thing. If you imagine faculty as 'coaches,' having a state-of-the-art practice facility helps us better prepare our 'athletes' for the big game. The new lab makes this possible by allowing us to offer a richer training experience."

The upgrades are numerous and will be especially helpful in teaching residents cataract surgery — the procedure most commonly performed by residents during their training and when they become licensed as ophthalmologists. Improvements include:

- Three new phacoemulsification machines to help residents practice surgical techniques in state-of-the-art cataract surgery
- Operating microscopes identical to those used in operating rooms that include video cameras so that practice surgeries can be recorded and reviewed by faculty and residents
- Three suturing stations

In addition, the FEI lab is the first in the United States to install the Kitaro wet lab simulator. This award winning system synthetically recreates the human eye and allows residents to practice nearly every aspect of cataract surgery, from making the initial incision to removing the cataract and replacing it with an artificial lens. Kitaro even simulates eye movement that a surgeon would expect in the operating room. Moreover, it greatly reduces the need for animal eyes which have limited shelf lives. FEI equipment manager **Terry Schafer, C.O.M.T., C.R.A.** is responsible for maintaining the facility.



THANKS TO THE GENEROUS SUPPORT OF NUMEROUS DONATIONS, FEI'S WET LAB NOW INCLUDES THREE PHACOEMULSIFICATION STATIONS WHERE RESIDENTS CAN PRACTICE PERFORMING CATARACT SURGERIES AND OTHER PROCEDURES. THE FACILITY ALSO INCLUDES OPERATING ROOM MICROSCOPES WITH VIDEO RECORDING CAPABILITIES SO THAT RESIDENTS AND THEIR INSTRUCTORS CAN REVIEW THEIR PROGRESS.



Annual Conference Update

This year marked the 10th anniversary of the establishment of FEI and the 57th year of the Albert Snell Memorial Lecture. In celebration of this auspicious occasion the annual Rochester Ophthalmology Meeting hosted at the School of Medicine and Dentistry took on a special theme. Nearly all of the invited speakers had a connection to the University and/or the Department of Ophthalmology. Keynote lectures were given by three of our most famous alumni.

On Friday of the conference, the FEI Distinguished Visiting Professor lecture was delivered by **Robert Osher, M.D.** A graduate of the School of Medicine, Osher delighted the audience with surgical videos about managing cataract complications and was so kind as to take FEI residents aside for a special lunch time session. Former fellow, faculty member and Founder and Director of the L.V. Prasad Eye Institute in Hyderabad, India, **Gullapalli Rao, M.D.**, delivered the Snell Lecture on Saturday. On Thursday, former resident **Jayakrishna Ambati, M.D.**, gave the Ann Mowris-Mulligan Retinal Research Lecture. He presented cutting edge theories likely to lead to new approaches for treating retinal disease. Also lecturing were former residents **Jacqueline Leavitt, M.D.**, **Salman Ali, M.D.**, and **Greg McCormick, M.D.**, as well as School of Medicine graduate **Omesh Gupta, M.D., M.B.A.**

More than 250 — from as far away as West Virginia — turned out for the three-day event that featured scientific, clinical and business sessions. FEI extends its thanks to all the participants and the generous support of the underwriters and exhibitors who attended.

2012 Flaum Eye Institute Visiting Professor Series

MAY 12

RETINA

Peter Kaiser, M.D.

Professor of Ophthalmology,
Cole Eye Institute, Cleveland Clinic

JUNE 16

CORNEA / ANTERIOR SEGMENT

Roger Steinert, M.D.

