

Eye to Eye

Summer 1996

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Living with Glaucoma

I just returned from a trip to Prague. I was there to visit a mill where the tradition of making paper by hand has survived time and technology. It is one of the few places in the world where hand-dipped paper can still be found. I own this mill, as well as a small U.S.-based company that uses the paper to publish hand-printed, limited edition books. We produce only a few books a year, all numbered and signed by famous authors. The subjects of the books range widely -- from a book by Walter Cronkite on the moon landing, to a photogravure portfolio by artist William Wegman, and most recently, a new novel by J.P. Donleavy, author of *The Gingerman*. I started my business while I was still in high school. It was my enthusiasm for books that drew me to the profession.

I loved learning about printing and binding. By the time I entered college, I was publishing one book a year during my summer holidays. Over time, my work gained the attention of collectors who have taken a keen interest in these books. But, this isn't a story about my success in business. It is a story about how glaucoma -- a disease that can cause blindness -- has played a major role in my work and life.

I was just a few months old when my parents found out I had glaucoma. My pediatrician discovered it during a routine exam. At the time, my intraocular pressure was astronomical, and required immediate attention. I went through a series of surgeries, including goniotomies, and treatments, such as eye drops, to bring my pressure under control. Finally, after a number of years, I had a trabeculectomy on one eye, and the other eye miraculously stabilized on its own after this procedure. I was seven years old at the time. The results were great, and my glaucoma remained under control for the next twenty years. I went for eye exams once or twice a year to ensure that my condition remained in check.

One year ago, my doctor discovered that my pressure was increasing. This time, I had two laser surgeries, one trabeculotomy, and treatments with eye drops, all to no avail. Ultimately, I had two trabeculotomies, which alleviated the pressure. The recent surgeries seemed much less complicated than my childhood experience. When I was a child, I remember being in the hospital for days after each procedure. This time, I arrived at the hospital in the morning and was released by that afternoon.

I see my doctor more often now to make sure that my pressure remains under control. I can't take my vision for granted, because it's very important to my livelihood. In many ways, my eyesight guided my career direction and contributed to my success. Unlike other children, I knew that I was lucky to be able to see. Reading became very important to me; I developed my love of books at an early age.

My prognosis today is positive, but I know that it could change at any time. That's why I still think about my vision constantly. Each procedure that I've undergone for glaucoma has a certain "life expectancy." That means that an old problem could reoccur, or a new problem could develop. When and if it does, I'll be prepared. I have tremendous

admiration and faith in my doctors. They will be aware of new treatments for glaucoma as science moves ahead to find ways to deal with this disease. In the meantime, I will be thankful that I have been blessed with excellent near-sighted vision that enables me to focus on the details of design, typography and printing. And, I will continue to use it to provide the world with beautiful, interesting books.

Doctor, I have a question

by Robert Ritch, M.D.
Medical Director, The Glaucoma Foundation
Professor of Clinical Ophthalmology and Chief of Glaucoma Service,
New York Eye and Ear Infirmary

Q: At times you hear people say "terminal cancer." Do you think there is such a thing as "terminal glaucoma"? By this term I mean a point beyond which all treatment seems to fail and there is no hope to stay or slow significantly the damage from glaucoma. You probably have seen cases of this type. I would appreciate your comments.

A: No. There is always something to try until all light perception is lost. No matter how little vision is left, glaucoma should be treated aggressively enough to try to preserve that vision.

Q: I have some questions regarding two eye drops used to control glaucoma. I have read that timoptic and propine can have certain side effects.

My questions are:

- 1. If they are causing certain side effects can they be changed to a similar medication with less side effects? If the answer is yes, why is it then when I ask my eye doctor this question he says there is no difference with side effects?**
- 2. How can it be determined that it is the medication causing the side effects and not something else?**
- 3. Will there someday be new medications that will take the place of these medicines with no side effects and a longer duration time to eliminate taking so many drops? I feel my eye doctor is only concerned with keeping my pressures down and not my general health.**

A: All medications can have side effects. Not all medications cause side effects in all people. Medications can cause side effects in some people,

but not others. Different medications have different side effects and also have different side effects in different people. If you have side effects with one medication, it makes sense to try a different medication. There are a number of different classes of medications marketed now for treatment of glaucoma. These include beta-blockers (timolol, metipranolol, levobunolol, carteolol, and betaxolol), alpha-agonists (apraclonidine), miotics (carbachol, pilocarpine, echothiophate), epinephrine compounds (epinephrine, dipivefrine), and carbonic anhydrase inhibitors (dorzolamide, acetazolamide, methazolamide). A prostaglandin analogue, latanoprost, will soon be coming to market also.

