Gala Evening Raises Funds for The Foundation

In the elegant setting of New York’s Pierre Hotel, 325 private and corporate supporters of The Glaucoma Foundation gathered on December 5th to attend the 21st Annual Black & White Ball.

The gala showcased the important work of The Foundation and raised nearly $700,000 to carry out TGF’s crucial research and education initiatives. Christopher Gardner, the subject of the hit film “The Pursuit of Happyness,” based on his autobiography, was honored with the 2007 Kitty Carlisle Hart Award of Merit for Lifetime Achievement. Presented personally by Ms. Hart since 1999, the award was presented this year in her memory by Ms. Hart’s daughter, Dr. Catherine Hart, and her son, Chris Hart. The black tie event was emceed by CBS-TV personality, Dave Price.
Dear Friends:

Fall is traditionally the busiest season in TGF’s year and 2007 was no exception. In September, we hosted our 14th Annual Scientific Think Tank, at which experts from different scientific disciplines come together to share their research and apply their expertise to the challenges of glaucoma. This year, as you will read, the focus was on ultra-high resolution imaging techniques for the eye, and how advances in nanotechnology can further enhance these important diagnostic tools in the years ahead.

To close out 2007, we held our Twenty-First Annual Black and White Ball, The Foundation’s largest fundraising event of the year. On that elegant and festive occasion we were proud to honor Christopher Gardner, the subject of the successful movie “The Pursuit of Happyness,” whose exceptional life story carries a lesson for us all.

The Foundation is also increasingly involved with the broader glaucoma community to achieve our goals – including patient advocacy. Last fall we co-sponsored a major conference in the nation’s capital that we hope will have a positive impact on glaucoma patients’ access to screening and treatment covered by private insurers.

Globally, several members of TGF’s leadership serve on the board of the World Glaucoma Patient Association (WGPA), which helps establish and encourage collaboration among patient support groups worldwide. I am pleased to be the current president of that organization and both Dr. Robert Ritch, our Medical Director, and Dr. Gregory Harmon, our Chairman, sit on WGPA’s board. March 6th has been designated World Glaucoma Day to raise global awareness of the global toll of this disease that afflicts 67 million people worldwide.

Along with Foundation news, this issue features several 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, which we are publishing more frequently.

All these initiatives would not be possible without your valued support. The Glaucoma Foundation extends a sincere ‘thank you’ to each of the 13,000 individuals who contributed to our work in 2007. We are very grateful to each and every one of you and hope your support will continue.

Sincerely,

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

Questions answered by:

Dr. James Tsai
Robert R. Young Professor and Chair
Department of Ophthalmology and Visual Science
at Yale University School of Medicine

I have asthma: will my inhaler medication affect IOP?

If you use a steroid inhaler, it may cause elevated IOP with long-term use. Some medicines (like beta-blockers used for treating high blood pressure and glaucoma; aspirin; and nonsteroidal anti-inflammatory drugs) can interfere with asthma medicines or even cause asthma attacks. Be sure to tell your doctor about all medicines that you take, including over-the-counter ones.

Is LASIK surgery safe for glaucoma patients and people at risk for glaucoma?

LASIK, a form of refractive surgery, can be an option for a patient with glaucoma, particularly if the intraocular pressure (IOP) is well controlled and the glaucoma is mild. During LASIK, there is a brief, but significant, rise in IOP. The refractive surgeon may prefer PRK (another form of refractive surgery) over LASIK for patients with glaucoma because PRK does not involve a rise in IOP during the procedure.

In both LASIK and PRK the cornea is thinned. This may result in a misreading of IOP because the instruments used to measure IOP underestimate eye pressure in a thinner-than-average cornea. Following LASIK or PRK, a glaucoma patient must be aware that future measurements of IOP may need to be adjusted to determine a true reading. Knowing the “true IOP” will ensure that the glaucoma treatment is still effective and that eye pressure is adequately controlled. An experienced glaucoma specialist will be able to adjust to the IOP measurements according to the patient’s central corneal thickness (CCT). It is important that the eye doctor be aware that the glaucoma patient has had refractive surgery in the past, and that the IOP may be underestimated.

What over-the-counter (OTC) medications are safe for glaucoma patients?

