



VISIONS

Koret Vision Institute + Beckman Vision Center + Department of Ophthalmology + Francis I. Proctor Foundation Fall 2014 + Annual Report University of California, San Francisco + That Man May See

Focal Point



Dear Friends,

Visions magazine highlights our efforts to help patients see better and live longer lives. We are proud to feature our partnership with Research to Prevent Blindness, which is one that allows faculty to launch projects, advance understanding of the visual system, and hasten breakthroughs.

These stories illuminate the expertise of UCSF's vision scientists, who serve not only the Bay Area community but take on global epidemics that threaten sight.

In all we do, our goal is to provide the finest quality patient care, research, and education.

We welcome five outstanding new residents to UCSF, who begin their ophthalmology training with our distinguished scholars and clinicians. We also welcome nine superb fellows for advanced training.

This issue includes the Annual Report for That Man May See, underscoring the importance of your philanthropic investment. We thank you earnestly for your generosity in supporting our cause of saving and

Sincerely,

Stephen D. McLeod, MD
Theresa M. and Wayne M. Caygill, MD Endowed Chair
Professor and Chair



Surgical patient John Edom (center) with Drs. Jay Stewart, Armin Afshar, and Bertil Damato (left to right) and Kelly Babic (front).

Bright Clinical Outcomes

Team Pioneers Cancer Care

When cancer arises in the eye, sight and life are at risk. UCSF's ocular oncology team, led by **Bertil Damato, MD, PhD, FRCOphth**, provides patients with novel and comprehensive solutions to save their lives, preserve as much vision as possible, and address the emotional challenges of cancer.

Dr. Damato has been pioneering solutions for cancers of the eye for more than three decades. The ocular oncology team at UCSF includes vitreoretinal surgeon **Jay Stewart, MD**, fellow **Armin**

Afshar, MD, MBA, ultrasonographer and Ophthalmology Clinic Manager **Kelly Babic**, psycho-oncologist **Laura Dunn, MD**, and **Jamie Manning, RN**.

Uveal Melanomas

The most common intraocular cancer is uveal melanoma, which affects about six million people each year. These tumors threaten the eye and can spread to other parts of the body, leading to early death.

Continued on page 2



New Faculty Bringing Art to Science

To study live retinal tissue, new faculty member **Felice Dunn, PhD**, uses a multiphoton microscope some four feet long. Provided by donors to That Man May See, it is her latest tool in a lifelong quest to understand sight.

As a curious and creative teen, Dr. Dunn made drawings and paintings

to replicate the world around her. Her fascination with seeing led from a degree in visual arts to a career in retinal physiology, where powerful technologies allow her to look deeply inside the eye.

She combines art and science in her pencil and watercolor renditions of retinal cell processes, which have been

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A PEEK INSIDE:



Collaboration Yields Breakthrough



That Man May See Annual Report



Clinical Trial to Stem Epidemic



New Fellows Learn and Serve

Vision Team Pioneers Cancer Care

Continued from page 1

For most patients with a uveal melanoma, radiation therapy is the best treatment.

Most Accurate Radiation Therapy

UCSF is one of the few centers worldwide, and the only one in northern California, to offer proton beam radiotherapy. Compared to plaque radiation, proton therapy more accurately localizes the radiation dose, preserving more surrounding tissue.

Proton therapy can also treat a wider range of uveal melanomas.

Novel Surgery Saves Optic Nerve

Melanomas that are close to the optic nerve require a different solution. Even proton therapy damages the optic nerve, resulting in severe visual loss and often a painful eye.

In the 1980s, Dr. Damato developed a technique designed to destroy choroidal tumors without radiation. Endoresection uses a tiny vacuum cleaner-like tool

to remove the tumor. Intra-operative laser treatment eliminates any remaining cancer cells and “welds” the retina in place during recovery.

UCSF is among a handful of eye centers that perform this operation without prior radiotherapy. Dr. Damato’s long-term studies with more than 100 patients have shown that endoresection is as safe and effective as other methods in killing these tumors and prolonging life.

