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## 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



Trustees of the University approved formation of an Eye Institute at the University of Rochester School of Medicine and Dentistry in January 2002, setting us on a course to become a major center for ophthalmologic research, education, patient care, and technology transfer. With each issue of *InSight*, we will provide a quick glimpse of our progress.

We have set an aggressive goal to rank in the top 10 in NEI funding. To achieve our goal, we are redesigning our physical infrastructure, recruiting additional faculty with subspecialty expertise, focusing our research efforts on areas of strength, preparing the next generation of specialists, and leveraging the commitment of local ophthalmology-related industries.

In stages, we will establish a stellar facility to accommodate the needs of our patients, faculty, students, and trainees. Today we have over 13,000 square feet of clinical and research space—within five years, the Eye Institute is projected to have 50,000 to 70,000 contiguous square feet.

Through the University's commitment to hiring and retaining the best clinical and research faculty, while providing them with state-of-the-art clinical and laboratory space, eye care can be dramatically improved not just in Rochester but nationally and internationally.

A handwritten signature in black ink, reading "Steven E. Feldon". The signature is fluid and cursive.

*Steven E. Feldon, M.D., M.B.A., Director of the Eye Institute*

Join us at the **American Academy of Ophthalmology Annual Meeting** in Orlando. Alumni, residents, and friends of the Eye Institute are invited for a reception on Monday, October 21 from 7 to 9 p.m. at the Rosen Plaza Hotel, 9700 International Drive.

## 2002–2003 Bausch & Lomb Visiting Professor Series

*The Eye Institute is pleased to bring these distinguished professionals to the University of Rochester Medical Center for continuing education.*

*For more information on the series, contact Betty McElwain at 585-273-3954. To learn more about earning credit at the series, call 585-275-4392.*

### Series Schedule

#### September 21, 2002

Oncology/Plastics/  
Reconstructive Surgery  
David T. Tse, M.D.  
University of Miami, Bascom  
Palmer Eye Institute

#### October 12, 2002

Neuro-ophthalmology  
Alfredo A. Sadun, M.D., Ph.D.  
University of Southern  
California/Doheny Eye Institute

#### November 16, 2002

Glaucoma  
Stuart J. McKinnon, M.D., Ph.D.  
University of Texas  
Health Science Center

#### December 14, 2002

Uveitis  
Emmett T. Cunningham, Jr., M.D.  
New York University

#### January 18, 2003

Cataract  
George Beiko, M.D.  
Hotel Dieu Hospital

#### February 15, 2003

Pediatric Ophthalmology  
John Flynn, M.D.  
Edward S. Harkness Eye  
Institute

#### March 15, 2003

Cornea & External Disease  
David M. Meisler, M.D.  
Cleveland Clinic Foundation

#### April 19, 2003

Ocular Oncology  
Joan M. O'Brien, M.D.  
University of California  
San Francisco

#### May 15–17, 2003

ROS Conference RIT Inn  
Retina/Vitreous  
Snell Speaker:  
Eugene de Juan, Jr., M.D.  
University of Southern  
California, Doheny Eye Institute

#### June 21, 2003

Retina  
Allen C. Ho, M.D.  
Wills Eye Hospital

# Sharing the Vision

The University of Rochester Eye Institute gratefully acknowledges the generous support of: **Hobart A. Lerner, M.D.**, 1949 resident alumnus, **Arthur Lowenthal, Walter and Adeline Lutz**, and **Frederick and Bernadette Zaunick**.

We also recognize the extraordinary benevolence of the late **Helen Thompson**, a patient of Dr. Donald Grover's, who left the Department of Ophthalmology a significant bequest.



## Retinal Laboratory Dedicated

On June 13, the Ralph and Mary DeStefano Center for Retinal Genomics was formally dedicated in honor of the generosity of the DeStefanos. With a leadership gift to the Eye Institute, **Ralph and Mary DeStefano** are facilitating the development of an advanced program to study the genetics of retinal disease including molecular architecture, degenerative and hereditary disease states, age-related macular degeneration, glaucoma, and therapeutics.

Feldon acknowledged the DeStephanos' support. "As we embark on our vision to become a top eye institute, it is through private philanthropy—along with federal funding—that we will be able to grow at an aggressive pace, dramatically improving eye care and vision research in Rochester," said Feldon.



