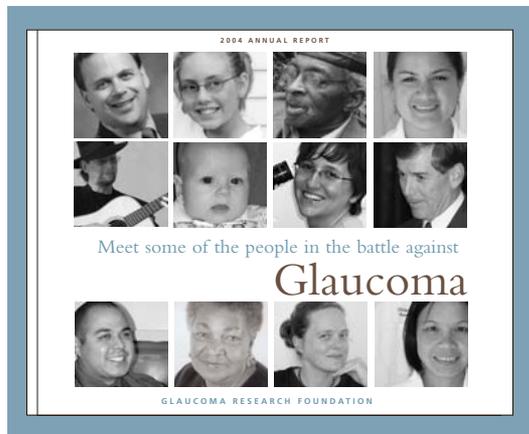


Meet some of the people in the battle against
Glaucoma



Mission Statement

PROTECTING THE SIGHT AND INDEPENDENCE OF PEOPLE WITH GLAUCOMA THROUGH RESEARCH AND EDUCATION, WITH THE ULTIMATE GOAL OF FINDING A CURE.



Top row, left to right: Carl Smith, former GRF board member with glaucoma; Danielle Fiarito, a school girl with glaucoma; Doug Edwards, radio producer with glaucoma; and Rebecca Armendez, glaucoma researcher.

OUR COVER FEATURES PEOPLE ON THE FRONT LINES OF THE BATTLE AGAINST GLAUCOMA.

Middle row, left to right: Roger McGuinn, world renowned musician with glaucoma; Que, a baby born with glaucoma; Dr. Rebecca Sappington, glaucoma scientist; and Dennis Singleton, Chairman of the GRF board with glaucoma.

Bottom row, left to right: Rafaele Perrotta, a college student with glaucoma; Bernice Jones, a grandmother with glaucoma; Jennifer Rulon, GRF glaucoma information specialist; and Loan Nguyen, a glaucoma researcher.

Dear Friends and Supporters,

This annual report is about you—the people who are the Glaucoma Research Foundation:

- The individuals with glaucoma and their families
- The many, many donors around the country who contribute the money that makes GRF possible
- The Scientific Advisory Committee that selects the deserving scientists and research projects to be funded
- The doctors and scientists who do the research to find a cure for glaucoma
- The Board Members who contribute their time, energy and money to help GRF
- The staff and volunteers who support those affected by glaucoma by providing information and answers and conducting the daily operations of GRF.

Without all of you there would not be a Glaucoma Research Foundation.

Thanks to you, this past year has been very successful. Research by GRF-funded scientists has made outstanding progress toward identifying potential gene targets that might someday prevent loss of vision from glaucoma.

Five Pilot Projects enabled scientists to test new ideas about glaucoma treatments. Information about glaucoma continues to be distributed nationwide through our newsletter, GLEAMS, and the booklet Understanding and Living with Glaucoma, available in English and Spanish. Our website, www.glaucoma.org, has more than one thousand visitors daily!

After 26 years, the Glaucoma Research Foundation is stronger than ever—thanks to all of you. We are excited about the future as new discoveries and technology make it ever more likely that a cure for glaucoma will be found. Your contributions in both time and money make it all possible. We thank you for your confidence and continued support.



Dennis E. Singleton
Chairman of the Board



Thomas M. Brunner
President and CEO



Pilot Project Grants

FUNDING CUTTING-EDGE PILOT RESEARCH PROJECTS CONTINUES TO BE AT THE VERY HEART OF THE GLAUCOMA RESEARCH FOUNDATION'S MISSION.

THIS YEAR, FIVE HIGHLY PROMISING PROJECTS RECEIVED CRITICAL SEED MONEY FROM GRF TO HELP CONTRIBUTE TO THE KNOWLEDGE BASE THAT IS SO CRUCIAL TO PROTECTING SIGHT AND ADVANCING A CURE.

“Project Grants are designed to fund initial studies that address an especially novel idea or determine the feasibility of a larger scale project. Research funds from federal organizations such as the National Eye Institute cannot be obtained until preliminary studies indicate that the project is likely to be successful. Grants that address new untested ideas are frequently not funded by large organizations because there is no assurance that they will be successful, especially when compared to larger accomplished research programs. However, to advance knowledge of the underlying pathophysiology of complex human diseases, such as glaucoma, it is extremely important to explore novel hypotheses and creative approaches. The Glaucoma Research Foundation provides a critical service to the glaucoma research community by funding cutting-edge Pilot Projects that may develop into larger research programs, which could eventually receive federal funding support. The Pilot Projects funded this year by the Glaucoma Research Foundation are excellent examples of this principle.”