Dr. Stewart has refined Dr. Damato’s technique by using an endoscope to view the tumor from the middle of the eye. Through innovators like Dr. Damato and Dr. Stewart, UCSF Ophthalmology saves vision and the eye itself in patients who otherwise would lose both. ●

Funding for research in ocular oncology is provided by donors to That Man May See. To learn more about ways to support vision research at UCSF, contact That Man May See at 415.476.4016, rydark@vision.ucsf.edu or thatmanmaysee.org.

Research to Prevent Blindness Advancing the Search for Solutions



Dr. Brian Hofland, president of Research to Prevent Blindness (second from left), with vision scientists Drs. David Copenhagen, Erik Ullian, and Jonathan Horton (left to right).

Research to Prevent Blindness, a private foundation, enables vision scientists to expand their search for answers to eye patients’ most complex challenges. Through competitive awards, it has provided more than \$5.7 million to UCSF Ophthalmology scientists since 1998.

“We are grateful for this major, ongoing support,” says Department of Ophthalmology Chair **Stephen D. McLeod, MD**. Individual awards substantially expand innovative efforts, and an unrestricted award benefits investigations department wide. More than \$500,000 was generously granted this year.

The Physician-Scientist Award, granted to mid-career clinicians who are nationally recognized in their subspecialty, will enable neuro-ophthalmologist **Jonathan C. Horton, MD, PhD**, to pursue promising experiments on strabismus that range outside the scope of his five-year grant from the National Eye Institute.

The Walt and Lilly Disney Amblyopia Award assists “exceptional ophthalmic scientists doing research of unusual significance and promise in amblyopia.” Neurobiologist **Erik M. Ullian, PhD**, will expand his exploration of the mechanisms governing how proper eye-brain connections are made, which has implications for novel treatment of amblyopia. (Dr. Horton is a previous recipient of this prize.)

The Career Development Award supports the work of promising younger scientists who recently completed postdoctoral or fellowship training. Glaucoma specialist **Yvonne Ou, MD**, who performed her fellowship at Duke University, investigates the neurodegenerative mechanisms underlying glaucoma.

Understanding Visual Suppression

Jonathan C. Horton, MD, PhD, with colleagues **Daniel L. Adams, PhD**, and **John R. Economides, PhD**, studies visual function in children with strabismus.

to double vision. Children rapidly learn to suppress the second image, reducing confusion but robbing them of the feedback signal needed to adjust eye muscle tone and bring the eyes back together.

in each eye that reveal “suppression scotomas,” areas where retinal input is ignored by the brain to prevent double vision. In addition, his team has shown that visual suppression is accompanied by reduced metabolic activity in the primary visual cortex.

Research to Prevent Blindness supports the team’s most recent project: testing how patients with strabismus make eye movements to look at objects of interest. In normal subjects, the eyes make a rapid coordinated movement, called a saccade, to look at a new visual target. The situation is more complicated in strabismus – misalignment means that only one eye can acquire a target.

acquire new visual targets. By studying these patients, Dr. Horton’s team expects to learn the rules that govern which eye will be used and to discover which eye provides information to the brain on the location of the next target.

In this condition, the eyes drift out of alignment, giving rise

The Horton lab has mapped regions of the visual field

This research will reveal the unconscious strategies strabismus patients use to make accurate eye movements. It will also provide fundamental new understanding of the mechanism of visual suppression, which may lead to better methods for preventing and treating strabismus. ●

Dr. Horton documented the movements of the left eye (blue trace) and the right eye (red trace) of a strabismic person looking at a cliff face for seven seconds. Each circle is a fixation target, and each line is an eye movement to the next target. Misalignment of the eyes causes each eye’s movement direction to differ.



Overcoming Vision Disability

Many strabismus patients engage in alternating fixation, using the right eye and the left eye at different times to

Patient Expresses Gratitude

When John Edom first noticed his blurred vision, he told his wife Gail, “It’s probably allergies.” Instead, concern and clinic visits quickly multiplied. Not far from the couple’s Colorado Springs home, a Denver specialist laid out the facts. A cancerous tumor in John’s left eye had to be destroyed, and destroying the tumor would cost John his sight.

“Unless.” A groundbreaking surgery that might save John’s sight had been pioneered by UCSF Ophthalmology’s Dr. Bertil Damato, who recently arrived from the United Kingdom, where he had perfected the treatment. While the couple drove 22 hours to San Francisco, images of the eye were examined by Dr. Damato’s team. Pronounced a perfect surgical candidate, John felt a prayer had been answered.