The only way to tell if a medication is causing side effects is to stop the medication and see if the side effects go away, then start the medication and see if the side effects come back, and then repeat this once again. Sometimes it is the preservatives in the medications rather than the medications themselves that cause the side effects. In such cases, it is possible to get preservative-free medication. See our brochure, "Doctor, I Have a Question", for a more extensive discussion of the side effects of medications.

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Latanoprost

by Robert Ritch, M.D.

Latanoprost recently received FDA approval. Marketed under the name "Xalatan" by Pharmacia & Upjohn, Inc., it lowers intraocular pressure up to 20-40% both in people without glaucoma and in glaucoma patients, even when measured 24 hours after dosing. In three randomized, double-masked, multicenter trials, latanoprost 0.005% once a day was as effective or more effective than 0.5% timolol twice a day. Side effects such as burning, stinging, blurred vision, itching, foreign body sensation, tearing, or eye pain occurred infrequently in these trials.

The mechanism of action of latanoprost is different from that of all other presently available glaucoma medications. It increases uveoscleral outflow, that is, outflow through the soft tissues of the front of the eye (iris and ciliary body). Uveoscleral outflow is normally a minor route of aqueous outflow, accounting for about 10% of outflow in human beings, while 90% goes through the trabecular meshwork. Thus, latanoprost should prove to have an impact in addition to that of all other classes of antiglaucoma medications, which might be used in conjunction with it.

There has been some publicity about the capacity of latanoprost to change eye color. In clinical trials, latanoprost produced an increase in iris pigmentation in 1-3% of patients and a possible increase in another few percent. Eyes prone to develop this complication typically are bicolored to begin with, the inner central portion of the iris (the sphincter) being brownish, and the remainder of the iris blue or green. In these cases, the peripheral iris darkens and the iris color becomes more uniform. The mechanism does not appear to be due to proliferation of melanocytes but rather to stimulation of melanin synthesis (melanogenesis) within iris melanocytes, so that the possibility of carcinogenesis appears most unlikely.

If you are interested in using latanoprost, you should consult your doctor.

Let's Get Acquainted with the Medical Support Network

Gregory K. Harmon, M.D.

Chairman, Medical Advisory Board, The Glaucoma Foundation

Member of the Board of Directors, The Glaucoma Foundation

Since 1990, Dr. Harmon has served as the Director of Glaucoma Services at The New York Hospital-Cornell Medical Center. Dr. Harmon graduated with Honors from Johns Hopkins University in 1978 and received his medical degree from The Mount Sinai School of Medicine in 1982. Following a medical internship at St. Luke's-Roosevelt Hospital, his ophthalmology training began at The New York Hospital. At Cornell, he completed both residency and glaucoma fellowship training between 1983 and 1986. Currently, he is the Director of Glaucoma Services at Cornell and is an Assistant Professor of Ophthalmology. Dr. Harmon is a Diplomate of The American Board of Ophthalmology and has served on the Medical Advisory Board of The National Association of Visually Handicapped (NAVH) since 1988. Dr. Harmon has particular interest in public education in the area of glaucoma. One of his projects involved the creation of national television and radio public service announcements (PSA's) concerning glaucoma, featuring Mrs. Kitty Carlisle Hart. To date, thousands of Americans have received free literature on glaucoma as a result of this single project.

Paul L. Kaufman, M.D.

Professor of Ophthalmology & Director of Glaucoma Services

University of Wisconsin

Paul L. Kaufman, M.D., is Professor of Ophthalmology and Visual Sciences and Director of Glaucoma Services at the University of Wisconsin Medical School, Hospital and Clinics, in Madison, Wisconsin. He has intensively studied the physiology, pharmacology, morphology, neural control and aging of the aqueous humor formation and drainage apparatus and of the accommodative mechanism of the eye, in human and sub-human primates, with the goal of understanding the pathophysiology of pressure regulation in the eye and developing more effective and safer drugs for the treatment of glaucoma. Dr. Kaufman has authored or co-authored over 170 scientific articles, 20 book chapters, and numerous invited reviews and editorials, and co-edited a major glaucoma textbook. He has served on advisory panels for the Federal government, private foundations, and pharmaceutical and medical instrument companies, and on the Board of Trustees/ Councilors of the two major vision research organizations. Dr. Kaufman was born and raised in New York City, where he also attended medical school after completing his undergraduate education in Boston. He served at the NIH for two years, then took his ophthalmology residency in St. Louis and research training in Uppsala, Sweden. He has lived in Madison since 1975, with his wife, the novelist Margaret George; their daughter Alison is a recent graduate of Harvard University.