There are various OTC drugs that can cause dilation of the pupil and suddenly cause angle-closure attacks, and/or promote the development of chronic angle-closure in susceptible patients with very narrow angles. Drugs prescribed for conditions as diverse as depression, allergy and systemic hypertension can cause papillary dilation and result in angle-closure in patients with untreated narrow angles. It does not apply to patients with open-angles or patients whose narrow angles have already been treated.

We recommend asking your glaucoma specialist/ophthalmologist before taking any drug that has “warnings” about usage in people with glaucoma. Glaucoma is a group of different diseases and what is best for one patient may not work for another. Only a doctor who examines your eyes can determine the most appropriate treatment for you or answer questions about your specific condition. It is also a good idea to discuss possible drug interactions with your pharmacist.
High resolution imaging of the eye is a major breakthrough that, according to the 55 participants attending The Glaucoma Foundation’s 2007 Scientific Think Tank, is redefining our ophthalmic horizons. Today it is understood that glaucoma is a progressive disease of the optic nerve, with visual field loss attributed to the degeneration of retinal ganglion cells and their axons (nerve fibers). Imaging devices that can quantitatively assess the structure and integrity of the optic nerve, retina and retinal nerve fiber layer are crucial to early diagnosis of glaucoma and monitoring responses to therapy.

At the two-day interdisciplinary Think Tank in September, researchers, clinicians, biomedical engineers and neuroscientists from eight countries gave presentations about state-of-the-art imaging technology, going beyond diagnostic tools that have made it to the mainstream to discuss what’s new in research and development of devices that incorporate cutting edge optics, microtechnology and nanotechnology.

Several participants reported on recent advances in Ocular Coherence Tomography (OCT) that provide much clearer images of the macula; topographic images of the optic nerve and measurement of the thickness of the retinal nerve fiber. The newest ultra-high resolution and high speed OCT, 500 times faster than standard OCT, provides a wealth of new data. The limitation of the OCT technology remains its inability to measure changes in the retinal fiber thickness over a period of time. Think Tank participants also spoke of the need for better ways to analyze and share the new data.

“Our Think Tank participants are at the vanguard of exploration,” says Robert Ritch, MD, Chair of the Think Tank and TGF’s Medical Director. “With these and other advanced imaging technologies, we will be able to more precisely diagnose and predict the development of visual field abnormalities in at-risk individuals and better assess clinically significant change in a patient’s condition over time.”
Central to the 2007 Think Tank program were presentations about new techniques that can image functional changes before anatomic consequences of glaucoma arise. Among them:

- Devices that measure ocular blood flow velocity and indicate differences between individuals with glaucoma and those without. Researchers have found reduced velocity in the arteries and vein of the retina of glaucoma patients that may be secondary as well as contribute to glaucomatous damage.

- DARC (Detection of Apoptosing Retinal Cells), a new method that uses advanced optical techniques to image and track the process of nerve cell death in real time. DARC has detected very early glaucomatous changes, thus enabling rapid and objective assessments of potential sight-saving strategies.

- New Magnetic Resonance Imaging (MRI) techniques that can measure changes in neuronal activity and could give early indications of positive responses to treatments for nerve cell regeneration.

- New techniques in microscopy that take measurements at the cellular level and can detect nanometer-scale motions in living cells.

- Array Tomography, a new imaging method which looks at molecular changes and holds promise in advancing the study of neural circuits and their disorders.
Types of Glaucoma Surgery

Surgery for glaucoma falls primarily into two categories – laser surgery and traditional, or cutting, surgery. Within each category, there are different procedures available and others being developed. Here are some of the more common surgical procedures used broadly by physicians today.

Laser Surgery

A laser is a highly concentrated beam of light that is often used to treat glaucoma. For some patients, laser surgery may be one of the first steps recommended by their doctor. For others, laser surgery may be suggested if medication does not reduce the intraocular pressure (IOP) to a sufficient degree, or if medication fails to maintain an adequately controlled IOP over time. Doctors use laser light in a variety of ways to treat glaucoma. During laser surgery, the eye is numbed so that there is little or no pain.