JANEY WIGGS, MD, PHD

2004 GLAUCOMA RESEARCH FOUNDATION PILOT PROJECT GRANTS

PROJECT ONE GRANT: \$31,000

EFFECTS OF ACUTELY ELEVATED INTRA-OCULAR PRESSURE (IOP) ON RETINAL STRUCTURE AND FUNCTION IN PIGMENTED RAT

RECIPIENT: DISCOVERIES IN SIGHT/
DEVERS EYE INSTITUTE
PORTLAND, OREGON

SCIENTIST: BRAD FORTUNE, OD, PHD

PROJECT TWO GRANT: \$36,000

PEDIGREE COLLECTION IN 500 PATIENTS FROM THE COLLABORATIVE INITIAL GLAUCOMA TREATMENT STUDY (CIGTS)

RECIPIENT: UNIVERSITY OF MICHIGAN,
W.K. KELLOGG EYE CENTER
ANN ARBOR, MICHIGAN

SCIENTIST: PAUL R. LICHTER, MD

PROJECT THREE GRANT: \$35,000

ROLE OF OPA1 AND OF MITOCHONDRIAL REMODELING IN RETINAL GANGLION CELL DEATH

RECIPIENT: VENETIAN INSTITUTE OF
MOLECULAR MEDICINE
PADOVA, ITALY

SCIENTIST: LUCA SCORRANO, MD, PHD

PROJECT FOUR GRANT: \$28,000

ARE FOCAL ADHESIONS PRESENT IN SCHLEMM'S CANAL ENDOTHELIAL CELLS?

RECIPIENT: MAYO CLINIC
ROCHESTER, MINNESOTA

SCIENTIST: CHERYL HANN, MS

PROJECT FIVE GRANT: \$35,000

EFFECTS OF ACUTELY ELEVATED GANGLION CELL CONTRIBUTION TO NONINVASIVE RETINAL FUNCTIONAL IMAGING

RECIPIENT: SUNY UPSTATE MEDICAL
UNIVERSITY
SYRACUSE, NEW YORK

SCIENTIST: DANIEL Y. TS'O, PHD



Scientific Advisory Committee Members

GEORGE CIOFFI, MD, CHAIR
Director of Ocular Research
Discoveries in Sight
Portland, Oregon

“For over twenty-six years the Glaucoma Research Foundation has been recognized in the scientific community as providing strong leadership in the funding of promising, cutting edge research. This last year was no exception.”

George Cioffi, MD

BALWANTRAY CHAUHAN, PHD
Department of Ophthalmology
Dalhousie University
Halifax, Nova Scotia, Canada

ANNE COLEMAN, MD, PHD
Department of Ophthalmology
Jules Stein Eye Institute
Los Angeles, California

SAYOKO EILEEN MOROI, MD, PHD
Ophthalmology and Visual Sciences
University of Michigan
Ann Arbor, Michigan

JOHN C. MORRISON, MD
Department of Ophthalmology
Casey Eye Institute/OHSU
Portland, Oregon

ERNST TAMM, MD
Anatomisches Institut, Lehrstuhl II
Universitaet Erlangen-Nuernberg
Erlangen, Germany

WILLIAM TATTON, MD, PHD
Mount Sinai School of Medicine
Department of Neurology
New York, New York

DOUGLAS E. VOLLRATH, MD, PHD
Stanford University
School of Medicine
Department of Genetics
Stanford, California

ARTHUR WEBER, PHD
Michigan State University
Department of Physiology
East Lansing, Michigan

ROBERT N. WEINREB, MD
University of California San Diego
Department of Ophthalmology
La Jolla, California

JANEY L. WIGGS, MD, PHD
Department of Ophthalmology
Massachusetts Eye & Ear Infirmary
Boston, Massachusetts

“No other organization is more committed.”

PILOT PROJECT GRANT 1

EFFECTS OF ACUTELY ELEVATED INTRA-OCULAR PRESSURE (IOP) ON RETINAL STRUCTURE AND FUNCTION IN PIGMENTED RAT



BRAD FORTUNE, OD, PHD

The goal of researcher Brad Fortune and his lab at the Devers Eye Institute in Portland, Oregon is to more precisely determine the relationships between intraocular pressure and the deterioration of

retinal cell types—information that could ultimately save eyesight for people like Carl Smith.



CARL SMITH

Diagnosed with glaucoma in his right eye when he was in his early 30’s, Carl Smith was not overly concerned. He had little vision in that eye since birth and it had not greatly hindered his life. But the doctors were anxious to maintain as much sight as possible. As time passed, the pain became increasingly difficult to control. Despite 15 surgeries and success in lowering the intraocular pressure, today, 15 years after the initial diagnosis, Carl no longer has vision in that eye. While he considers himself extraordinarily lucky to have one unaffected eye, he still worries about that good eye. And he worries about his children’s eyes.