## Portrait of Dr. Metz Unveiled

On July 10, faculty, friends and resident alumni from throughout the country came together at the Memorial Art Gallery in Rochester to honor the man whose tenure as Chair of the Department of Ophthalmology furthered the tradition of excellence in eye care and vision research in Rochester: **Henry S. Metz, M.D., M.B.A.** Appointed Chair of the newly created department in 1978, he served in the position until 1993. Under his leadership, the division became a department, the research wing was completed, and the residency program was expanded. Alumni and friends demonstrated their admiration for Metz through donations to a portrait fund campaign, which raised over \$10,000.

**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... Macular Degeneration

## Diagnosis and Treatment *by Donald Grover, M.D.*

The most common cause of severe vision loss among people over 60, macular degeneration is an increasing concern for our aging population. It can start as early as age 40, causing the central part of the retina, called the macula, to deteriorate. Responsible for central and detail vision, the macula controls our ability to read, drive, and recognize faces and colors.

### *Which symptoms should be taken seriously?*

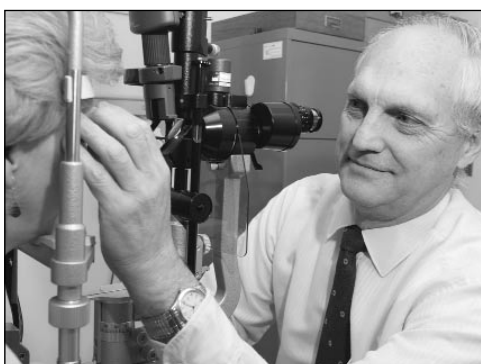
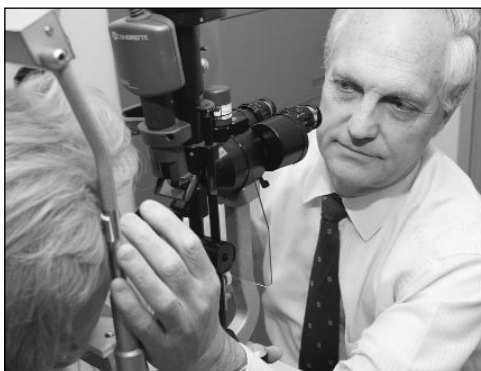
Early detection is very important. A number of nonspecific symptoms can all be signals that it's time to call your eye doctor for an examination. Blurred vision, spotty vision with gray or black spots, difficulty reading certain words, and distortion of images can be early signs of macular degeneration. The only way to know is to have an appropriate eye exam.

### *What will your eye doctor look for?*

The first thing your doctor will do as part of your diagnosis is determine if you are eligible for treatment and if you have "wet" or "dry" macular degeneration. Your eye doctor will, in the course of the examination, look at the macula with a regular ophthalmoscope or with a special lens. The macula may show loss of normal pigment or swelling of the retinal tissues. The former condition is called dry macular degeneration because there is no fluid accumulation or bleeding. The latter is called the wet form. It may be associated with formation of new blood vessels that leak into the macula.

### *What kinds of treatment are available and what can be expected long-term?*

Early detection gives the patient the best chance of preserving some useful vision. There is no treatment for advanced, dry age-related macular degeneration, but recent studies have shown that certain vitamin supplements can slow the early stage. Unfortunately, only about 10 to 15% of people with the wet form are eligible for treatment. Usually laser treatment or photodynamic therapy (PDT) is recommended to try to slow the degeneration.



**Donald Grover, M.D.**, demonstrates state-of-the-art photodynamic therapy. He is a Professor in the Department of Ophthalmology and is a leading specialist in the diagnosis and treatment of macular degeneration. He completed his residency at the University of Rochester and was a fellow in medical retinal diseases at the Wilmer Institute at Johns Hopkins University Medical School. He is a founding member of the Macula Society.



**CALL 273-EYES!**

Patient service is a priority of the newly formed Eye Institute. For the convenience of patients and referring physicians alike, there is now one central phone number for all faculty practice appointments: 585-273-EYES. Among other improvements are the implementation of check-in and check-out windows, and centralized billing, administrative, and technical expertise.



