Gala Evening Raises Funds for Foundation Programs

“You are bringing the world closer to eradicating preventable blindness from glaucoma,” said New York Governor David A. Paterson, the recipient of the 2008 Kitty Carlisle Hart Award of Merit for Lifetime Achievement. The occasion was the 22nd Black & White Ball, TGF’s annual fundraising gala, held on December 3 at New York’s elegant Pierre Hotel.

The award was created in 1999 in recognition of Ms. Hart’s contributions to the battle against glaucoma and was presented to Governor Paterson by the late Ms. Hart’s daughter, New York physician Dr. Catherine Hart.

Gregory K. Harmon, MD, Chairman of The Glaucoma Foundation, applauded “Governor Paterson’s tenacity and courage to overcome obstacles – traits that embody the spirit of the Kitty Carlisle Hart Award. He has set a milestone in American public life,” Dr. Harmon added, noting that “in all his endeavors, Governor Paterson continues to challenge public perceptions about what it means to have a disability.”

Legally blind after an infection robbed him of sight in his left eye and damaged vision in his right eye as an infant,
Dear Friends:

As I write this letter, plans are well underway for the March 12th observance of the second annual World Glaucoma Day, a joint global initiative of the World Glaucoma Association (WGA) and the World Glaucoma Patient Association (WGPA). The day will be marked by awareness and educational events organized by eye care organizations and local patient support groups on every continent.

I am delighted to serve as coordinator for all US activities for that day – we anticipate that it will be great! World Glaucoma Day is all about global awareness and the importance of detecting the disease early, before vision is lost. So it’s very appropriate that TGF is joining with the New York Eye and Ear Infirmary to sponsor a glaucoma screening for delegates and staff of the United Nations here in New York City.

We are also again co-sponsoring a legislative briefing in Washington, “Glaucoma – Vision’s Stealth Thief,” to make sure our elected representatives are well informed about the disease, new research directions and funding needs.

In this issue you’ll read about TGF’s own research initiatives, which have also gone global, with five new grants awarded to scientists based in Canada, the US, UK, Italy and Hong Kong.

These new projects are investigating aspects of cell death in glaucoma and cell types that may play an active role in the disease. Others focus on finding new genes that may cause glaucoma and new imaging techniques to monitor cell damage and to identify certain molecular biomarkers in glaucoma.

Along with Foundation news, this issue features patient-oriented articles we hope you will find helpful and interesting. Providing a real service to glaucoma patients of all ages is the primary goal of our “Eye to Eye” newsletter.

All these efforts would not be possible without the broad support of our friends. The Glaucoma Foundation extends a sincere ‘thank you’ to the 12,599 individuals who contributed to our work in 2008. During these financially difficult times, we are especially grateful to each and every one of you and hope your support will be ongoing.

Sincerely,

Scott R. Christensen
President
Chief Executive Officer
**Doctor, I Have a Question.**

*Questions answered by:*

**Dr. David S. Greenfield**  
Professor of Ophthalmology  
Bascom Palmer Eye Institute  
Member of the TGF Medical Advisory Board

**Why don’t doctors prescribe more generic glaucoma medications?**

In these challenging economic times, the cost savings associated with generic medications cannot be ignored. However, a concern among clinicians is whether generic glaucoma medications are as effective at reducing IOP as their brand-name predecessors. One might assume that generic medications have the same level of effectiveness because they are required to contain the same active ingredient as the brand-name drug. But the inactive ingredients in generic formulations, e.g. the solution in which the drug is dissolved and its preservative, may be different. Surprisingly, generic eye drops are not required by the FDA to undergo clinical trials in patients and therefore the effectiveness, tolerability, and side-effect profiles are unknown. Few studies have compared generic eye drops to their branded counterparts. Doctors must closely monitor patients after they switch to ensure the safety and effectiveness of the generic medication. Talk to your doctor to determine whether or not you should switch to a generic glaucoma medication.