“That’s why I became involved with GRF and continue to support it—no other organization is more committed or better suited to steer the research toward a cure.”

“As a family, we are galvanized to work toward maintaining the vision my sister still has.”

PAMELA COLBERT

Pam Colbert’s sister was a successful professional in the Human Resources department of a major consulting firm when glaucoma began to severely impact her vision. Five years ago at the age of 38, this active, vibrant mother of two quickly became part of a tragic statistic: an African American hit hard and fast by this terrible disease. Today she has less than half of her vision remaining and she is no longer able to drive, pursue her career or witness many of the accomplishments of



her children. Yet she continues to cook, entertain her large circle of friends and remain optimistic for a cure. And her hope for a cure only grows each day—her teenage daughter is now experiencing elevated eye pressure as well.

PILOT PROJECT GRANT 2

PEDIGREE COLLECTION IN 500 PATIENTS FROM THE COLLABORATIVE INITIAL GLAUCOMA TREATMENT STUDY (CIGTS)



PAUL LICHTER, MD

This study at the W.K. Kellogg Eye Center at the University of Michigan aims to more specifically quantify the value of obtaining a detailed family history in clinical settings. From this lab’s findings, further studies can then be designed to determine

the relationships between disease severity and specific glaucoma gene mutations. People like Pamela’s sister, her children and other relatives could benefit from this in the future with information about specific family inheritance.

PILOT PROJECT GRANT 3

ROLE OF OPA1 AND OF MITO- CHONDRIAL REMODELING IN RETINAL GANGLION CELL DEATH



In Padova, Italy, Luca Scorrano's **LUCA SCORRANO, MD, PHD** lab is working to determine if a protein that is responsible for a nonglaucomatous inherited optic nerve degeneration, dominant optic atrophy (DOA), also participates in the regulation of ganglion cell death in glaucoma. Based on their findings, future studies related to this protein could be designed, eventually providing clues to help people with glaucoma, such as Roger McGuinn.

“My motivation is getting people to realize they should be tested while we hope for a cure in the near future.”

ROGER MCGUINN

In the midst of a busy schedule that goes with a successful music career, Roger McGuinn has always made time for regular ophthalmic checkups. Co-founder of the famed pop music group The Byrds, known for such hits as “Turn, Turn, Turn” and “Mr. Tambourine Man,” Roger learned of his increased intraocular pressure at his eye checkup five years ago. “When I was first diagnosed, I was depressed. I didn’t know much about glaucoma, or whether the pressure could be controlled. I had trouble even accepting that something this serious could happen to my eyes,” he says. Daily medication has kept his pressure down and Roger appreciates how fortunate he has been in that his vision remains unaffected. Roger stated, “People have to realize that they really need to be tested for glaucoma. Waiting may result in vision loss and then it’s too late.”



“It’s amazing what research has brought about in the past 34 years.”

SCHUYLER, SUSAN AND PETER BAILEY

Thirty-four years ago, when Schuyler and Susan Bailey’s son Peter was diagnosed with glaucoma, the treatment and awareness of the disease was markedly different than today. Diagnosed at just 3 months of age, Peter endured a long siege of surgeries and medications with debilitating side effects throughout his entire childhood. Despite it all, he went on to earn a degree in history from Stanford and start an editorial career. Schuyler and Susan have been a part of Glaucoma Research Foundation since its inception, gaining knowledge and support, sharing their own resources and watching advances unfold. “Today, it’s



a whole new world,” says Susan. “The arsenal of medications and advances in treatment are so much greater than when Peter was born. GRF had a lot to do with it—this organization really can give people hope that this disease can be beaten.”

PILOT PROJECT GRANT 4

ARE FOCAL ADHESIONS PRESENT IN SCHLEMM’S CANAL ENDOTHELIAL CELLS?



CHERYL HANN

The purpose of this study at the Mayo Clinic in Rochester, Minnesota is to determine if important cellular connections called focal adhesions are present in certain parts of the eye involved in the removal of fluid. Eventually, this information could help to preserve the vision of people like Peter Bailey, as researchers learn if focal adhesions change in response to changes in intraocular pressure.

PILOT PROJECT GRANT 5

GANGLION CELL CONTRIBUTION TO NONINVASIVE RETINAL FUNC- TIONAL IMAGING

The aim of Daniel Ts'o's lab at SUNY Upstate Medical University in Syracuse, New York is to develop a new instrument and technique to help monitor the activity of the retina as it responds to light. This would facilitate early detection, characterization and monitoring of the disease in glaucoma patients like Danielle Fiarito.



DANIEL Y. TS'O, PHD

“Obviously, we know research is the answer.”