## New Avenues of Research by David Calkins, Ph.D.



**David Calkins, Ph.D.**, is an Associate Professor in the Departments of Ophthalmology, Neurobiology and Anatomy, Neurology, and the Center for Visual Science. He is a nationally recognized authority on vision-related research. At the Eye Institute, graduate students like **Ziye Sui** and **Rebecca Sappington** have the opportunity to conduct research.



Age-related macular degeneration is the leading cause of blindness in older Americans with 1.5 million people having some form of the disease. It is vitally important to learn how genes behave in healthy retinas as opposed to how genes behave in retinas that are affected by macular degeneration.

Although the macula makes up only 3% of the retina, 60% of the brain's capacity for vision is devoted to getting information from that area. The macula consists of a dense layer of photoreceptors. Without healthy macula photoreceptors, a patient will lose central vision, necessary for reading and fine detail.

In our lab we are focusing on two independent avenues of research. We are trying to isolate the photoreceptor genes of a healthy person and a person with macular degeneration to see how they compare. We hope to develop medical treatments that will signal the blood vessels to stop growing as an alternative to using lasers.

In 5 to 10 years, we will be ready for human testing of gene therapy. Our goal is to be able to pull out diseased genes from the retina and replace them with healthy genes. A laser would activate these genes, restoring visual function.

These are just a few of the many major studies being conducted to better understand the causes of all types and stages of macular degeneration and to develop effective treatments.

**Mina Chung, M.D.**, joined the Department of Ophthalmology this September as Assistant Professor, coming from the faculty of the University of Southern California/Doheny Eye Institute in Los Angeles where she worked with Feldon. Her research activities at the Doheny Eye Institute included the genetics of diabetic retinopathy and family profiles of macular degeneration. As a clinician, she specializes in diabetic retinopathy and retinopathy of prematurity.

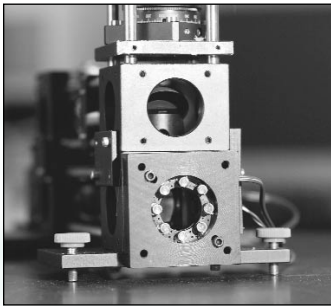
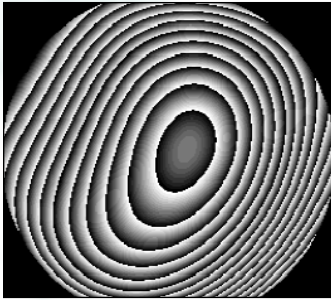
Chung earned an M.D. from Yale University School of Medicine. She completed a residency at USC/Doheny, followed by a retina-vitreous fellowship at the University of Iowa.

"Dr. Chung's clinical and research interests will further strengthen our team in the provision of excellent patient care and in the development of new treatments," said Feldon. "In addition, we are working everyday to expand our diagnostic and treatment capabilities with the latest and most advanced technologies."

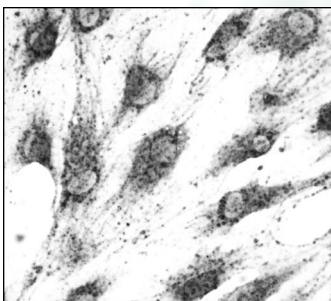


# Focus on Collaboration

*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 diseases.*



*The image above was generated by this miniature, portable wavefront sensor device, built by **Yoon**, who has a dual appointment as Assistant Professor of Ophthalmology and in the Center for Visual Science.*



**Phipps and Feldon** study human orbital fibroblasts like these. They are expressing the cyclooxygenase-2 enzyme that synthesizes lipid mediators — an important factor in the inflammatory process of thyroid eye disease.

## Perfecting Refractive Surgery

**Krystel Huxlin, Ph.D.** and **Geun-Young Yoon, Ph.D.:** “We have been collaborating with **Drs. David Williams, Scott MacRae, and Ian Cox** (from Bausch & Lomb) to develop a model for refractive surgical experiments that will tease out the causes of optical aberrations and test ways of preventing or correcting them. This is an exciting project for several reasons. First, any discoveries we make as to the precise causes of optical errors following refractive surgery will have significant benefit for patients. Second, we foresee making theoretical advances in terms of our understanding of corneal and ocular biomechanics at play during this procedure and how they affect optical quality. Third, we are constantly improving and developing the necessary technology—the outcome of this process will be a marked improvement in the technology used to carry out refractive surgical procedures. Our ultimate goal in this project is to design a treatment that can be used to correct any optical aberrations that might be induced by surgery or occur naturally. Optimally, this should be done in a way that is free of further complications and is customized to each patient.”