**What's involved in terms of recuperation and follow-up for trabeculectomy surgery?**

Trabeculectomy's goal is to reduce IOP, thereby preserving vision. The operation usually is an out-patient procedure, taking from 30 to 45 minutes. It is usually performed under local anesthesia. Eye drops will be needed until the eye is healed, usually two to three months following surgery. The patient may experience blurred vision and driving should be restricted until the ophthalmologist grants permission. The number of post-operative visits to the doctor varies depending on patient circumstances, and some activities, such as bending or heavy lifting must be limited for a two to four week period. During the first month after surgery, weekly follow-up is often recommended to ensure proper healing. Each case is different, so check with your doctor for specific advice.

**How does my ophthalmologist use the new imaging devices?**

Today, doctors use computerized imaging devices (which include OCT, GDx, or HRT) to identify, document and follow even the most subtle changes in the optic nerve head and surrounding retinal nerve fiber layer – anatomical structures that are damaged in glaucoma. Photographs of the optic nerve are also useful to establish a baseline for future evaluation and to monitor the progression of damage. These tests enable your eye doctor to establish a proper diagnosis and treatment plan for glaucoma. In addition, they provide a means of determining the degree of glaucoma severity and monitoring for progression. Research has shown that damage to the nerve fiber layer occurs before visual field changes are seen in early glaucoma. Your ophthalmologist will use these tests, in combination with other tests such as visual fields, to determine an approximate goal or target IOP.
2008 Think Tank
Encouraging Reports from Participants

The Glaucoma Foundation’s Annual International Think Tank, TGF’s two-day gathering that brings together experts from different disciplines from around the world, continues to play an essential role in creating a road map for glaucoma research.

The creative ideas that originate in these discussions help researchers unlock the mysteries of glaucoma and, hopefully, in the not too distant future, will lead to restoring vision lost from optic nerve damage.

The fall meeting was particularly stimulating. While there is still no cure for glaucoma and vision loss from the disease can not yet be reversed, there were encouraging reports from many of the 50 researchers who attended from the U.S., Canada, Finland, Germany, Hong Kong, Israel and the U.K.

The subject of the meeting was the current status of translational nanomedicine and tissue bioengineering in the eye – in other words, the practical applications of new state-of-the-art and emerging technologies to benefit patients.

Presenters reported on current research investigations into optic nerve regeneration and on the latest technologies and devices now being evaluated for continuous monitoring of IOP, targeted drug delivery to the eye, and high resolution imaging of the eye.

One of Israel’s leading researchers, a senior neurobiologist who has attended the Think Tank for many years, is actively working on treatments using the immune system for chronic neurological diseases that until now have been regarded as incurable. Her work is showing that the immune system, thought to be harmful in the event of injury to the central nervous system, may actually help it to recover. This may have neuroprotective applications in slowing down progressive eyesight loss due to nerve degeneration in glaucoma.

Presentations furthered the view that nanotechnology – which creates and uses materials and devices at a scale size of intracellular structures and molecules – has the real potential to alter glaucoma treatment paradigms. Scientists described nano-particles that could serve as vehicles for gene modulation, nano-scaffolds that could be used...
for cell implantation, and the use of nanotechnology to deliver doses of medication when you want them and implant sensors for monitoring IOP around the clock.

Participants discussed very real advances being made in hi-speed, ultra-high resolution imaging techniques and the need to continue making advances to show structural changes in the eye early, before glaucomatous damage begins and irreversible loss of vision occurs. Understanding the correlation between structural damage and functional abnormalities in glaucoma was deemed especially crucial.

“Recent innovations in medical technology are really very encouraging,” says Dr. Robert Ritch, the original organizer of the Think Tank. “Some of the new techniques and devices may sound bionic. But this isn’t fiction, it is very real.”
New Award Honors Dr. Robert Ritch

At its December 3rd Annual Black & White Ball, The Glaucoma Foundation (TGF) presented its first Award for Excellence and Innovation in Glaucoma to Robert Ritch, MD, the founder of TGF and its Medical Director and Chairman of The Foundation’s Scientific Advisory Board. It was also announced that the award, to be given annually, has been named the Dr. Robert Ritch Award for Excellence and Innovation in Glaucoma.