DANIELLE FIARITO

After five eye surgeries and as many as eight eye drop medications a day since the age of four, Danielle Fiarito, age 10, is a true veteran in the war against glaucoma. Her parents, Dan and Maureen, have been with her every step of the way. This year, they decided to do something more. They invited



nearly 200 friends and relatives to a fund-raising dinner to benefit glaucoma research. They personally solicited over 100 donations for a silent auction and they handled all the event details themselves—from arranging the flowers to making party favors. The results were better than anyone had hoped for: over \$10,000 in donations to the Glaucoma Research Foundation. “Obviously, we know research is the answer,” says Dan. “Our hope is that a cure will be found in Danielle’s lifetime,” adds Maureen.

Glaucoma Research Board of Directors



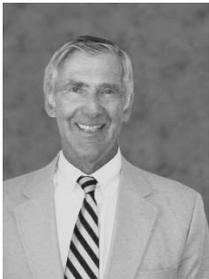
DENNIS E. SINGLETON, CHAIRMAN

Mr. Singleton has been Vice Chairman of Spieker Properties, Inc., a real estate investment trust, since 1998 and served as Executive VP and CIO of that company from 1993 to 1997. He has served on the GRF Board since 1998.



THOMAS M. BRUNNER, PRESIDENT & CEO

Before he joined GRF in 2003, Mr. Brunner was Executive VP at Lumenis, Inc. (formerly Coherent) for 15 years, where he was instrumental in the development of lasers for ophthalmic surgery.



JOHN HETHERINGTON, MD VICE CHAIRMAN

Dr. Hetherington is Clinical Professor of Ophthalmology at the University of California at San Francisco and is a past president of the International Glaucoma Society. He is one of the founding physicians of GRF and has served on the board since 1978.



C. SETH CUNNINGHAM, VICE CHAIRMAN

Mr. Cunningham is a Senior Advisor to Clearwater Capital Partners, a private investment fund. Mr. Cunningham's interest in GRF is very personal, arising from his own glaucoma and that of family and friends. He has served on the Board since 1997.



DEIRDRE J.G. PORTER, CFA, CIC TREASURER

Ms. Porter serves as Portfolio Manager and Managing Director of Wentworth, Hauser and Violich, Inc. She has been with that firm for 28 years and has served on the GRF Board since 2000.



ANDREW G. IWACH, MD SECRETARY

Dr. Iwach is an Assistant Clinical Professor of Ophthalmology at the University of California at San Francisco and a faculty instructor at the California Pacific Medical Center Department of Ophthalmology. Dr. Iwach has served on the GRF Board since 2000.



F.T. BARR, PHD

Dr. Barr is the President and founder of Afex International, Inc., an international exploration company, and Managing Director of its affiliate, South Atlantic Natural Resources, Ltd. Dr. Barr has served on the GRF Board since 2003.



J. BRONWYN BATEMAN, MD

Dr. Bateman has been Professor and Chair, Department of Ophthalmology at the University of Colorado since 1995 and Director of the Rocky Mountain Lions Eye Institute since 2001. Dr. Bateman has served on the GRF Board since 1994.



JUNE BEHRENDT

Ms. Behrendt has served as Executive Director of the Edward J. Daly Foundation since 2001. Ms. Behrendt has served on the GRF Board since 2001.

Research Foundation Directors 2004

JAMES D. BRANDT, MD

Dr. Brandt is Professor of Ophthalmology and Director of the Glaucoma Service at UC Davis in Sacramento. His clinical interests include pediatric glaucoma and surgical approaches to complicated glaucomas. He has served on the GRF board since 1999.



PAMELA COLBERT

Ms. Colbert has served as Vice President for Internet Channel Management, Internet Technology at Wells Fargo Bank since 1999. She has served on the GRF Board since 2002.



TIMOTHY J DWYER

Mr. Dwyer served Sun Microsystems in a variety of capacities from 1988 until 2003, including holding the post of VP International. Prior to joining Sun, he was founder and Executive VP for MARC, a software company. He joined the GRF Board this year.



H. DUNBAR HOSKINS, JR., MD

Dr. Hoskins is the Executive Vice President of the American Academy of Ophthalmology, a position he assumed in 1993 after a distinguished career in private practice. He is one of the founders of GRF and has served on the Board since its inception in 1978.



MICHAEL L. PENN, SR.

Mr. Penn is Principal of Michael L. Penn and Associates, a business development consulting firm he founded in 1999.

He has served on the GRF Board since 2000.



ROBERT L. STAMPER, MD

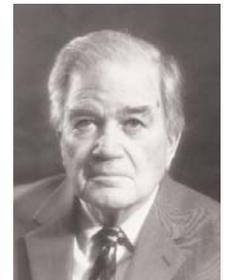
Dr. Stamper has been Professor of Clinical Ophthalmology and Director of the Glaucoma Service at University of California San Francisco since 1998.