“I’ve never been more grateful for my relationships, my eyes, or my faith.”

– John Edom

“Dr. Damato was direct and compassionate, sharing the risks and the hope of his approach,” John recalls. “The decision to trust him came easily.” After rigorous imaging, measurement, and analysis, Dr. Jay Stewart performed the procedure, with assistance from Dr. Armin Afshar.

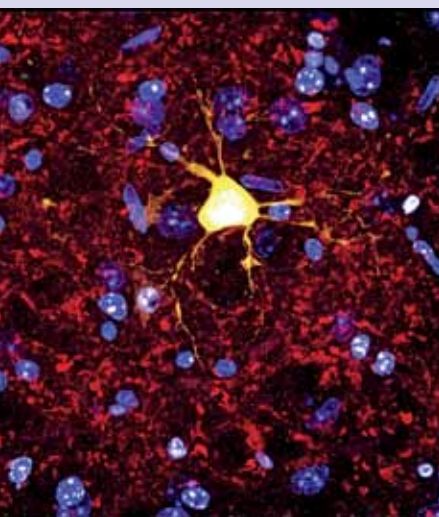
“The whole team’s professionalism inspired confidence,” John recalls. A week after surgery, the patient had regained 60 percent of his vision in the treated eye, and Dr. Damato expects further improvement.

For John, the experience has been life changing. “I’ve never been more grateful for my relationships, my eyes, or my faith,” he says.



Advancing the Search for Solutions

Continued from page 2



A single filled neuron (labeled yellow) in the brain’s visual thalamus is shown receiving visual input from the retina (red). The nuclei of all cells are labeled blue.

Eye-Brain Connectivity

The research of neurobiologist **Erik Ullian, PhD**, includes exploration of the mechanisms governing how proper eye-brain connections are made and maintained over a lifetime. Dr. Ullian’s team, including **Dang Dao, PhD**, and **Kenton Hokanson**, has published findings suggesting that the classical model for how retina-to-brain connections are made may be incorrect.

In amblyopia, commonly referred to as “lazy eye,” visual information received by the retina fails to be relayed properly to the brain. This can result in partial to complete loss of vision. Amblyopia sometimes represents a worsening of strabismus, in which misaligned eyes cause double vision, leading to visual suppression (see Dr. Horton’s research summary).

Recreating Precise Alignment

The leading cause of childhood vision loss in the United States, amblyopia can be treated most effectively at young ages, when the retina-to-brain connections undergo rapid growth and remodeling. However, young children’s inability to describe their symptoms often delays diagnosis. Particularly after age five, ocular misalignment often cannot be corrected completely, leaving many patients with vision disability.

New studies will allow the Ullian team to identify, for the first time, key molecular signals that govern the exquisite cellular connectivity and function required for proper visual alignment. “We hope that elucidation of these mechanisms will lead to alternative therapies for better realignment of visual information from the two eyes, even after the retina-to-brain pathways become less adaptive,” says Dr. Ullian. ●

Making and Breaking Retinal Cells

In untreated glaucoma, the retinal ganglion cells that form the optic nerve gradually die. **Yvonne Ou, MD**’s laboratory experiments are allowing her to distinguish subtypes of these cells that are more or less resistant to raised intraocular pressure, a major risk factor. This work is a collaboration with vision scientists at the University of Washington.

Understanding Cell Injury

Discovering what makes one type of retinal ganglion cell more vulnerable to injury than another will drive Dr. Ou’s

next set of experiments. She will identify the characteristics that distinguish relatively resilient retinal ganglion cell types from others.