Making the presentation to Dr. Ritch at the annual gala, TGF Chairman Gregory K. Harmon noted that this new annual award recognizes the contributions of individuals who have played a significant and unique role in promoting the medicine and science of glaucoma. “Dr. Ritch has devoted his career to broadening our knowledge of the nature of glaucoma and innovation in the medical, laser, and surgical management of glaucoma,” Dr. Harmon said. “His contributions have been indispensable to setting the momentum for research in the field. It is most fitting that we give this award in his name.”

Dr. Ritch holds the Shelley and Steven Einhorn Distinguished Chair in Ophthalmology and is Surgeon Director and Chief of Glaucoma Services at the New York Eye & Ear Infirmary, and Professor of Clinical Ophthalmology at New York Medical College, Valhalla, New York.

Dr. Ritch founded TGF in 1984 to support translational research to identify factors that lead to glaucoma and to develop new methods of treatment. In 1994 he initiated The Glaucoma Foundation’s annual Think Tank on Optic Nerve Rescue and Restoration, gathering scientists and researchers that first year to discuss the latest research in the emerging field of nerve regeneration. The International Think Tank, unique in its interdisciplinary format, has attracted established researchers in other fields to glaucoma and continues to generate new concepts that have greatly advanced the field.

Dr. Ritch has co-authored or edited seven textbooks and over 1,300 medical and scientific papers and other writings. He has trained over 120 clinical and research fellows. He is the recipient of numerous awards. One of the three organizers of the first annual World Glaucoma Day in 2008, he has organized meetings, established teaching programs and helped to modernize ophthalmology in Thailand, Malaysia, the Philippines, Laos, Myanmar and other countries in Asia.

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Governor Paterson recently had his own personal experience with acute angle-closure glaucoma. “I was extremely lucky – I had world-class treatment and fully recovered,” he said. “Without that immediate attention, I could have suffered irreversible damage – and this is what makes the work of The Glaucoma Foundation so important.”

Also honored at the Ball was TGF’s founder, Dr. Robert Ritch, who received TGF’s first Award for Excellence and Innovation in Glaucoma. On hand for the festivities were 350 corporate and private friends of the Foundation.

The $600,000 generated from the Ball supports TGF’s innovative research initiatives. Proceeds also help sustain TGF’s efforts to educate the public about the need for routine testing to detect the disease in its earliest stages.
Diagnosing Glaucoma

Your eye doctor has a variety of diagnostic tools which aid in determining whether or not you have glaucoma – even before you have any symptoms. Here is a summary of these tools and what they do.

The Tonometer
The tonometer measures the pressure in your eye. Your doctor places a numbing eye drop in your eye. Then you sit at a slit-lamp, resting your chin and forehead on a support that keeps your head steady. The lamp, which lets your doctor see a magnified view of your eye, is moved forward until the tonometer, a plastic prism, barely touches the cornea to measure your IOP. The test is quick, easy and painless.

The Pachymeter
The pachymeter measures central corneal thickness (CCT). As in tonometry, your doctor will first anesthetize your eyes. Then a small probe will be placed perpendicular to the central cornea.

CCT is an important measure and helps your doctor interpret your IOP levels. Some people with thin central corneal thickness will have pressures that are actually higher than when measured by tonometry. Likewise, those with thick CCT will have a true IOP that is lower than that measured. Measuring your central corneal thickness is also important since recent studies have found that thin CCT is a strong predictor of developing glaucoma in patients with high IOP.

Visual Field Test
Visual field is an important measure of the extent of damage to your optic nerve from elevated IOP. In glaucoma, it is the peripheral (side) vision that is most commonly affected first. Testing your visual field lets your doctor know if peripheral vision is being lost. There are several methods of examination available to your doctor; visual field testing has advanced significantly in recent years.

In computerized visual field testing you will be asked to place your chin on a stand which appears before a concave computerized screen. Whenever you see a flash of light appear you press a buzzer. At the end of this test, your doctor will receive a printout of your field of vision. New software has been developed to help your doctor analyze these tests as well as monitor progression of visual field loss over successive tests.

Ophthalmoscopy
Using an instrument called an ophthalmoscope, your eye doctor can look directly through the pupil at the optic nerve. Its color and appearance can indicate whether or not damage from glaucoma is present and how extensive it is. This technique remains the most important in diagnosing and monitoring glaucoma.