He has served on the GRF Board since 1987.



GEORGE E. THOMAS

Mr. Thomas is an insurance management consultant with expertise in commercial insurance marketing, underwriting, administration and management. He has served on the GRF Board since 1993.



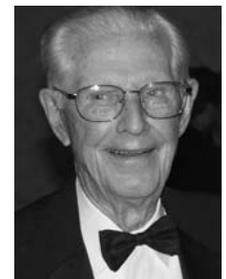
MARTIN B. WAX, MD

Dr. Wax is Vice President, Research and Development and Head of Ophthalmology Discovery Research at Alcon Laboratories in Fort Worth, Texas. He is also Professor of Ophthalmology and Visual Sciences at the University of Texas Southwestern Medical School in Dallas, Texas. He has served on the GRF Board since 2003.



ROBERT N. SHAFFER, MD, FACS CHAIRMAN EMERITUS

Dr. Shaffer founded GRF in 1978. He is a pioneer in the field of glaucoma and is a Clinical Professor Emeritus in Ophthalmology at University of California San Francisco, where he taught for a half century. His extensive writing on glaucoma includes over 90 articles and books.



Catalyst For A Cure

Catalyst For a Cure (CFC) is a unique joint program of the Steven and Michele Kirsch Foundation and the Glaucoma Research Foundation that breaks with the traditional approach to medical research. Rather than individual scientists working on separate projects and sharing advances only at conferences and through publications, CFC researchers in diverse fields of expertise are working in a full, ongoing partnership. Building on each other's findings, this innovative collaborative effort aims to speed progress in finding the causes and mechanisms that bring on glaucoma.



“Because the Catalyst For a Cure research project is focused on understanding how nerve damage occurs in glaucoma, it’s likely to discover ways to save vision. It’s also exciting that Catalyst For a Cure has attracted talented, eager, young scientists to the field of glaucoma research.”

H. DUNBAR HOSKINS JR., MD

“Catalyst For a Cure is a unique project designed to support consortium-based research on the causes and mechanisms of the debilitating eye



disease known as glaucoma. Our model of investigation optimizes the potential for new insights into glaucoma by applying recent breakthroughs in neuroscience, molecular biology, genetics and immunology.”

MARTIN B. WAX, MD

“An exciting feature of the CFC program has been the coming together of highly original young scientists who have been able to focus their individual approaches on a collective goal.”

JACK P. ANTEL, MD, PHD

“The Catalyst For a Cure (CFC) represents an innovative mechanism for bringing young investigators together to direct their basic research findings toward the treatment of glaucoma. This unique way of supporting research has yielded many dividends. CFC allows novel, integrative approaches using genetics, cell biology, and molecular biology to be applied to the problem of glaucoma. Truly distinct from NIH-based funding mechanisms, this approach brings new ideas and creativity to the field”



MOSES V. CHAO, PHD

CATALYST FOR A CURE ADVISORY BOARD



Catalyst For a Cure advisory board members:
Drs. Martin Wax, Constance Cepko, Moses Chao
and Jack Antel.

JACK P. ANTEL, MD, PHD
Professor of Neurology
Montreal Neurological Institute
McGill University
Montreal, Canada

CONSTANCE L. CEPKO, PHD
Professor,
Department of Genetics
Harvard Medical School
Boston, Massachusetts

MOSES V. CHAO, PHD
Professor of Cell Biology,
Physiology and Neuroscience
New York University
School of Medicine
NYU Medical Center/
Skirboll Institute
New York, New York

MARTIN B. WAX, MD
Vice President of Research
and Development
Alcon Laboratories, Inc.
Fort Worth, Texas



DR. DAVID CALKINS REPORT

The laboratory of Dr. David Calkins is best known for its work on deciphering the basic wiring of the retina. Like an electronic circuit, the retina has different components (neurons) that are tuned for different tasks, such as discriminating color, detecting motion, or resolving edges.

Dr. Calkins' training as a neurobiologist has helped his laboratory to apply highly sensitive tools, like electron microscopy and genetic sequencing, to study how different genes and molecules regulate the neurons that form functional circuits in the retina. Now, as part of the CFC, the Calkins laboratory is applying those same, high-resolution tools to understanding why the ganglion neurons of the retina, whose fibers comprise the optic nerve, die as a result of elevated intraocular pressure in glaucoma.

