

Vision *for the* Future

University of Rochester Eye Institute

Summer 2003

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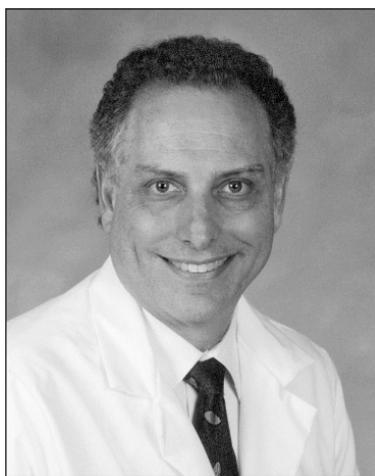
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Eye on the News

Our Mission

The mission of the Eye Institute is to develop and apply advanced technologies for the preservation, enhancement and restoration of vision through a partnership of academic medicine, private industry, and the community we serve.

Message from the Director



The University of Rochester Eye Institute is on a fast track to achieving its aggressive goals. With the addition of seven ophthalmologists and scientists since 2001, we now are halfway through our plan to add 14 new recruits.

The specialty and scientific expertise of our physicians is quickly making us the premier provider of tertiary care in the region. And we continue to pursue our ambitious goal to rank in the top 10 in NEI funding, focusing our research on areas of greatest strength.

We are committed to state-of-the-art diagnostic and treatment capabilities and outstanding customer service. Our planned growth includes new research laboratories that facilitate clinical applications of basic science investigations. These studies are the critical link in bringing the latest discoveries swiftly to patients so that we truly can preserve, enhance, and restore vision.

A handwritten signature in black ink, reading "Steven E. Feldon".

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

Director of the Eye Institute

Join us again this year at the American Academy of Ophthalmology Annual Meeting in Anaheim, California. Alumni, residents, and friends of the Eye Institute are invited to a reception on Monday, November 17 from 7 to 9 p.m. at the Hyatt Regency Orange County in Garden Grove.



The Department of Ophthalmology awarded Dr. Frederick Dushay the 2003 Resident Teacher Award. Honoring him as a "teacher, physician and friend," the award recognizes his years of outstanding dedication to resident education and patient care.

2003-2004 Bausch & Lomb Visiting Professor Series

Bringing distinguished professionals to the University of Rochester for continuing education. For more information, contact Karen Pestlin at 585-273-3954.

Series Schedule

September 20, 2003

Refractive Surgery
Capt. Steven Schallhorn, M.D.
Director Cornea and Refractive Surgery
Naval Medical Center San Diego

October 18, 2003

Uveitis
Narsing Rao, M.D.
Professor of Ophthalmology and Pathology, Doheny Eye Institute, Los Angeles

December 13, 2003

Neuro-Ophthalmology
Mark Kupersmith, M.D.
Professor and Chair,
Neuro-Ophthalmology,
Beth Israel Medical Center

January 17, 2004

Retina
Hilel Lewis, M.D.
Professor and Chair
Division of Ophthalmology
Director, Cole Eye Institute
Cleveland Clinic Foundation

Sharing the Vision

Philanthropy will be a cornerstone of the newly created Eye Institute, building on a history of support from alumni, the community, and corporate innovators. It is in this spirit of partnership that we salute recent benefactors:



Pearle Vision Foundation

With a common interest in preserving and maintaining sight, especially among the disadvantaged and children, the Pearle Vision Foundation is supporting the creation of a dedicated, state-of-the-art pediatric eye center at the Eye Institute. Thanks to the Pearle Vision Foundation, we will continue to be the primary provider of ophthalmology services to underprivileged Rochester children. Together, we are giving many youngsters a whole new outlook.



Glover-Crask Charitable Trust

Significant funding from the Glover-Crask Charitable Trust is laying important groundwork for the success of the Eye Institute, providing critical support to recruit top faculty, expand research efforts, and train the next generation of ophthalmology specialists. Previous grants in part funded the photodynamic therapy program, allowing for the purchase of the photodynamic laser and the provision of vital care to many patients. The generosity of the Glover-Crask Charitable Trust is helping us become a top eye institute, enhancing our ability to attract major national funding and world-class physicians and scientists.



Joseph S. Feldman Foundation for Scientific Research

The Joseph S. Feldman Foundation for Scientific Research has established a departmental discretionary fund. Discretionary funds are especially needed and valued during this period of growth for the Eye Institute because they can be directed where they are needed most. This fund will help advance medical science related to eye disease.