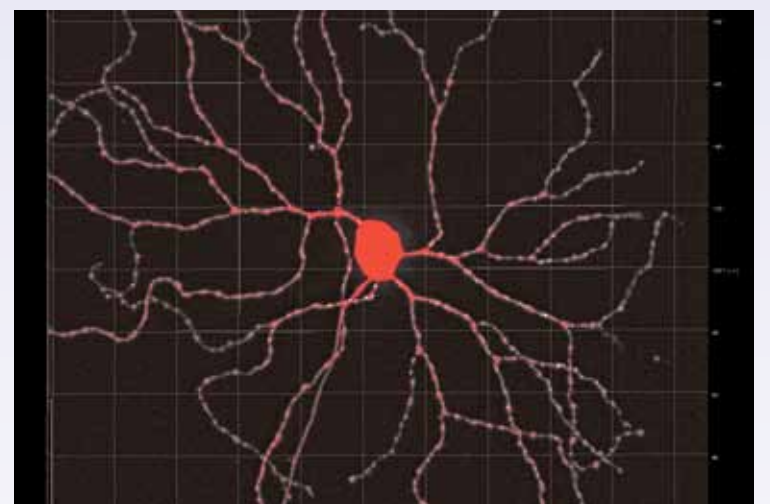
The findings will allow her team to design tests to diagnose glaucoma at an earlier stage or more rapidly identify progression. For example, a specialized visual field test that challenges more vulnerable retinal ganglion cells may help diagnose damage earlier.

Glaucoma in a Dish

Dr. Ou is also developing a “disease in a dish” model.

Patients from her glaucoma clinic volunteered to have skin biopsies, and those skin cells were transformed into stem cells. The stem cells then were meticulously differentiated into retinal ganglion cells. Dr. Ou and her team will expose these cells to a pressure-like injury to simulate human glaucoma signs.

“This work will broaden the foundation for innovative therapies with the potential to protect vulnerable retinal cells and prevent loss of sight,” says Dr. Ou. ●



This retinal ganglion cell subtype is relatively resistant to raised intraocular pressure.

Ronald and Anita Wornick provided generous support for Dr. Ou’s research through *That Man May See*. To learn how to support vision research, contact *That Man May See* at 415.476.4016 or rydark@vision.ucsf.edu.

Retinal Degeneration Breakthrough for Retinitis Pigmentosa



Drs. Doug Gould (left) and Marcel Alavi

A cross-disciplinary team of specialists in diabetes and ophthalmology has shown for the first time that a novel drug can slow progression of a severe, but relatively common, type of retinitis pigmentosa. Extending survival of the retina's photoreceptors in a laboratory model suggests that this drug, or others like it, has potential for future treatment of patients facing sight loss to this type of inherited eye disease.

Rhodopsin, a key protein in photoreceptor cells, is essential for vision. Mutations cause chronic misfolding of the rhodopsin protein, stressing photoreceptors and triggering their destruction. The drug can precisely target part of a crucial cellular quality-control network, and this allowed photoreceptor cells to survive.

This novel drug shows potential for future treatment of retinitis pigmentosa.

Collaboration with Diabetes Team

The innovative drug, developed by UCSF researchers **Scott Oakes, MD**; **Feroz Papa, MD, PhD**; and **Bradley Backes, PhD**, targets a cellular "life-or-death" pathway that detects when proteins misfold. The drug also was shown effective in slowing disease progression in diabetes caused by misfolded proteins.

The Department of Ophthalmology's highly developed laboratory models for retinitis pigmentosa, cultivated for three decades in the laboratory of **Matthew LaVail, PhD**, provided the ideal test population. Dr. LaVail previously used the models to illuminate the biology of how rhodopsin mutations kill photoreceptors. Vision scientists **Doug Gould, PhD**; **Marcel Alavi, PhD**; **Michael Matthes, PhD**; and **Doug Yasumura, MA**, provided expertise to Drs. Oakes and Papa. ●

This work was funded by donations to That Man May See and grants from the National Institutes of Health. To support vision research, please contact That Man May See, 415.476.4016, tmms@vision.ucsf.edu, or www.thatmanmaysee.org.



Probing Macular Origins

Drs. Jeanette Hyer (left) and Sara Venters

A richer understanding of the central retina's development will give biologists a stronger foundation for advancing novel therapies that protect the central retina (called the fovea or macula). The concentration of photoreceptors in this area allows humans to recognize faces, read, and drive. Eventually, greater insight into the biology will help scientists regrow healthy tissue and restore sight to those with macular degeneration.