From the Desk of the Executive Director

by John W. Corwin

Have you ever been to an eye doctor?

Many of our readers will think this question ridiculous. Yet, for some people, the answer is "no." Why is that?

Eye care is different from most health care. We all learn as children the importance of a regular general physical exam. Moreover, when something hurts, we seek medical attention to get well. But, as long as we can see well enough to function, it is not so obvious why we should go to an eye doctor. And glaucoma is the perfect example of something for which people often don't seek treatment, because it has no symptoms.

Which, of course, is precisely why regular eye exams are so important. The point was driven home for me recently when I attended a glaucoma screening conducted by The Foundation. Our screening program works like this: Volunteer doctors and other medical and administrative support staff spend a day at a company's office. Employees are notified in advance and sign up for free appointments. Employees receive a visual acuity test, the familiar eye chart, to find out if they need glasses. Then the pressure inside the eye is measured, since abnormally high pressure is a risk factor for glaucoma. Then the optic nerve itself is examined with a kind of flashlight called an ophthalmoscope. The employee is told if there is any cause for concern.

In this and other recent screenings, several people were found to have glaucoma. More striking is the fact that more than 20% of those screened were found to have one or more risk factors indicating they should pay attention to their eyes and be on the alert for glaucoma. The risk factors included family history of glaucoma, race, age, and myopia. Fifty percent of the glaucoma suspects were under the age of 45.

But the most surprising -- and, in a way, rewarding -- aspect of this screening was the revelation that so many of the participants had never been to any eye doctor. For them, this event brought them into contact with an important health service that could some day save their eyesight. Remember... half of the people who have glaucoma don't even know it.

Many people may have thought about obtaining an eye exam but don't know where to go. For referrals and other information, call us at 1-800-GLAUCOMA, or email us at glaucomafdn@interramp.com.

We are vigorously searching for cures to glaucoma, as illustrated in two articles elsewhere in this issue—None describes the recent meeting of the worldwide Scientific Think Tank on Optic Nerve Rescue and Restoration, and the other outlines recent research awards issued by The Foundation. Some day, we will be able to reverse optic

nerve injury and restore lost vision. But, for now, the best protection is early detection and treatment. Actually, it's the only way to preserve your vision...and to create our shared vision, a world without blindness.

The Glaucoma Foundation gratefully acknowledges the following doctors for donating their time to The Foundation's glaucoma screening program:

Jerome Finkelstein, M.D.

David Greenfield, M.D.

Gregory K. Harmon, M.D.

Steven Inker, M.D.

Howard Kushnick, M.D.

Patricia McLaughlin, M.D.

Robert Ritch, M.D.

The Glaucoma Foundation Welcomes Five New Board Members

Leonard N. Bernardo

President, Data Communiqué

Mr. Bernardo is President and sole owner of The Print Partnership, a firm he founded in 1991. In 1995, with two partners, he started Data Communiqué, a company that offers a full spectrum of design, print, database management, information dissemination, InterNet information flow, and, in the future, a mutual funds transfer agency. Mr. Bernardo's personal interests include patron status in The Manhattan Theatre Club, as well as active support of Gilda's Club and Cassidy's Place. Mr. Bernardo divides his time between his Manhattan apartment and his Connecticut residence.

Shelley Einhorn

Shelley Einhorn is a member of the Board of Visitors of the Syracuse University School of Social Work, a Board member of the First Avenue Playhouse in New Jersey, and a participant in the Volunteer Adult Literary Program of Monmouth County. In addition to these activities, Mrs. Einhorn's principal interest is in the production and funding of community theater. She holds a Bachelor of Arts degree in elementary education from Kean College and has taught remedial reading for several years. Mrs. Einhorn resides in New Jersey with her husband, Steven, and their two children, Stacy and Eric.

Donald Engel

Don Engel, who is 63 years of age and was born in New York City, is currently a Private Investor. He was a Managing Director of Drexel Burnham Lambert from 1979 to 1984. He was a consultant to Drexel from 1985 to 1990 and to Bear Stearns from 1991 to 1993. Mr. Engel has been a Director of many companies including Revlon Group Incorporated, Triangle Industries, Inc., Uniroyal Chemical, Stone Savannah River Pulp & Paper Corporation, Seminole Kraft Corporation, Rex-Nord Corporation, Banner Industries, Rex-PT Holdings, Ind., Andrews Group, Stone Forest Industries, and APL Corp.