The retina and optic nerve are part of the central nervous system, which includes the brain and spinal cord. Like the brain, the retina contains not only neurons, but also specialized cells called "glia" that help maintain its health and integrity. Part of the job of these glia is to serve as the interface between the retina and the immune system. Thus, glia secrete molecular signals that regulate how neurons respond and adapt to danger. For the CFC, the Calkins group is focusing on the nature of these signals and how they contribute to the death of



Rebecca Sappington, PhD

ganglion neurons and the optic nerve in response to elevated pressure. For example, Dr. Calkins and his team of scientists, which includes Dr. Rebecca Sappington and Dr. Ling Pan, have discovered that glia secrete not only "death signals" in response to pressure, but also signals that may serve to protect ganglion that are released when a special factor in the glia cells binds to the chromosomes of the glia and cause the activation of a particular group of genes. At high pressures, the ganglion cells express a family of receptor molecules that bind the cytokines and induce an adaptive mechanism that seems to decrease the ganglion cells' susceptibility to damage.

The Calkins group hopes to identify other agents that could serve in similar fashion as therapeutic targets for glaucoma.



Left to right: Yolanda Miller, administrator; Dr. Sappington, Dr. Cai, and Brian Carlson, research assistant.

DR. PHILIP HORNER REPORT

Dr. Horner's lab continues its exploration of the retina's potential for endogenous repair. Ganglion cells lost during the course of glaucoma have to be replaced in order to restore vision. Rather than transplant cells, Dr. Horner and his colleagues are exploring ways for the retina to generate cells from potential progenitor cells. They have demonstrated that there is cell division in the adult mouse retina, though these cells do not become ganglion cells. Other researchers have shown that progenitor cells exist in the ciliary body, though these cells lie dormant in adulthood. Instead of cell replacement, the glaucomatous retina exhibits a reactive cell response that lacks activation of the resident stem cell. One type of support cell, the Müller glia, increases in density and size of its cell processes, especially in the ganglion cell layer. These glial changes are indicative of ganglion cell stress and may represent places ganglion cells have been lost. The Horner lab is actively exploring the signals that lead to the prevention of stem cell activation – in other words – why the brakes are on for repair of the retina.

In addition to the research in endogenous repair, Dr. Horner's lab continues to be in charge of cultivating a colony of mice that spontaneously



Dr. Maisey McGaughey

develop glaucoma. The lab has become expert in measuring the intraocular pressure of these mice in order to stage the disease for distribution to the CFC consortium labs. The Horner lab has also been characterizing alterations in the number and distribution of ganglion cells, support cells, blood vessels and connective tissue over time in the mouse model of glaucoma.

Future studies for the lab include examining the health of ganglion cell axons to determine the mechanism of axon degeneration and whether or not axon degeneration can be halted at the level of the nerve fiber layer or the optic nerve head. This work is important in order to determine the earliest events that characterize the onset of the disease. Identification of these early events has become a priority and could lead to the finding of new targets to curb or prevent cell loss.



Left to right: Rebecca Armendarez, Brian Buckingham, Loan Nguyen, Dr. Philip Horner, and Dr. Denise Inman.

DR. NICK MARSH-ARMSTRONG REPORT



At Dr. Marsh-Armstrong's laboratory at the Kennedy Krieger Institute in the Johns Hopkins University School of Medicine, Dr. Marsh-Armstrong and his team use transgenic technologies to explore various aspects of retina biology and disease.

As part of the Catalyst For a Cure consortium, this research team has been focusing on developing the ability to use transgenes to manipulate retina cells in a model of glaucoma. They have already identified a transgene that can be used to alter gene expression in retina progenitor cells. They are now focused on the cell that dies in glaucoma – the retinal ganglion cell.

These researchers are currently using bioinformatic tools and reagents in order to develop the ability to alter gene expression selectively in ganglion cells. By gaining this ability, they can then target those genes they expect will alter glaucoma progression. Some of these genes will be ones that CFC consortium analyses have shown to be promising leads.

These analyses also are providing leads that implicate various molecular pathways. With the eventual goal of identifying a molecular pathway for altering disease progression in the model of glaucoma, these researchers will then turn to devising therapeutic interventions that can be used to modify the same molecular pathway in glaucoma patients.



Left to right: Shih-Jung Pan, Rui Zhang, Dr. Nick Marsh-Armstrong, Janette Lebron and Ericka Oglesby.

DR. MONICA VETTER REPORT

The role of Dr. Vetter's lab in the CFC consortium is to help in the molecular analysis of the glaucoma phenotype with the goal of defining causative molecular changes during glaucoma progression. The projects can be subdivided into two parts. First, they are performing microarray experiments to determine whether there are significant changes in gene expression during glaucoma progression that may contribute to disease pathology. Second, they are investigating whether specific candidate molecules are altered in the glaucomatous retina.