Alvin F. and Ruth K. Thiem Charitable Foundation

Resident scholarships in ophthalmology have been made possible by the Alvin F. and Ruth K. Thiem Charitable Foundation. The generosity of this foundation gives residents the opportunity to receive additional specialty training.



Roy F. Johns Jr. Family Foundation

A grant from the Roy F. Johns Jr. Family Foundation funds ongoing research related to development of a photostress screening test for macular degeneration.



Kenneth C. Townson Foundation

The growth of the Eye Institute is enhanced by a grant from the Kenneth C. Townson Foundation.

For information on opportunities to make a gift in support of the Eye Institute, contact Larry Kelly in Medical Center Development at 585-275-0808.

Taking a look at, and learning more about... Idiopathic Intracranial Hypertension (Pseudotumor Cerebri)

Diagnosis, Treatment, and Research by Deborah I. Friedman, M.D.



Dr. Friedman is a specialist in the combined areas of ophthalmology and neurology, affording her patients the benefit of investigating their eye problems from two areas of expertise. Her clinical experience within neuro-ophthalmology includes optic neuritis and other optic neuropathies, myasthenia gravis, diplopia, visual field defects, and migraine treatment. In addition to pseudotumor cerebri, Dr. Friedman's research interests include disorders of the afferent visual pathways, the effect of analgesics on intracranial pressure, and migraine therapy.



New Brighton Location!

Comprehensive Eye Care Service
100 Meridian Centre
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Rochester, NY 14618
585-341-7825

For appointments with
Shobha Boghani, M.D., and
Diane Singer, M.D.

What is idiopathic intracranial hypertension (IIH)?

Also known as pseudotumor cerebri, some symptoms of IIH mirror those of a brain tumor even though there is none. IIH is defined by a buildup of high pressure in the fluid that surrounds the brain. There's no known cause for why the pressure rises, thus the "idiopathic" nature of the condition.

Who's at risk? IIH occurs mostly in women during their childbearing years. Weight gain appears to be a significant factor in the onset or worsening of IIH.

How prevalent is IIH? IIH affects one person in 100,000 in the general population. In the "at risk" group, the incidence rises to 19 per 100,000. A few new patients are diagnosed each month at the Eye Institute.

What dangers are associated with IIH that is not treated?

Permanent visual loss can ensue. A small percentage of patients become legally or totally blind, even with treatment.

What other conditions are associated with IIH?

While obesity and a recent weight gain are the only confirmed factors associated with IIH, many other conditions mimic it. Disorders that block spinal fluid between the brain and the blood can cause raised pressure. Blood clots in the veins that drain the brain, for example, can cause increased intracranial pressure. Withdrawal of steroids, large doses of vitamin A, use of body-building steroids and possibly certain drugs such as tetracycline, and sleep apnea can cause raised intracranial pressure in some individuals.

How do you know you need to be checked for IIH?

Most patients with IIH will experience headaches that can be severe. Others may have transient visual loss, blurred vision, or hear a "whooshing noise" in the ear. More than a third of patients report double vision and close to another third have noticeable loss of vision.

Should patients see an ophthalmologist or neurologist?

The diagnosis and management of IIH requires a team approach and good communication between all of the patient's physicians. The ophthalmologist is best suited to follow visual function and the appearance of the optic nerves. The neurologist performs the lumbar puncture (spinal tap) and prescribes medication. Because this disease crosses specialty lines, usually a neuro-ophthalmologist becomes "captain of the ship".

How is the condition diagnosed? The diagnosis of IIH is based on symptoms and the presence of optic nerve swelling (papilledema) upon examination. If IIH is suspected, a scan of the brain is ordered to make sure there is not a real tumor. If the scan is normal, a lumbar puncture confirms that the spinal fluid pressure is high and no other abnormalities are present.

How is IIH treated? The first line of medical treatment is medication to lower the spinal fluid pressure. Weight loss is recommended (if the patient is overweight) but is more of a long-term strategy. Headaches are managed with medications that are used for migraine prevention. When patients do not respond well to medical therapies, there are surgical options. Currently, we use optic nerve sheath fenestration (making slits in the optic nerve sheath or covering) and lumbar shunting procedures (running a tube from the spinal fluid space in the lower spine into the abdominal cavity).