Imaging Technology
A number of new and highly sophisticated image analysis systems are now available to evaluate the optic nerve and retinal nerve fiber layer, the areas of the eye damaged by glaucoma. These devices include scanning laser tomography (e.g. HRT3), laser polarimetry (e.g. GDX), and ocular coherence tomography (e.g. older time-domain OCT or newer spectral-domain OCT). These instruments can help your doctor by giving a quantitative measure of the anatomical structures in the eye. Photographs of the optic nerve can also be useful to follow the progression of damage over time. Large databases have been established to compare an individual’s anatomic structures to those of

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**Research Grants Fall 2008**

**Alberto Izzotti, MD, PhD**
Professor, Department of Health Sciences
University of Genoa, Italy

*Analysis of Mitochondrion Involvement in the Pathogenesis of Primary Open-Angle Glaucoma*

Glaucoma patients might have a genetic predisposition, rendering them more susceptible to free radical-induced damage. However, the source of oxidative stress remains to be identified. The aim of the study is to identify the relationship between oxidative stress and mitochondrial damage. In this study, mitochondrial-related molecular endpoints will be tested in the trabecular meshwork, the tissues involved in the regulation of aqueous humor outflow from the anterior chamber. Obtained data will be useful to clarify the interplay among different processes during primary open-angle glaucoma pathogenesis with particular reference to the sources of endogenous oxidative stress.

**Tatjana C. Jakobs, MD**
Assistant Cell Biologist, Department of Neurosurgery Research
Massachusetts General Hospital, Boston, MA

*Single-Cell Imaging of Optic Nerve Astrocytes in Glaucoma*

Ganglion cells are the only neurons in the retina that send axons to the brain via the optic nerve. Glaucoma leads to a progressive and irreversible loss of these cells, thereby severing the connection of an otherwise functional retina with the brain. Recent evidence suggests that a non-neural cell type in the optic nerve, astrocytes, might play an active role in the disease. Using a transgenic mouse strain in which astrocytes are labeled with a fluorescent protein and IOP has been increased, this project will follow damage in the optic nerve, especially during early stages of the disease. The goal is to visualize individual astrocytes in more detail than has been possible before.

**Christopher Kai Shun Leung, MD, MB ChB, BMedSc, MSc**
Assistant Professor, Ophthalmology and Visual Sciences
University Eye Center, Hong Kong Eye Hospital

*In Vivo Imaging of Retinal Ganglion Cells – A New Model to Study Neuroprotection in Glaucoma*

The goal of this project is to investigate the use of a novel in vivo imaging technique to monitor the longitudinal profile of retinal ganglion cell (RGC) damage in glaucoma and to study their response to a neuroprotectant, brain-derived neurotropic factor (BDNF). An experimental model of glaucoma is induced in a strain of transgenic mice (Thy-1 CFP) that express cyan fluorescent protein (CFP) under the control of a Thy-1 promoter. Using a modified confocal scanning laser ophthalmoscope, RGC damage is detected as loss of fluorescent signals. BDNF is considered to be neuroprotective if it could either prevent the decrease of Thy-1 CFP expression or increase the expression of Thy-1 in fading RGCs. This imaging model offers a unique opportunity to monitor RGCs longitudinally and non-invasively, and will provide a new paradigm to study neuroprotection in glaucoma.

**Keith R.G. Martin, MA, DM, MRCP, FRCOphth**
University Lecturer and Consultant in Ophthalmology
Cambridge Centre for Brain Repair, UK

*Does Tau Dysfunction Play a Role in Glaucoma?*

Exactly how and why nerve cells die in glaucoma is not yet fully understood.
Previous work suggests that blockage of the transport of survival factors from the brain to retinal neurons contributes to cell death in glaucoma. Similar transport problems occur in other neurodegenerative conditions such as Alzheimer’s and multiple sclerosis. In these diseases, dysfunction of a protein called tau contributes to disrupted cellular transport. Tau is a small protein that stabilizes the tracks along which motor proteins transport their cargo (e.g. neuronal survival factors), much like cross ties keep railroad tracks firmly in place. There is strong preliminary evidence that tau dysfunction occurs in experimental glaucoma. This is exciting because drugs that modulate tau are available, including lithium and also newer agents with more favorable side-effect profiles. Investigators will test whether these drugs reduce neuron death in glaucoma and help to preserve sight.