Jeffery M. Liebmann, M.D., F.A.C.S.

Clinical Associate Professor of Ophthalmology,
Associate Director, Glaucoma Service, New York Eye & Ear Infirmary

Dr. Jeffrey Liebmann is Clinical Associate Professor of Ophthalmology at New York Medical College and Associate Director of the Glaucoma Service at the New York Eye and Ear Infirmary, where he is responsible for resident glaucoma education. He is a fellow of the American Academy of Ophthalmology and American College of Surgeons

and serves as Secretary of the New York Glaucoma Society. He is currently the Principal Investigator of the New York site of the National Eye Institute's Ocular Hypertension Treatment Study, a nationwide glaucoma research project sponsored by the National Institutes of Health. Dr. Liebmann is the author or co-author of over 120 medical and scientific papers, book chapters, and abstracts, and has lectured widely in the United States and abroad on glaucoma diagnosis and management.

John C. Moore

President, Humphrey Instruments

Mr. Moore is President of Humphrey Instruments, a division of Carl Zeiss, Inc. Prior to joining Humphrey Instruments, he was the Vice President and General Manager of the Carl Zeiss, Inc. Surgical Products Division. He joined Carl Zeiss, Inc. from Coherent Medical Group and Scientific Laser Division where he was the Vice President. Mr. Moore is a graduate of the University of Rochester and holds a Bachelor of Science degree in chemistry and general science.

3rd Annual Scientific Think Tank on Optic Nerve Rescue and Restoration

Scientists from around the world engaged in research aimed at restoring sight for the blind have agreed that "a new frontier" has been reached in their ability to develop techniques to combat glaucoma, as a result of the Scientific Think Tank sponsored by The Glaucoma Foundation. For the first time, leading scientific experts on glaucoma have reached a broad consensus about how to pursue the search for a cure to the disease, which affects 50 million people.

The common understanding emerged from the Third Annual Scientific Think Tank on Optic Nerve Rescue and Restoration, held in New York City on June 7-8. The Think Tank brought together more than 40 experts from the diverse fields of neurology, ophthalmology, toxicology, pathology, surgery, biomedical engineering, and pharmacology, from Japan, Israel, Britain, Canada, and the United States.

Glaucoma, the world's leading cause of preventable blindness, occurs when cells in the optic nerve die, preventing transmission of visual images from the retina to the brain. The nerve cells can be killed by excessive fluid pressure within the eye or by other factors such as toxins within the eye. When enough cells die, loss of vision results.

Think Tank participants spent two days exploring exactly how optic nerve damage occurs, how the cells die, and how they can be protected from the various factors which can harm them. There is accumulating evidence, according to Dr. Michal Schwartz, of the Weizmann Institute of Science in Rehovot, Israel, that damage progresses even if you remove the primary cause (such as pressure) of the optic nerve disease. The search is on to find a process for rescue of the neurons that escaped the primary damage and prevention of further cell and fiber death. Scientists believe that cells which have been damaged but not killed can be rescued and continue to function, and that drugs can be developed to protect healthy nerve cells from glaucoma. The conference also explored possibilities for optic nerve fiber regeneration, that is, regrowth of optic nerve cells.

"The unique value of this Third Annual Think Tank," said Dr. Robert Ritch, Medical Director of The Glaucoma Foundation and Chief of Glaucoma at The New York Eye & Ear Infirmary, "is that it brings together top researchers in the glaucoma world from diverse disciplines for a frank exchange of questions and information." Dr. Michael Belkin of the Sheba Medical Center at Tel Aviv University in Israel agreed. "If you can prolong the survival of the optic nerve cells, you can look to the prevention of blindness," Dr. Belkin continued, describing the latest research as "encouraging."

Until recently, treatment therapies have focused on the front of the eye, where eyedrops or surgery can reduce the pressure within the eye. The Think Tank has led to the recognition that a more direct approach of treating the optic nerve itself, located at the back of the eye, is now realistic. "We have reached a new frontier, in that we can now be reasonably confident that we will be able to develop back-of-the-eye therapies for

glaucoma," said Dr. Paul Kaufman, Director of Glaucoma Services at the University of Wisconsin-Madison. "We have the tools and much of the knowledge we need. We can now talk about how and when, not if."

According to Dr. Robert Weinreb, Director, Glaucoma Center at the University of California-San Diego, "there is increasing consensus among glaucoma experts that direct treatment of optic nerve fibers can enhance traditional pressure-lowering therapy as well as offer a new alternative for patients who have not responded to current treatments."