What do researchers think might cause IIH? No one knows for sure, but there are several theories. We all make spinal fluid constantly and then reabsorb it. For some reason, in IIH the spinal fluid is not being absorbed as quickly as it is being made by the brain. The correlation with young overweight women suggests a hormonal component, but none has been found. Perhaps high pressure in the veins prevents spinal fluid reabsorption, but it's not clear why otherwise healthy people would develop high venous pressure.

What aspects of IIH are being investigated? We developed an animal model of IIH comparing the spinal fluid pressure in special breeds of obese and lean animal models. The obese animal models had naturally occurring high pressure.

The second part of this research examined the effects of various medications on intracranial pressure, including acetaminophen elixir. Spinal fluid pressures rose significantly and remained high as long as the animals were ingesting daily acetaminophen. After 2 to 3 weeks the acetaminophen was discontinued, and the pressure came back down significantly, but not completely back to normal. This work was presented recently at the North American Neuro-Ophthalmology Society and the American Academy of Neurology.

Additionally, Dr. Feldon and I are involved with the IIH Study Group, a small group of neuro-ophthalmologists from around the country. We are putting together a proposal for a multicenter clinical treatment trial of IIH, to assess the effectiveness of acetazolamide (Diamox) and diet compared to diet alone in patients who have little to no visual loss. We are collecting pilot data right now and hope to submit the grant proposal to a central data coordination center at the University of Rochester.



*David DiLoreto, M.D., Ph.D.
Assistant Professor*

The newest addition to the Eye Institute team, **Dr. DiLoreto** is a retinal specialist and has been appointed assistant professor. He was a fellow at Wilmer Ophthalmological Institute at Johns Hopkins University, serving in the Retinal Vasculature Center and most recently in the Vitreo-Retinal Service at the Baltimore facility.

In addition to his clinical work, Dr. DiLoreto's research activities include retinal regeneration and neuro-retinal transplantation.

Dr. DiLoreto earned his medical degree from the University of Rochester School of Medicine and Dentistry, as well as his doctorate degree in neuro-biology and anatomy. He completed an internship at Highland Hospital and an ophthalmology residency at the University of Southern California/Doheny Eye Institute.

He has received numerous awards, and is a member of the American Academy of Ophthalmology. His research has been published in the *American Journal of Ophthalmology* and other prestigious journals.

Focus on Collaboration

This column is dedicated to the collaborative endeavors of bench scientists and physicians—work aimed at swiftly bringing basic science discoveries and new technologies to improved diagnostics and treatment of eye disease.



*Mina Chung, M.D.
Assistant Professor*



*Steven Ching, M.D.
Associate Professor*



*David Calkins, Ph.D.
Associate Professor*

In what we hope will be the first of many such agreements, Dr. Calkins, primary investigator, was awarded a grant from Bausch & Lomb to refine histological, immunocytochemical and computational protocols on eye tissue. The sponsor supplies the tissue and Dr. Calkins' lab assures that the protocols detect certain cells and quantify their prevalence.

Mina Chung, M.D.: "Dr. David Williams (Professor of Brain and Cognitive Science) and his team at the University's Center for Visual Science have developed an instrument using the principles of adaptive optics to image the retina at extremely high resolutions. For the first time, ophthalmologists are able to visualize single cones in the retina. This advancement may greatly enhance diagnosis of diabetic retinopathy, which is a vascular disease of the retina. Patients with macula diseases, including macular degeneration and inherited macular dystrophies, may also benefit from this new retinal imaging technique. Dr. Luca Brigatti and I currently are recruiting patients with macular degeneration, color vision abnormalities, inflammations, and inherited diseases of the macula for imaging to see if we can find changes in these patients' retinal cones."

Steven Ching, M.D.: "One of the newest technologies in corneal transplantation is posterior lamellar keratoplasty. The Eye Institute is one of a limited number of centers nationally that is conducting clinical trials. For the past 40 years, corneal transplantation has involved replacing the central cornea in partial thickness transplants or full thickness penetrating keratoplasty. While highly successful, these procedures also present some problems for patients. Healing is a slow process with sutures often left in place for a year or more, raising the risk of infection and rejection. Most patients will also experience astigmatism at a rate significantly higher than people with healthy eyes. Over time, surgeons and researchers working together have learned that most diseased corneas are only diseased in the back layer, paving the way to posterior lamellar keratoplasty. In this revolutionary procedure, with just a small side incision, only the diseased back layer is replaced, about 20% of the cornea. Early results show that this new technology allows patients to heal faster with less risk of rejection and less astigmatism."