Chair, Department of Ophthalmology;
Director, The Gavin Herbert Eye Institute
UC at Irvine School of Medicine

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

FEI Match Results

Every fall, faculty and current residents look forward to hosting the brightest medical students who choose to make Ophthalmology their career. This year FEI reviewed hundreds of applications for admission to the residency program and interviewed more than 50 candidates for these slots beginning in July 2013. In January, the San Francisco Match announced the results of their annual program that places candidates in ophthalmology residency programs. We look forward to seeing four outstanding medical students in July 2013:

Katherine Fallano

Johns Hopkins School of Medicine

Amit Sangave

University of Rochester School of Medicine

Rachel Wozniak

Tufts University School of Medicine

Tailun Zhao

University of North Carolina School of Medicine

Besides Amit Sangave, FEI is also pleased to announce that four additional University of Rochester School of Medicine and Dentistry medical students decided to pursue careers in ophthalmology and successfully matched to programs. They include **Mircea Coca** (University of Texas, Galveston), **Robert Fargione** (Albert Einstein College of Medicine), **Leah Kammerdiener** (Medical University at South Carolina) and **Kendra Klein** (Tufts New England Eye Center). Much of the resurgence of interest in ophthalmology at the University of Rochester can be credited to **Holly Hindman, M.D.** who has revitalized the clerkship program and is a great mentor to medical students.

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



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Welcoming New Faces

FEI continues add key personnel to streamline processes and improve patient care. In this issue of Vision for the Future we highlight the addition of three new team members:

Christian Klein, M.D. joins the FEI faculty as Assistant Professor of Ophthalmology. Among his many duties will be precepting the residents in their busy clinics at both FEI and at Rochester General Hospital. Klein will also see patients through the faculty practice as part of the Comprehensive Ophthalmology Service. He attended Medical School at SUNY Upstate Medical University and completed his residency in Ophthalmology at Case Western Reserve University. He joins us from the Hammond Clinic in Munster, Indiana where he practices general ophthalmology and is Board Certified by the American Academy of Ophthalmology. Dr. Klein is a native of Rochester and attended McQuaid High School in Brighton, New York.

Sarah Klein, O.D. is also coming to Rochester as a Senior Associate in the Department of Ophthalmology. She will split her time between the Veterans Administration and FEI's optometry service. She is a graduate of the New England College of Optometry and completed her residency in optometry at the Louis Stokes Cleveland Veterans Affairs Center in Cleveland, Ohio. Dr. Klein is a fellow of the American Academy of Optometry.

The husband and wife team will join FEI in July.



JOSEPH GABRIEL

Joseph Gabriel has been named FEI's Director of Information Services and Associate Administrator. Chief among his duties to start will be FEI's transition to an electronic medical record-keeping system in addition to managing the information technology infrastructure across the clinical and research enterprise. Gabriel graduated from the Management Science Program of SUNY Geneseo and has more than 16 years experience in information technology management. He comes to FEI from University of Rochester affiliate Visiting Nurse Service.

FLAUM EYE INSTITUTE

FACULTY PRACTICE Comprehensive Eye Care

Shobha Boghani, M.D.
Rebecca Nally, O.D.
Jill Schafer, O.D.

Contact Lens Services

Rebecca Nally, O.D.
Jill Schafer, O.D.

Cornea and External Disease

James Aquavella, M.D.
Steven Ching, M.D.
Holly Hindman, M.D.
Yousuf Khalifa, M.D.
Ronald Plotnik, M.D.

Glaucoma

Shakeel Shareef, M.D.

Neuro-Ophthalmology and Orbit

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

Pediatric Ophthalmology

Matthew Gearing, M.D.

Refractive Surgery

Scott MacRae, M.D.
Holly Hindman, M.D.
Ryan Vida, O.D.

Retina and Vitreous

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

Uveitis

Yousuf Khalifa, M.D.

RESEARCH FACULTY

Charles Duffy, M.D., Ph.D.
William Fischer, M.S.
Lin Gan, Ph.D.
Jennifer Hunter, Ph.D.
Krystal Huxlin, Ph.D.
Amy Kiernan, Ph.D.
Richard Libby, Ph.D.
William Merigan, Ph.D.
Gary Paige, M.D., Ph.D.
Richard Phipps, Ph.D.
Duje Tadin, Ph.D.
David Williams, Ph.D.
Geunyoung Yoon, Ph.D.
Jim Zavislan, Ph.D.