Argon Laser Trabeculoplasty (ALT)

Argon laser trabeculoplasty (ALT) is a treatment that was first introduced in the 1970s and has proven to be effective for different types of glaucoma. It is most successful for patients with primary open-angle glaucoma who have not had cataract surgery and/or patients who have pseudoexfoliation (exfoliation glaucoma). In the ALT procedure, the surgeon directs a laser beam into the trabecular meshwork, which is the primary fluid drainage region of the eye. The trabecular meshwork is located in the angle of the eye, where the cornea meets the iris. The effect is increased drainage of aqueous fluid out of the eye, thereby lowering the IOP.

The procedure is usually completed in the doctor’s office or as an out-patient procedure, with the patient seated at the laser, and a lens applied to the surface of the eye to allow the laser applications into the trabecular meshwork. Usually, half the fluid channels are treated first. While no medication or procedure can reverse glaucoma, an ALT works to reduce IOP in the great majority of cases for a period of time. A second ALT may be appropriate after several years; ALT may be used alone or in combination with medications.

Selective Laser Trabeculoplasty (SLT)

Approved by the FDA in 2001, SLT is a type of treatment that uses a combination of frequencies allowing the laser to work at very low levels. It treats cells selectively and leaves portions of the trabecular meshwork intact. Unlike ALT, SLT appears to produce no superficial scarring of the trabecular meshwork. As a result, SLT has the theoretical potential for being repeated as needed. SLT may be an alternative for patients who have been treated unsuccessfully with ALT surgery or with pressure lowering medication. SLT has been demonstrated to be effective in lowering IOP in patients with open-angle glaucoma.

Laser Peripheral Iridotomy (LPI)

Developing since the 1970s, LPI is a procedure in which laser energy is used to make an opening through the iris, allowing aqueous fluid to flow from behind the iris directly to the anterior chamber of the eye. This allows the aqueous to bypass its normal route. LPI is the preferred method for managing a wide variety of angle-closure glaucomas that have some degree of pupillary block. The procedure is usually completed in the office or as a brief out-patient procedure.
When medications and laser therapies do not lower IOP sufficiently, doctors may recommend a procedure called filtration surgery, also known as a trabeculectomy, which employs conventional surgical techniques and is used in both open-angle and closed-angle glaucomas. The surgeon creates a sclerostomy, a passage in the sclera (the white part of the eye), for draining excess eye fluid. A flap is created that allows fluid to escape, but which does not deflate the eyeball.

A small bubble of fluid called a “bleb” often forms over the opening on the surface of the eye, which is a sign that fluids are draining out. Occasionally, the surgically created drainage hole begins to close and the IOP rises again. This happens because the body tries to heal the new opening, as if it was an injury. Anti-wound healing drugs help slow down the aggressive healing response at the site. About 50 percent of patients no longer require glaucoma medications for a significant length of time after surgery. 35 to 40 percent of those who still need medication have better control of their IOP.

A trabeculectomy is usually an out-patient procedure. The number of post-operative visits to the doctor varies depending on patient circumstances. Some activities, such as driving, reading, bending or heavy lifting must be limited for a two to four week period. Full recovery is usually expected after two to four weeks.

**Shunt Devices**

Despite the success associated today with filtration surgery, there is a significant minority of patients whose IOP cannot be controlled with traditional surgery. Glaucoma drainage devices offer hope for these patients. Aqueous shunts are implantable drainage devices in which a small tube extends into the anterior chamber of the eye. The tube is connected to one or more plates, which are sutured to the surface of the eye, usually not visible under the eyelid. Fluid is collected on the plate and then is absorbed by the tissues in the eye. This surgery is usually an out-patient procedure, most often with local anesthesia.
Research Grants

Fall 2007
TGF has approved the funding of three new innovative research projects that focus on better understanding several types of glaucoma.