Michael Walter, PhD
Professor & Chair, Medical Genetics
University of Alberta, Edmonton, Canada

Development of a Functional Assay for WDR36
(Renewal)
Finding the genes that cause glaucoma is the first step in improving early diagnosis and treatment. WDR36 has been proposed as a new primary open-angle glaucoma gene, but its role in the disease is controversial. While a number of nucleotide changes of WDR36 have been found in elevated frequency in glaucoma patients, proof that these alterations are disease-causing mutations awaits demonstration that these alterations result in actual defects in WDR36 function. This group developed an assay to test the consequences of these DNA sequence changes and found that WDR36 mutations alter cellular processes, but only when a second gene is also mutated. They will now test if mutations of this second gene also cause glaucoma, and will investigate the cellular processes in which both genes are involved to determine the role of such processes in glaucoma.

Free Online Glaucoma Support Groups
Are you interested in joining an online email-based glaucoma support community? More than 700 glaucoma patients – young and older – are currently members of TGF online groups that help them understand their disease and learn how to manage it over their lifetime. The Glaucoma Foundation sponsors three different free online support groups, each hosted by Yahoo! Groups. There are groups for young patients, for caregivers of young children with glaucoma, and for adult patients. One may be just right for you!

Young and Under Pressure
YUP stands for “Young and Under Pressure.” This online support community makes it possible for teens and young adults under 30 with glaucoma to communicate with their peers, share their stories and experiences, and offer support through online discussions.
To join email:
yup-subscribe@yahoogroups.com

YUP Parents
YUP Parents was created to give the caregivers of young children with glaucoma their own online support forum. YUP Parents helps family members cope with the daily challenges of raising a child with glaucoma by providing an outlet where they can discuss surgeries and treatments, doctors, and other issues and experiences specific to childhood glaucomas.
To join email:
yup_parents-subscribe@yahoogroups.com

APUP
APUP, “Adult Patients Under Pressure,” was created to give adult patients with glaucoma a forum to discuss and share their stories and experiences, as well as offer each other support through online discussions.
To join email:
apup-subscribe@yahoogroups.com

WE HOPE YOU’LL SIGN UP TODAY!
New England Chapter

On Saturday, October 4, David S. Walton, MD, world renowned pediatric glaucoma specialist, gave a presentation. Dr. Walton, who travels the world to treat children in their home environment, emphasized the importance of cultural sensitivity as well as medical and psychosocial considerations in successful pediatric glaucoma management.

On Saturday, October 28, NEC hosted a panel discussion with Dina Rosenbaum, Marketing Director, Carroll Center for the Blind, who discussed reading aids and services which are available to patients who experience difficulty reading. The other two panelists, Lynda Ketcham, Social Worker, and Christine Finn, Pharmacist, both work at the Massachusetts Eye and Ear Infirmary. Lynda stressed the importance of patient access to glaucoma treatment and shared a method for evaluating a doctor and his staff’s responsiveness to patient needs. Christine described the families of glaucoma medications, and provided information about the financial aid programs offered by the pharmaceutical companies. To obtain copies of either Lynda’s or Christine’s presentations, please e-mail: cduffek@glaucomafoundation.org.

On January 24, Louis Pasquale, MD, Co-Director, Glaucoma Service, Massachusetts Eye and Ear Infirmary, talked about “Who Gets Glaucoma and Why: Results of a Large Population Study.” In addition, as Principal Investigator of a new study, he talked about his hopes, through this study, to find genetic markers associated with primary open angle glaucoma.

Look for upcoming New England Chapter activities on the The Glaucoma Foundation website. Any patient, family member or friend of a patient with glaucoma is welcome to attend our meetings.

For information about the New England Chapter please e-mail cduffek@glaucomafoundation.org.