UCSF developmental biologists **Jeanette Hyer, PhD**, and **Sara Venters, PhD**, investigate how the central retina's unique characteristics arise as the eye develops. "We hope to provide insight into why certain diseases harm the macula more than other retinal cells," says Dr. Hyer.

"We hope to provide insight into why certain diseases harm the macula more than other retinal cells."

– Dr. Jeanette Hyer

Development of the Central Retina

These scientists are passionate about the biology of ocular development. They previously found evidence that embryonic retinal development may be quite distinct for the retina's macular cells. The team wants to establish definitively when and from what early cells the central retinal cells emerge.

A bird model with a rapidly forming eye simplifies their research. Advanced optics allows them to mark the precursors of central retinal cells with a fluorescent label early in development. Each new cell that divides from these cells then carries the same fluorescent identifier, providing a way to track which cells eventually contribute to the central retina.

Retinal tissue development takes place in an environment of myriad cellular signals and interactions. Dr. Venters will meticulously isolate these environmental factors in emerging retinas, allowing the team to determine the influence, if any, of these factors. ●

Funding from the National Institutes of Health and Bright Focus Foundation make this investigation possible. To learn more about supporting vision research, please contact That Man May See at 415.476.4016, tmms@vision.ucsf.edu, or www.thatmanmaysee.org.

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Dear Friends of That Man May See,

Thank you for sharing our passion and commitment by supporting UCSF's world-class vision science faculty. When our eyesight falters, there is no finer place to turn than UCSF Ophthalmology. We have a rare jewel to safeguard for the Bay Area and the world.

That Man May See plays a vital role in the successful achievements of UCSF's dedicated clinician scientists and laboratory researchers whose work is aimed at saving and restoring sight. Below you will find a summary of specific research, patient care, and education projects made possible by your support. I hope you share my sense of accomplishment in being part of this great work.

You and our growing circle of friends make a real difference. When you make a gift to That Man May See, you help us imagine a world in which all may see.

With deep gratitude,

John P. Rohal
Chair, Board of Directors
That Man May See

Impact of Your Generous Funding

ENDOWED FUNDS

Endowed funds stabilize the long-range financial future of UCSF Ophthalmology and bring recognition to those who provide funds or whom generous contributors choose to honor. This year, two endowed chairs were established, and one was increased. *(Estate of Harvey A. Birsner, MD, Andrew and Cecilia Yau, Theresa M. Caygill)*

FACULTY RECRUITMENT & LAB RENOVATIONS

Bertil E. Damato, MD, PhD, FRCOphth, joined the ophthalmology department as director of Ocular Oncology. He also holds an appointment to the radiation oncology department. *(Don and Judy McCubbin)*

Basic Scientists **K. Saldas Nair, PhD**, and **Felice A. Dunn, PhD**, bring tremendous energy to research in the areas of glaucoma and retinal degeneration. Recruitment included laboratory renovations. Clinician scientist **Marc Levin, MD, PhD**, a neuro-ophthalmologist, is one of five Heed Fellows in the country elected to the Society of Heed Fellows. *(Estate of Denise B. Evans)*

Anthony Thomas Moore, BM, BCh, FRCOphth, FMedSci, will join the pediatric ophthalmology team in 2015. Dr. Moore built the leading pediatric ophthalmology units in the United Kingdom. *(Koret Foundation, William Randolph Hearst Foundation, the David and Elva Sinai Foundation)*

Majid Moshirfar, MD, will join the ophthalmology department in 2015. He specializes in refractive surgery, medical and surgical management of corneal disorders, cataract removal, and inflammatory eye diseases. Dr. Moshirfar currently serves as director of the Moran Eye Center's Refractive Surgery Program and Cornea

Program at the University of Utah and on the editorial board of the *Journal of Refractive Surgery*. He has pioneered numerous cataract and refractive surgery technologies. *(Don and Judy McCubbin and Koret Foundation)*

RESEARCH

Inherited Retinal Degenerations
Jacque L. Duncan, MD, studies retinal degenerative diseases using a ground-breaking technology, adaptive optics, to rapidly advance this field of research to lead to sight-saving treatments. *(Claire Giannini Fund)*

Glaucoma
Using stem cell technology, researchers have made tremendous progress in their study of the mechanisms of glaucoma – to advance novel diagnostics and treatments. *(Ronald and Anita Wornick)*