Markus H. Kuehn, PhD
Assistant Professor, Ophthalmology and Visual Sciences
The University of Iowa, Iowa City

Genetic Characterization of a Novel Canine Model of Heritable Angle Closure Glaucoma

In primary angle closure glaucoma (PACG), the iris blocks the drainage of fluid from the eye through the trabecular meshwork. In the US, PACG accounts for about 10 percent of glaucoma, but in other countries, particularly in Asia, it represents the majority of cases. To date, genes associated with PACG have not been identified. The researchers recently identified a pedigree of Basset hounds afflicted with hereditary PACG, with features similar to those observed in humans. Preliminary genetic studies point to small regions of their genome which most likely contain the disease-causing mutation. The proposed project seeks to identify this mutation. Discovery of the responsible gene will enhance understanding of how this disease develops and may aid in early detection of at-risk persons and improve the ability to evaluate the effectiveness of treatment regimens.

Paulo D. Koeberle, PhD
Assistant Professor, Division of Anatomy, Department of Surgery
University of Toronto, Ontario, Canada

The Role of Extracellular Matrix Interactions in Retinal Ganglion Cell Survival and Growth Factor Neuroprotection

Glaucoma is a progressive disease that results in the programmed cell death of retinal ganglion cells (RGCs). A number of naturally occurring proteins known as neurotrophic factors have been shown to promote RGC survival and regeneration. The therapeutic use of neurotrophic factors has been limited due to a number of factors, including the loss of effectiveness when they are delivered for prolonged periods. Dr. Koeberle’s research suggests that one factor contributing to the loss of effectiveness is the activation of enzymes that degrade the extracellular matrix surrounding nerve cells. This study will identify those critical matrix components and the signaling cascades that help promote cell survival in concert with signaling pathways that are activated by neurotrophic factors. It is hoped that this will lead to the development of new avenues for using neurotropic factors as effective therapeutics for glaucoma.

Mansoor Sarfarazi, PhD
Professor of Human Molecular Genetics
University of Connecticut Health Center

Genome-Wide Association Study of Normal-Tension Primary Open Angle Glaucoma

While elevated intraocular pressure (IOP) is the most important known risk factor for glaucoma, approximately 30 percent of primary open-angle glaucoma in the United States can be accounted for by non-IOP dependent risk factors, most commonly referred to as normal tension glaucoma (NTG). Dr. Sarfarazi’s group previously identified a defective gene that is primarily involved with the inherited forms of NTG. But for the majority of
Research Grants continued

cases no specific gene is known. This study will use a subgroup of NTG cases and a similar number of matched control subjects and scan the genome with over 1.8 million land marked DNA markers. It is anticipated that a specific DNA marker will be identified that is highly associated with the NTG phenotype. Identification of such a DNA marker will lead the researchers to a specific gene or a known biological pathway, providing an early method of detection for NTG and promoting subsequent development of an effective medical therapy.

Balwantray Chauhan, PhD
Dr. Chauhan is a Professor and Research Director of Ophthalmology & Visual Sciences and Professor of Physiology & Biophysics at Dalhousie University in Halifax, Nova Scotia. He holds the first endowed Chair in Vision Research at Dalhousie and was instrumental in establishing the university’s Retina and Optic Nerve Research Laboratory. Dr. Chauhan is the principal investigator of the Canadian Glaucoma Study, a just concluded long-term and broad project. His clinical research interests are in the diagnosis of early changes in the visual field and optic nerve as well as experimental models of optic nerve damage.

Philip P. Chen, MD
Dr. Chen is an Associate Professor in the Department of Ophthalmology at the University of Washington in Seattle. He received his undergraduate degree with honors from Stanford University and his MD from Yale University School of Medicine. Dr. Chen completed his internship at St. Vincent’s Hospital & Medical Center in New York, his residency at Doheny Eye Institute in Los Angeles, and his glaucoma fellowship at Bascom Palmer Eye Institute in Miami. His research interests include diagnosis, treatment methods (medical and surgical), and outcomes of treatment of open-angle and angle-closure glaucoma, and anterior segment surgery.

David S. Greenfield, MD
Dr. Greenfield is a Professor of Ophthalmology at the Bascom Palmer Eye Institute, University of Miami School of Medicine, practicing in Palm Beach Gardens, Florida. His research interests include optic disc and retinal nerve fiber imaging in glaucoma, bleb-related ocular infection, normal-tension glaucoma, and complex glaucoma filtration surgery. Greenfield received his undergraduate and MD degrees from New York University. His residency was completed at New England Eye Center at Tufts University and his fellowships in both glaucoma and neuro-ophthalmology at Bascom Palmer Eye Institute. He is actively involved in clinical and pharmaceutical research.