They have assembled a team of investigators in the lab to pursue these goals. Mike Steele, an experienced Research Specialist, is spearheading the microarray analysis. This spring, Mike visited the Calkins lab to observe the retinal tissue isolation and retinal ganglion cell sorting procedures, and began optimizing the RNA isolation methods. Since then, he has been receiving tissue from both the Horner lab and the Calkins lab and has been preparing samples and testing methods for amplifying the small amounts of starting material obtained from the purified retinal ganglion cells for microarray analysis. He has also been



Mike Steele

mastering the software needed to analyze the large amounts of data obtained from the microarray experiments and assess whether there are significant changes in gene expression. He has thus laid the groundwork for the microarray analysis, and is presently coordinating with the other CFC labs to analyze gene expression in purified retinal ganglion cells.

Connie Dooley is a post-doctoral fellow in the lab who has worked in the field of retinal biology for a number of years. She has recently become involved in the CFC project and is examining whether microglia become activated in the glaucomatous retina, since this cell population can have potent effects on the survival of neighboring cells. Specifically, she will determine whether these cells alter their expression of specific survival signals or death-promoting signals that may impact the survival of retinal ganglion cells during glaucoma progression.



Connie Dooley

Financials

2004

The Glaucoma Research Foundation's fiscal year end June 30, 2004 completed the financial turnaround from the large deficit of 2002 and the significantly reduced but continuing deficit of 2003. Careful management of expenses and more than \$450,000 of increased revenues resulted in a surplus of over \$180,000 compared with a deficit of over \$500,000 last year. Individual contributions, up more than \$400,000 from year-earlier levels, made a significant difference.

With its improved financial position, during the fiscal year GRF was able to provide an extra and much-needed \$100,000 grant in support of the exciting work of the Catalyst For a Cure consortium. The Foundation maintained its financial commitment to outreach and education for glaucoma patients while continuing to increase its funding for research that has moved from early emphasis on diagnosis and management to a sharpened focus on causes that may lead to prevention or cure.

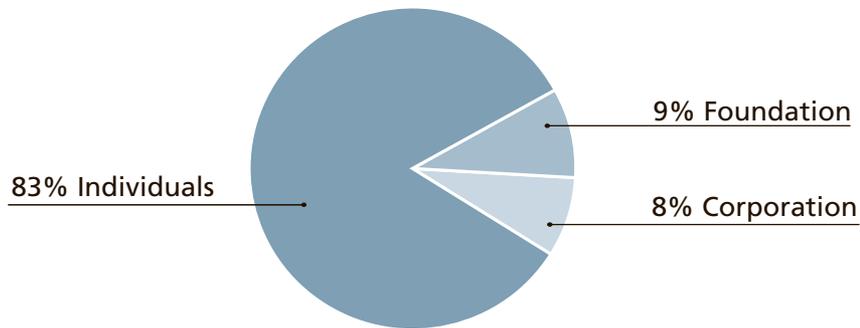
Details of GRF's financial results and position are provided in the statements that follow.

DEIRDRE PORTER
TREASURER

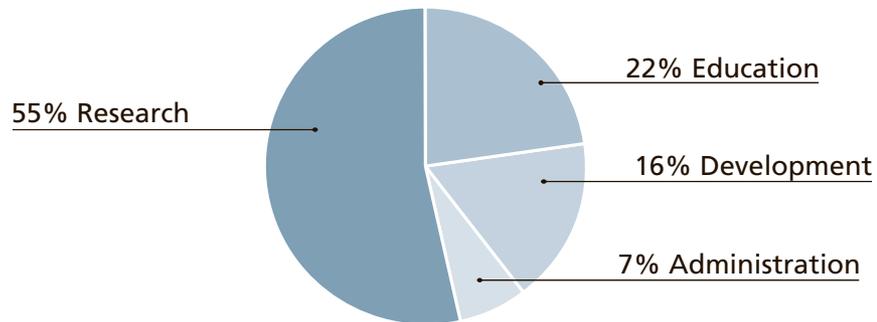
Financial Highlights 2004

“Individual contributions, up more than \$400,000 from year-earlier levels, made a significant difference”

**DIERDRE PORTER,
TREASURER**



REVENUE



EXPENSES

STATEMENT OF ACTIVITIES FOR THE YEAR ENDED JUNE 30, 2004

	2004			2003
	UNRESTRICTED	TEMPORARILY RESTRICTED	TOTAL	TOTAL
REVENUES, GAINS & SUPPORT				
Donations and Bequests	\$ 1,054,835	\$ 518,183	\$ 1,573,018	\$ 1,097,942
Other Income	9,716		9,716	15,052
Investment Income	409,187		409,187	72,737
Lease Settlement	45,792		45,792	
Change in value of charitable trusts		5,682	5,682	(82,610)
Assets released from restrictions	562,742	-562,742	0	
TOTAL REVENUE, GAINS & SUPPORT	2,082,272	-38,877	2,043,395	1,103,121
 EXPENSES				
Research Programs	1,031,398		1,031,398	856,444
Education Programs	401,359		401,359	479,379
Administration	132,157		132,157	162,547
Fund Raising	295,804		295,804	156,823
TOTAL EXPENSES	1,860,718		1,860,718	1,655,193
 CHANGE IN NET ASSETS	221,554	-38,877	182,677	(552,072)
Net Assets, beginning of year	3,508,061	608,986	4,117,047	4,669,119
Prior period adjustment	7,267	93,693	100,960	
NET ASSETS, END OF YEAR	\$ 3,736,882	\$ 663,802	\$ 4,400,684	\$ 4,117,047