David Calkins, Ph.D.: "In one investigational model of photodynamic therapy (PDT), light-sensitive pharmaceuticals called 'photosensitizers' are delivered to specific cells in the retina. Called glia, these cells are known to proliferate as part of an inflammatory response in degenerative diseases such as glaucoma, macular degeneration and diabetic retinopathy. In administering photosensitizer drugs, they can be applied to the whole eye since they are harmless until activated and can be easily washed out. PDT allows ophthalmologists to use a small laser of limited power to focus a beam of light onto the region of the retina where the drug is needed. Once activated, the drug acts on the glial cells that are proliferating uncontrollably. The FDA has now approved several photosensitizers that kill proliferating vascular endothelial cells, those cells that cause unmitigated growth of blood vessels in the wet form of macular degeneration. We are working with Dr. Tom Foster, Professor of Radiology, University of Rochester, a world-renowned expert on laser-activated PDT, to develop appropriate photosensitizer drugs that target glial cells of the retina in particular, to abate the inflammation. Our research is focusing on growing glial cells in culture under conditions in which they proliferate, much the way a tumor proliferates. We are identifying drugs that glial cells can absorb so that we can target them with PDT. The advantage for eye care is that only specific cells in specific diseased regions of the retina can be targeted without harming the rest of the eye."

Eye on the News

- **Ann Stoutenburg, CMA**, is now a Certified Clinical Research Coordinator, as awarded by the Association of Clinical Research Professionals. Handling everything from recruitment to follow through with patients and physicians, Ann has worked on a dozen clinical trials in the year she's been with us.
- **Dr. Scott MacRae** has recently delivered lectures at the Harvard visiting professor series, the Mayo Clinic, and the American Society of Cataract and Refractive Surgery Annual Symposium.
- We welcome our incoming ophthalmology residents: **Matilda Chan, M.D., Ph.D.**, **John Karth, M.D.**, and **Ying Qian, M.D., Ph.D.**
- We congratulate those who have completed their residencies this year:
 - **Nick Schmitt, M.D.**, who is pursuing his career interests in Pittsburgh
 - **Cat Burkat, M.D.**, who will continue her training as an oculoplastics fellow at the University of Wisconsin-Madison
 - **Stan Bykov, M.D.**, who will be entering private practice in New York City
- We salute **Bryant Shin, M.D.**, who completed a cornea fellowship and will enter private practice in Rochester.
- A recent addition to the cornea research team is **Jianhua (Jay) Wang, M.D., Ph.D.**, who joins the Eye Institute from the Centre for Contact Lens Research at the University of Waterloo. His work focuses on contact lens wear, tear film thickness, and the effects of corneal surgery.
- **David Calkins, Ph.D.**, received the prestigious Lew Wasserman Award from Research to Prevent Blindness to further his research on vision loss in glaucoma.

Save the date – June 4-5, 2004

The Annual Rochester Ophthalmological Society Conference will be held in conjunction with the announcement of the University of Rochester Eye Institute. The gala event will mark the dedication and opening of the clinical services expansion.

Snell Lecturer

Stephen J. Ryan, Jr, M.D., Dean and Senior Vice President,
Keck School of Medicine, University of Southern California,
President, Doheny Eye Institute

Bausch & Lomb Visiting Professor

Ronald E. Smith, M.D., Chair, Department of Ophthalmology,
Keck School of Medicine, University of Southern California

StrongVision Faculty Practice

Comprehensive Eye Care

Shobha Boghani, M.D.
Diane Singer, M.D.

Cornea and External Disease

James Aquavella, M.D.
Steven Ching, M.D.
Ronald Plotnik, M.D.

Glaucoma

Luca Brigatti, M.D.

Neuro-Ophthalmology and Orbit

Steven Feldon, M.D., MBA
Deborah Friedman, M.D.

Refractive Surgery

Scott MacRae, M.D.
Joseph Stamm, O.D.

Retina and Vitreous

Mina Chung, M.D.
David DiLoreto, M.D., Ph.D.
Donald Grover, M.D.

Basic Scientists

David Calkins, Ph.D.
Krystal Huxlin, Ph.D.
William Merigan, Ph.D.
Jianhua (Jay) Wang, M.D., Ph.D.
Geun-Young Yoon, Ph.D.

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the Eye Institute or one of our
professionals, contact:*

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