David S. Walton, MD
Dr. Walton is a Clinical Professor of Ophthalmology at Massachusetts Eye and Ear Infirmary, Harvard Medical School. He received his MD from Duke University School of Medicine and completed his ophthalmic training at the Massachusetts Eye and Ear Infirmary. Dr. Walton is boarded in both pediatrics and ophthalmology and has a unique practice that contains a high percentage of childhood glaucoma cases. His research interest focuses on the mechanisms of childhood glaucomas.
TGF Co-Sponsors Medical Conference in Washington, DC

On October 18, The Glaucoma Foundation and the Potomac Institute for Policy Studies convened a major policy conference to address the publication of a report by the United States Prevention Services Task Force (USPSTF) that states that there is insufficient scientific evidence to support the practice of screening for glaucoma in the U.S. population.

Hon. Louis Sullivan, MD, former Secretary of the Department of Health & Human Services (HHS); current Deputy HHS Secretary, Tevi Troy; Senator Norm Coleman; Hon. Mark McClellan, MD, PhD, former Commissioner of the FDA and former Medicare Administrator; and members of the patient and medical community participated in the day-long session to consider the scientific evidence countering the USPSTF report dismissing the vital role of glaucoma screening. TGF Board member, Debora Grobman, presented from the patient’s advocacy perspective and TGF President and CEO, Scott Christensen, delivered remarks as well.

The conference was convened because the task force had previously declined to consider public comments presenting new information, and the speakers highlighted the urgent need for review of the evidence before patients might be further harmed. Said Dr. Sullivan, Honorary Chairman of the conference: “We in the medical and scientific communities owe it to the American people to develop a unified federal policy concerning the management of this serious eye condition.”

At the conclusion of the conference, Dr. Ned Calonge, Chair of the task force, pledged to recommend to his task force members that they take the extraordinary step of re-evaluating their findings. Christensen applauded the work of the conference participants in moving toward a consensus on glaucoma screening policy, which will have an enormous benefit to the millions of Americans at-risk for developing the disease.

We Value Your Giving!

While headlines about charitable giving focus on ‘mega-gifts’, it is notable that nationally, according to Giving USA, the percentage of households with incomes under $100,000 that give to charities is higher than the percentage who vote or read a Sunday newspaper.

The Glaucoma Foundation’s experience reflects this fact – we are immensely proud and grateful that the number of individuals who donated to TGF in 2007 topped 13,000. We value your trust that we are working to meet the challenges of finding new treatments and one day eliminating blindness from glaucoma.

Targeted growth requires increased support. It is your contributions – large and small – that enable us to intensify our research efforts and launch new education initiatives. In the research realm, a TGF grantee recently underscored the importance of private foundations in the current climate of government funding for health: in the past three years, the budget of the National Institutes of Health has increased less than the rate of inflation. “We have to make up the difference,” he says. We are counting on you to help us do that.
WE NEED YOUR SUPPORT

Yes, I support The Glaucoma Foundation’s work in pursuit of new treatments and cures for glaucoma. Enclosed is my tax-deductible gift of:

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* In order to locate additional supporters, The Foundation occasionally trades mailing lists with other non-profit organizations. Checking this box will ensure that The Glaucoma Foundation never trades your address. [45-2008]
TGF Board Members
Present to Area Organization about Eye Health

On Thursday, September 20, 2007, 80 employees from the law firm of Kramer, Levin, Naftalis and Frankel, LLP attended a “Lunch and Learn” lecture featuring glaucoma patient, Debora Grobman, and glaucoma specialist, Dr. Jim Tsai. The well received lecture, which also featured a question and answer segment, addressed glaucoma and the importance of being an active participant in your ophthalmic health. Grobman, a recently retired Kramer Levin attorney, and Tsai, the Chairman of the Department of Ophthalmology at Yale University, are both members of the TGF Board of Directors.

More lectures have been planned for the future. If your company hosts similar lunchtime series and is interested in having Ms. Grobman and a TGF physician give a presentation, please contact Clara Cullen at The Foundation at 212.285.0080.

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