**Scott MacRae, M.D.:** “For the past 200 years, we have only been able to measure lower order aberrations, which include astigmatism, nearsightedness, and farsightedness. With the development of wavefront sensing and adaptive optics, which was first developed and patented at the University of Rochester, we are now able to detect and treat up to 20 higher order aberrations including coma and spherical aberrations with LASIK using customized ablation. The “customized” system may be able to improve patients to visual acuities better than the 20/20 range. Studies done in the laboratory of **Dr. David Williams** indicate that the adaptive optics system may double the visual performance of normal human eyes. Our team is trying to take Dr. William’s lab observations and apply them to patients being treated with laser refractive surgery.”

## Understanding Thyroid Eye Disease

**Richard Phipps, Ph.D.:** “Many Graves’ disease patients—especially women who smoke—will develop thyroid eye disease, a condition that causes disfiguring bulging eyes, blurry vision, and even blindness. An inflammatory process associated with the disease induces cells behind the eye called fibroblasts to make too much connective tissue protein. The fibroblasts also convert into fat-like cells. The combination of excessive connective tissue and accumulating fatty tissue pushes the eye out of the orbit. Today we have decompressive surgery available to restore some measure of cosmetic appearance but no cure. Building on our knowledge of lung fibroblasts, and working with **Dr. Feldon** who has expertise in treating thyroid eye disease and its complications, we are developing a model system to study how immune system cells interact with orbital fibroblasts. By understanding the process, we hope to develop a rational therapy for treatment of this disease and possibly other autoimmune diseases.”

# Eye on the News

- **Deborah Isa Friedman, M.D.**, has been appointed to a dual associate professorship in the Departments of Ophthalmology and Neurology. Friedman has served as Assistant and Associate Professor of Neurology and Ophthalmology at the State University of New York – Upstate Medical University in Syracuse since 1989. Her clinical interests within neuro-ophthalmology include idiopathic intracranial hypertension and headache disorders, including migraine. Friedman’s research interests include pseudotumor cerebri, disorders of the afferent visual pathways, migraine therapy, and the effect of analgesics on intracranial pressure.
- Next year, second- and third-year residents in Rochester will have the opportunity to train at one of the world’s leading eye health institutions, the L.V. Prasad Eye Institute in Hyderabad, India. “The process of learning for our residents needs to be about seeing and doing as much as you can,” said **Shobha Boghani, M.D., Assistant Professor**. “At L.V. Prasad, our residents will be exposed to high volumes of pathologies, surgeries, and procedures—learning from doctors and surgeons who are using all the best, most expeditious techniques. In exchange, the University can offer L.V. Prasad additional research and educational opportunities.”
- In July, the Board of Trustees approved the appointment of **James V. Aquavella, M.D.** to Professor of Ophthalmology. Aquavella established a practice in Rochester in the mid-1960s, and has been affiliated with the department since 1975 as clinical associate professor and later clinical professor. When research facilities were established in the late 70s, Aquavella founded the Cornea Research Laboratory and was its director for almost 20 years. He initiated Rochester’s corneal fellowship program, which has trained over 40 clinical corneal specialists and a similar number of research fellows.
- The Eye Institute’s first **Eye Health Seminar Series** was well received by the Rochester community. Faculty covered clinical and research updates on macular degeneration, glaucoma, LASIK, thyroid eye disease, low vision rehabilitation, and dry eye syndrome. “Excellent presentation, very informative. Thank you for talking to me about my eye health,” said one guest. Watch for information on future eye health seminars.

## **StrongVision Faculty Practice**

**Comprehensive Eye Care**  
Shobha Boghani, 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.  
Donald Grover, M.D.

**For more information**  
about the Eye Institute  
or to reach one of the  
professionals in this  
issue, contact:

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[www.urmc.rochester.edu/  
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