Scientists at the meeting were in general agreement that clinical trials can be designed which will shorten the time needed to develop and obtain approval for neuroprotective drugs. They also expressed the hope that some treatments under development for other nerve diseases, such as Parkinson's, stroke, epilepsy, dementia, and Alzheimer's, may turn out to be useful for glaucoma. "We are looking for the compound that will be effective with minimal side effects," said Dr. Schwartz.

1996 Think Tank Participants

Albert Aguayo, M.D.
Center for Research in Neuroscience
Montreal General Hospital Research Institute, Canada

Jorge A. Alvarado, M.D.
Director, Glaucoma Clinic
University of California, San Francisco

Michael Belkin
Professor of Ophthalmology
Goldschleger Eye Research Institute
Sheba Medical Center
Tel Aviv University, Israel

Sek Jin Chew, M.D., Ph.D.
Nottebohm Laboratory
Rockefeller University

Max Cynader, Ph.D.
Eye-Care Centre
Vancouver, British Columbia, Canada

Robert David, M.D.
Director, Glaucoma Clinical Research
Allergan Pharmaceuticals

Louis DeSantis, Ph.D.
Vice-President, Biological Research
Alcon Laboratories

Evan B. Dreyer, M.D., Ph.D.
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Harvard Medical School

David Greenfield, M.D.
Clinical Assistant Professor of Ophthalmology and Neurology
New York Eye & Ear Infirmary

William Hare, Ph.D.
Senior Scientist, Vision Sparing Team
Allergan Pharmaceuticals

Dan-Ning Hu, M.D.
Director, Tissue Culture Lab
The New York Eye & Ear Infirmary

Paul Kaufman, M.D.
Professor of Ophthalmology and Visual Science
Director of Glaucoma Services
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University of Wisconsin

Angela Kothe, M.D.
Director of Clinical Research for Visual Field Testing
Alcon Laboratories

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Manhattan Eye, Ear & Throat Hospital

Thomas O. Muldoon, M.D.
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New York Eye & Ear Infirmary

Robert Nickells, Ph.D.
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SUNY Health Science Center, Brooklyn
Michal Schwartz, Ph.D.
Weizmann Institute of Science
Rehovot, Israel
Robert Schumer, M.D., Ph.D.
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Yeni Yucel, M.D., Ph.D.
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Mt. Sinai Hospital
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Donald J. Zack, M.D., Ph.D.
Assistant Professor
Department of Ophthalmology
Wilmer Eye Institute, Johns Hopkins University Hospital

**3rd Annual Scientific Think Tank on Optic Nerve Rescue and Restoration
Conference Program**

Friday, June 7 -- NEUROPROTECTION

Session One

Michal Schwartz -- Introduction to the Concept of Neuroprotection

Michael Belkin -- Overview of Neuroprotectant Research in Various Fields

Discussion. Robert Ritch, moderator.

Stuart A. Lipton -- Pharmacology and Molecular Biology of NMDA Receptors in Neuroprotection

Discussion. Leonard Levin, moderator.

Session Two

Albert Aguayo -- Stimulating the Regrowth of Cut Retinal Ganglion Cell Axons

Discussion. Robert Weinreb, moderator.

Paul Kaufman -- Potential Applications of Neuroprotectants to Glaucoma

Discussion. Theodore Krupin, moderator.

Saturday, June 8 -- WORK IN PROGRESS

Session Three

Art Weber -- Patterns of Neuronal Degeneration and the Potential for Survival in the Glaucomatous Eye

Donald Zack -- Ganglion Cell Death Associated with Glaucoma and Optic Nerve Transection

Discussion. Robert Ritch, moderator.

Evan Dreyer -- The Chinese restaurateur's role in glaucoma

Dan-Ning Hu -- Culture of adult human retinal ganglion cells

Discussion. Theodore Krupin, moderator.

Michael Belkin -- Minimizing laser-induced retinal injuries by neuroprotective compounds

Tomoya Saitoh -- Protective effects of acidic condition against glutamate-induced delayed death of cultured retinal neurons

Discussion. Sek-Jin Chew, moderator.

John Troy -- Neuroprotection for Different Classes of Retinal Ganglion Cell

Neville Osborne -- The neuroprotective actions of betaxolol to the retina

Discussion. Stuart Lipton, moderator.

Session Four

Leonard Levin -- 21-Aminosteroids (lazaroids) and retinal ganglion cell death

Robert Nickells -- Anti-death Gene Expression in Retinal Ganglion Cells

Discussion. Paul Kaufman, moderator.