New York City Chapter

Date: April 18, 2009 at 11:00 am
Topic: Medication – Its Contents and Discontents

Date: May 16, 2009 at 11:00 am
Topic: Advances in Diabetic Retinopathy and Age-related Macular Degeneration

All workshops are free to the public and are held at: New York Eye and Ear Infirmary – 310 East 14th Street, NYC

Create a Lasting Legacy

The Glaucoma Foundation has been privileged to be the recipient of bequests from friends as well as other individuals, not previously known to the Foundation, who shared our goal of eradicating blindness from glaucoma and sought out the Foundation as a way to support that mission.

Won’t you consider including The Glaucoma Foundation in your Will? Your support through a testamentary gift will help us fund cutting edge innovative research that can lead to new treatments and a cure for glaucoma. It will also help us fulfill our mission to reach out and educate the public about the disease, the need to detect it early and new developments.

While surprises are nice and you don’t have to let us know that you have made a bequest, the knowledge of your bequest gives TGF greater confidence knowing that necessary financial resources will be available to continue the important work that we do. We also value the chance to thank you personally.

There are various available options to include The Foundation in your Will. You may designate a specific dollar amount; leave a percentage of your estate, to insure that your beneficiaries are not affected by changes in the size of your estate; or leave the residue of your estate after providing for family and friends.

Your professional advisor can help you weigh the benefits of various forms of giving.

To let us know of your intent to include The Glaucoma Foundation in your Will and obtain a confidential Declaration of Intent, or to discuss other gift options, please contact Scott Christensen by phone at 212-285-0085 or by email at info@glaucomafoundation.org.
**New Board Member**

**Rutledge Ellis-Behnke, PhD**

Rutledge Ellis-Behnke is Associate Director of the Technology Transfer Office at the University of Hong Kong, as well as Professor at the University’s Li Ka Shing Faculty of Medicine; Department of Anatomy; State Key Lab for Brain and Cognitive Sciences; and Research Centre of Heart, Brain, Hormone and Healthy Aging. He is also a Research Affiliate in the Brain and Cognitive Sciences department at MIT. His primary interest is using nanobiotechnology to reconnect disconnected parts of the central nervous system (CNS).

A member of TGF’s Scientific Advisory Board, Dr. Ellis-Behnke most recently served on the organizing committee for TGF’s 2008 International Scientific Think Tank.

Professor Ellis-Behnke received his PhD in Neuroscience from MIT, BS from Rutgers University and graduated from Harvard Business School’s International Senior Manager’s AMP Program. Prior to pursuing his PhD, Ellis-Behnke held various management positions.

He is Associate Editor of Neurology for the journal Nanomedicine: Nanotechnology, Biology and Medicine. He is a member of the China Spinal Cord Injury Network and numerous professional societies.

Technology Review named his “Nanohealing” one of the “Top 10 Emerging Technologies of 2007.”

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**New Member of TGF Medical Advisory Board**

**Robert D. Fechtner, MD**

Robert D. Fechtner, MD, is Professor of Ophthalmology and Director, Glaucoma Division, at the Institute of Ophthalmology and Visual Science, UMDNJ—New Jersey Medical School in Newark, New Jersey. He received his bachelor of science and medical degrees from the University of Michigan School of Medicine.

Dr. Fechtner completed his residency at Albert Einstein College of Medicine in New York. A fellowship in glaucoma followed at the University of California, San Diego. He has published over 70 articles and chapters and is on the editorial board of Journal of Glaucoma.
Diagnosing Glaucoma... continued from page 7

other patients in the same age group. This software and technology are developing rapidly and show great promise. However, they have not yet evolved to replace ophthalmoscopy, where the doctor looks directly at the optic nerve.

Gonioscopy
Your doctor may perform a gonioscopy to closely examine the trabecular meshwork and the angle where fluid drains out of the eye. After dilating and numbing the eye with anesthetic drops, the doctor places a special type of hand-held contact lens, with mirrors inside, on the eye. The mirrors enable the doctor to view the interior of the eye from different directions. In this procedure, the doctor can determine whether the angle is open or narrow. Individuals with narrow angles have an increased risk for a sudden closure of the angle, which can cause an acute glaucoma attack. Gonioscopy can also determine if anything, such as abnormal blood vessels or excessive pigment, might be blocking the drainage of the aqueous humor out of the eye.