STATEMENT OF FINANCIAL POSITION AS OF JUNE 30, 2004

ASSETS	2004	2003
CURRENT ASSETS		
Cash	\$ 206,498	\$ 638,926
Pledges and bequests receivable	298,787	91,280
Prepaid expenses	5,771	46,324
Booklet inventory	62,065	23,160
TOTAL CURRENT ASSETS	573,121	799,690
NON-CURRENT ASSETS		
Assets held in trust (at market value)	757,717	838,456
Investments (at market value)	3,491,162	2,928,934
Furniture and equipment (net of depreciation)	61,171	97,904
TOTAL NON-CURRENT ASSETS	4,310,050	3,865,294
TOTAL ASSETS	\$ 4,883,171	\$ 4,664,984
 LIABILITIES AND NET ASSETS		
CURRENT LIABILITIES		
Accounts payable and accrued expenses	45,554	42,187
Trusts, distributions payable, current portion	63,998	55,899
Lease obligation, current portion	7,973	
Grants payable	100,000	
TOTAL CURRENT LIABILITIES	217,525	98,086
NON-CURRENT LIABILITIES		
Liabilities to trust beneficiaries (at present value)	261,639	449,851
Lease obligation, net of current portion	3,323	
TOTAL LIABILITIES	482,487	547,937
 NET ASSETS		
Unrestricted	3,736,882	3,508,061
Temporarily restricted	663,802	608,986
TOTAL NET ASSETS	4,400,684	4,117,047
TOTAL LIABILITIES AND NET ASSETS	\$ 4,883,171	\$ 4,664,984

Professional Staff



“There are so many behind-the-scenes activities that keep the Glaucoma Research Foundation functioning smoothly to support our research and educational activities. From answering inquiries and sending out educational literature to working with volunteers and updating our website; our dedicated professional staff is key to fulfilling the GRF mission, in which we all take great pride.”

Thomas M Brunner, President and CEO

THOMAS M. BRUNNER
PRESIDENT AND CEO

Tom is the former Executive Vice President of Lumenis, Inc. and he brings more than thirty years of experience in the ophthalmic laser business. Tom has a degree in electrical engineering from Lehigh University and an MBA from University of Delaware. He began his ophthalmic career at Coherent Medical where he was instrumental in the development of lasers for ophthalmic surgery. Tom joined GRF in February of 2003.

RITA LOSKILL
EXECUTIVE DIRECTOR

Initially joining GRF to help manage outreach programs, Rita is now responsible for all operations functions and programs. Prior to GRF, Rita was an Area Vice President at Olsten Health Care, a national home health care company. Rita holds a BA in Health Services Administration and joined GRF in 1999.

ANDREW JACKSON
ADMINISTRATIVE SERVICES MANAGER

Andrew manages office technology and supports development activities. Last year, Andrew coordinated a series of Catalyst For a Cure luncheon and dinner events that connected GRF constituents with GRF-sponsored researchers. Outside work, he enjoys spending time with his wife and two teenage children, composing music and volunteering at his children's dance studio. Andrew has been with GRF since April 2003.

CLARA RUBIN-SMITH
**ADMINISTRATIVE ASSISTANT/
VOLUNTEER COORDINATOR**

Clara provides constituents with basic information and links to other resources, heads GRF's Spanish-speaker outreach and is revitalizing our national Speakers' Bureau volunteer program. Clara holds a BA in Anthropology, Modern Languages and Dance. Outside GRF, Clara enjoys dancing and being outdoors. She joined GRF in 2004.

CATALINA SAN AGUSTIN
**HUMAN RESOURCES/
OPERATIONS MANAGER**

Catalina is responsible for human resources and manages all state licensing, our direct mail program and the processing of incoming donations. After six years and much growth with the Glaucoma Research Foundation, Catalina is still excited about our mission: to find a cure for glaucoma. Catalina has been with GRF since 1998.

JENNIFER RULON
RESEARCH AND EDUCATION SPECIALIST

Since 2000, Jennifer has utilized her social work degree assisting and supporting individuals requesting glaucoma information and referral. She coordinates the research grant applications and also updates the GRF website. She especially enjoys the close-knit environment of GRF and the sense of camaraderie.



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