Michal Schwartz -- Implication of Inflammation for Optic Nerve Regeneration

Max Cynader -- Gene Therapy for Glaucoma

Discussion. Robert Weinreb, moderator

Session Five -- BRAINSTORMING SESSION

New Research Grants to Study Optic Nerve Protection

The Board of Directors of The Glaucoma Foundation has awarded a total of almost \$100,000 in research funds to five scientists. These grants, which arise from the first of two grant approval cycles for 1996, will focus primarily on optic nerve research. Specifically, much attention will be given to the death of retinal ganglion cells, which causes loss of vision in glaucoma. The grants are briefly described below. For further information, contact The Foundation.

□ **Daniel Goldman, M.D.**, Associate Professor, Mental Health Research Institute, University of Michigan -- *Molecular Mechanisms Mediating Optic Nerve Regeneration*

The long-term purpose of this research is to find out which molecular mechanisms allow optic nerve cells to grow following nerve damage in fish, and then use this information to suggest ways of inducing cell growth in mammals. The research will attempt to identify genes that are activated during optic nerve regeneration. These genes will then serve as probes to find those factors which activate their expression. These factors are likely to be responsible for triggering a number of genes necessary for successful optic nerve regeneration. Dr. Goldman's hypothesis is that these factors are activated in fish upon nerve damage, but not in mammals. The goal is to find out how to stimulate the corresponding factors in mammals.

□ **Susan Keirstead, Ph.D.**, Assistant Professor, Department of Ophthalmology, University of Minnesota -- *In Vivo Imaging of Responses of Retinal Ganglion Cells to Optic Nerve Injury*

This project will study nerve cells in the mouse. The purpose of the study is to develop a technique for examining the regulation of key chemicals in retinal cells before, during and after injuries to the optic nerve. The project will develop several ways to mimic the type of injury that occurs in glaucoma. The ultimate goal is to gain a better understanding of the cellular processes that lead to retinal cell death so that treatment strategies can be developed to halt these processes and thereby prevent the visual loss that patients with glaucoma must currently endure.

□ **James D. Lindsey, Ph.D.**, Assistant Research Scientist, Department of Ophthalmology, University of California-San Diego -- *Ceramide & Retinal Ganglion Cell Survival*

Treatments that delay or reverse events leading to retinal ganglion cell death could provide a new therapeutic approach to preserving vision in glaucoma. The researchers have developed a cell culture system that allows direct study of the effects of drugs and biological signal molecules on ganglion cell survival. Within this system, ceramide, a chemical in the cell membranes, can enhance the survival of the ganglion cells. The objective of the project is to systematically evaluate the interactions of ceramide with other important biological molecules. The project will also evaluate how ceramide changes events leading to cell death. The study will clarify the role of ceramide in the survival of ganglion cells and may provide new insight into how cell death in glaucoma is triggered.

□ **Magdalene Seiler, Ph.D.**, Assistant Professor, Kentucky Lions Eye Research Institute -- *Growth of embryonic retinal ganglion cell axons in the adult optic nerve -- a transplantation model for optic nerve regeneration*

This study will use transplanted embryonic ganglion cells in rats to find out whether such cells, once transplanted, can grow new connections through the adult optic nerve. Success with this project would provide the first scientific evidence that the optic nerve can "regenerate." Even if this is not true regeneration, but rather growth of transplanted embryonic ganglion cells in an intact optic nerve, it will give hope for restoring eyesight in people with a damaged optic nerve such as occurs in glaucoma. This model will help to develop future treatments for glaucoma and other diseases.

□ **Hiroshi Ishikawa, M.D.**, Mie University, Japan -- *Dynamic Changes of Iris and Anterior Chamber Angle: Administration of Miotic and Cycloplegic Agents*

About 10% of the drainage of fluid from the normal human eye occurs through the "uveoscleral" pathway. Very little is understood about how the "aqueous" fluid enters this pathway. This question has become important because drugs are being developed which can increase the amount of fluid leaving the eye through this pathway. One possibility is that the iris acts as a mechanical pump, taking up fluid when the pupil constricts and pushing the fluid into the pathway when the pupil dilates.

With ultrasound biomicroscopy, we can now measure the volume of the iris in the living eye when the pupil is constricted and when it is dilated. This will enable us to design future studies (a) to delineate the precise route taken by the aqueous fluid as it passes out of the eye through the uveoscleral pathway, and (b) to attempt to regulate the rate of flow through this pathway with drugs.

Making Progress Toward A World Without Blindness

by Michele M. Burnett Director of Development, The Glaucoma Foundation

Two More Easy Ways to Make a Contribution

In the last issue of Eye to Eye, we looked at three easy ways to make a contribution:

- Stewardship Gifts, which allow the donor to make payments on a pledge of a pre-set amount over a series of months;
- Corporate Matching Gifts, through which the donor's employer makes a contribution based on the amount of the employee's original gift; and
- The Foundation's Tribute Gift Program, which allows the donor to make a gift in honor or memory of a family member, friend or colleague. (See following page for a list of recently received Tribute Gifts)

These options are always available to our donors, but there are two others that you might want to consider as well:

- Use A Credit Card to Make A Contribution -- By Mail, By Phone, By Email!!

Today, everyone is looking for an easy way to cut back on the amount of time spent on personal bookkeeping. One way is to charge all purchases to a credit card. This eliminates the necessity of writing (and in some cases, paying a service charge on) several checks each month and there is a clear record of expenses paid. Now you can use your credit card to make a charitable donation to The Glaucoma Foundation. You can even avoid the cost of the postage by making your donation by phone or email!! Some credit cards even award bonus points or frequent flyer points on the total amount of each month's charges and this would include contributions. The donation coupon in this issue gives you the option to use your Visa, Mastercard or American Express card to make a contribution. You can also visit The Foundation's Web Site (<http://www.glaucoma-foundation.org/info>) to use the online donation form or you can call me at (212) 504-1902 -- just say "CHARGE IT!"

- Establish Your Own Legacy

There has been a great deal of talk in the news about the terms of the wills of famous individuals who have passed away. In the Winter, 1996 issue of Eye to Eye, Ronni Davidowitz, Esq., explained that everyone should have a legally valid will to guarantee that your estate is distributed according to your wishes. In addition to remembering family and other individuals who have played an important role in your life, you might also want to remember and be remembered by The Glaucoma Foundation and all those who are helped by our work. As a valued member of our contributions

family, we hope you will consider making a bequest to be used to support a specific program or to help The Foundation accomplish its many purposes in general. Bequests can be made for a specific dollar amount or a certain percentage of the total estate -- whichever you prefer. Remember -- it's a good idea to obtain professional advice and assistance. Only your attorney can correctly prepare and advise you about a will to suit your needs as you prepare to draft or change this important document.

It really can be easy to support The Glaucoma Foundation. If you would like to receive information on all five giving methods, please call me at (212) 504-1902. There is a giving plan that is right for you. Please clip this coupon and mail it with your contribution to The Glaucoma Foundation, Attn: Development Department, 33 Maiden Lane, New York, NY 10038.

Your Support Is Needed

Yes, I want to help The Glaucoma Foundation in its efforts.
Enclosed is my check, payable to The Glaucoma Foundation
in the amount of :

\$500.00 \$250.00 \$100.00 \$50.00 \$25.00 Other
\$ _____

I prefer to become a Steward of The Foundation and make my
pledge as follows:

The total amount I pledge to The Glaucoma Foundation is \$ _____.

I will make my payments in monthly installments of
\$ _____ over a 3 6 12 month period. (circle one)

I want to make a down payment now of \$ _____.

Name _____

Address _____

City _____, State _____ Zip _____

Telephone (including area code) (_____) _____

Please charge my donation to my:

American Express Card Mastercard Visa

Card Number _____

Expiration Date _____

Card Holder Signature _____

Please send me information on the Tribute Gift Program.

My company will match my gift. Forms are enclosed.

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All contributions are tax-deductible to the extent permitted by law. A copy of the last annual report filed with the New York State Department of State may be obtained upon request by writing to New York State Department of State, Office of Charities Registration, Albany, NY 12231, or The Glaucoma Foundation.

Please print and return this form or
[e-mail the information](#) to The Foundation at 33 Maiden Lane, New York, NY 10038.

Singular Sensations

The Racquet and Tennis Club in New York was the location for the Seventh Annual Singular Sensations as The Glaucoma Foundation honored 23 women for their professional and philanthropic achievements. This year's gala event which included a buffet supper and dancing was co-chaired by Garrett R. Bowden, a former Bachelor honoree (1988) and Susan Consentino, a former Singular Sensation honoree (1994). Both Mr. Bowden and Ms. Consentino are members of The Foundation's Board of Directors. Sam Champion, senior weather anchor for WABC-TV, presented this year's honorees to the assembled guests during a break in the dancing. This year's stellar group included Foundation Board member Jolene Mirena; cosmetics executive Lisa Beshlian; magazine editor Laura Fisher; and clothing designer Tracy Lynch to name a few. Past Singular Sensations honorees have included Julia Roberts, Nancy Hogshead, Brooke Shields, Rolonda Watts, and Mira Sorvino. The Glaucoma Foundation congratulates all the 1996 Honorees and wishes them continued success in the years to come.

Rain Date Announcement

The 2nd Annual Glaucoma Golf Classic To Be Announced

Due to the severely inclement weather on June 3rd and September 18th, The 2nd Annual Glaucoma Golf Classic will be rescheduled.

All reservations made for the original date of Monday, June 3, 1996 will be honored.

SCHEDULE FOR THE DAY

1:00 p.m. Box lunch at the Marriott
WindWatch Golf Club

1:30 p.m. Tee-off / Shotgun Start

7:00 p.m. Buffet Reception and
Awards Ceremony with
Sports Auction and Raffle

There are still slots available for those wishing to make new or additional reservations. Ladies and gentlemen are welcome to participate. Tickets for The Glaucoma Golf Classic start at \$250.00 per golfer/ \$1,000.00 per foursome. Please call Michele Burnett, Director of Development, at (212) 504-1902 for further information.

The Glaucoma Foundation gratefully acknowledges the following organizations for their support of The Glaucoma Golf Classic:

CONTINENTAL AIRLINES, the Official Airline of The Glaucoma Golf Classic
BREITLING USA
MARRIOTT WINDWATCH
(list in formation as of 6/11/96)

A Thank You to Our Donors

The Glaucoma Foundation gratefully acknowledges the following individuals, corporations, and foundations who have made a substantial contribution to support our many programs since March 1, 1996. We appreciate the support of all of our donors and will continue to acknowledge their support in each issue of Eye to Eye.

Contributions

The Alcon Foundation
Bear, Stearns & Co. Inc.
Bloomberg Financial Markets
Bottega Veneta
Crane Co.
Mr. & Mrs. Peter DaPuzzo
Data Communique
Mr. & Mrs. Steven Einhorn
Esi Securities
Gerard Klauer Mattison & Co.
Herzog, Heine, & Geduld
Hugoton Foundation
Mr. Martin R. Lewis
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Breitling USA
Continental Airlines
Graham & James LLP
Oppenheimer Capital
Data Communique
Peckolick Inc.
Rosenman & Colin LLP
Strategix, Inc.

Tribute Card Program

The Glaucoma Foundation is pleased to acknowledge the following Tribute Gifts that were received since March 1, 1996. These gifts not only provide valuable financial support for The Foundation's many projects, but also recognize the special individuals in the lives of our donors.

Honoring	From
Mr. Leon Leidner on the occasion of his birthday	Ms. Sylvia Katz
Dr. & Mrs. Maurice Luntz, on the occasion of their 40th wedding anniversary	Mr. & Mrs. Stephen Cohen Dr. & Mrs. Raymond Harrison Alison Hoffman & Kevin Rakin Caryn, Antony, Bryce & Emma Loebel Dr. & Mrs. J. Pierre Loebel David Luntz & Kristin Staab Melvyn, Beverly & Alix Luntz Mr. & Mrs. Donald A. Sayles Mr. & Mrs. Robert B. Sosnowitz Mr. & Mrs. Gerald Sutin
Mr. David Shore	Ms. Evylyn Rudne

Gifts in Memory of Those Who Have Passed Away

Honoring	From
Ms. Emma Brockman	Ms. Sharyn Ferretti
J.T. Guice	Diversified Food Brokers
Ms. Mary Lasner	Mr. Al Winter
Mr. Irving Levy	Mr. & Mrs. Sheldon M. Siegel
Mr. Robert D. Martin	Mr. & Mrs. Sheldon M. Siegel
Ms Shirley Wright Perrow	Mr. & Mrs. M.G. Deacon, Jr.

To receive a Tribute Gift Program Package or to make a Tribute Gift, please call The Foundation's Development Office at (212) 504-1902.

Calendar of Events

The 2nd Annual Glaucoma Golf Classic

Rain Date To Be Announced

Tee-Off at 12:30 p.m.

Pre-Tee-Off Lunch and Post-Play Reception

Celebrity Sports Auction

Special Sports Celebrity Guests

For information call (212) 504-1902

The 10th Annual Black & White Ball

Thursday, December 12, 1996

World Financial Center Winter Garden

Cocktails at 6:30 p.m.

Dinner & Dancing at 8:00 p.m.

Silent Auction/Raffle

For information call (212) 504-1902