Worldwide glaucoma study is under way to better understand glaucoma mechanisms, improve therapeutic intervention, and develop cost-effective screening protocols and medical and surgical treatments. *(Fortisure Foundation)*

Macular Degeneration
Applying a multifaceted research approach advances the Department of Ophthalmology's ability to make a difference for those with macular degeneration and retinal diseases. *(Lisa and John Pritzker Family Fund, Lynn Pasternak)*

Proctor Foundation's International Research
Gifts to this independent research unit support efforts to save sight and lives worldwide. *(Peierls Foundation and Harper-Ingليس Memorial Fund for Eye Research)*

Seed Funding for Peer-Reviewed Investigations
Seed funds allow researchers to initiate new projects with a high potential for success. With demonstrated results, faculty

members seek National Institutes of Health funding. This year's projects included the following:

- **Nisha Acharya, MD, MS, and John A. Gonzales, MD** *Validation of International Workshop on Ocular Sarcoidosis and Analysis of the Utility of Gene Expression Profiling as a New Diagnostic Criterion* This study aims to improve the accuracy of ocular diagnosis of a type of inflammation that can be fatal.
- **Nancy A. McNamara, OD, PhD** *Defining the Functional Link between Inflammation and Corneal Neuropathy in Dry Eye Disease*. This project tests the hypothesis that the neural sensory loss in the cornea plays a key pathological role in dry eye. This study intends to improve the management of dry eye and other diseases of the ocular surface.
- **Jeremy D. Keenan, MD, MPH** *Sanitation, Water, and Instruction in Face Washing for Trachoma*. This pilot study examines whether a complete set of hygiene intervention protocols is effective for reducing ocular chlamydial infection. This study has already led to a major clinical trial (see article on page 8).
- **Bertil E. Damato, MD, PhD, FRCOphth, and Boris C. Bastian, MD, PhD** *Improving Outcomes for Patients with Intraocular Melanoma Using Advanced Genetic Tissue Analysis*. This study uses advanced next-generation gene sequencing to identify the most common ocular melanoma with metastatic potential and to serve as a prognostic tool.
- **Douglas B. Gould, PhD** *Extracellular Matrix and Pathogenic Retinal Angiogenesis: Implications for Age-Related Macular Degeneration*. Aimed toward breakthroughs for age-related macular degeneration, this study seeks to understand how alterations of the extracellular

matrix lead to pathological angiogenesis in the retina.

- **Matilda F. Chan, MD, PhD** *Trials of a Herpes Simplex Virus (HSV) Mutant Strain as a Live Vaccine*. The results of this study have the potential for new HSV vaccines using genetically engineered forms of virus.

EDUCATION

By supporting medical student, resident, and fellow education, donors strengthen the stature of UCSF Ophthalmology and the University as a whole and contribute to the development of the next generation of leading ophthalmologists. *(Thomas R. Mazzocco, MD, and members of the Frederick C. Cordes Eye Society)*

PROSE DEVICES FOR LOW-INCOME PATIENTS

The Prosthetic Replacement of the Ocular Surface Ecosystem (PROSE) device, fitted at the Proctor Foundation, reduces pain and suffering for cornea patients. *(The Sean and Leslie Doherty Family and Jack and Betty Demetree Family Foundation)*

DONOR-DEVELOPED INITIATIVES

The Augie Fund – Glasses and Specialized Lenses for Children
Because of the Augie Fund, any vulnerable child treated at UCSF Ophthalmology who needs glasses or specialized lenses can get them – easily and without financial strain on his or her family. *(Gerson and Barbara Bakar, Lucinda Watson, the Kimball Foundation, the Wintroub-Hansen Family)*

Alcatraz Swim for Sight
That Man May See board members Lorie and Ron Hirson launched Alcatraz Swim for Sight to raise funds for research and efforts to save sight and lives. *(Hirson Family)*

Donors listed in parentheses have provided major gifts to anchor this work. Gifts at every level support these achievements.

In Gratitude for Generous Gifts

Thank you for your generous support received between July 1, 2013, and June 30, 2014. For a complete donor list, please visit www.thatmanmaysee.org/how-you-can-help/contributors/

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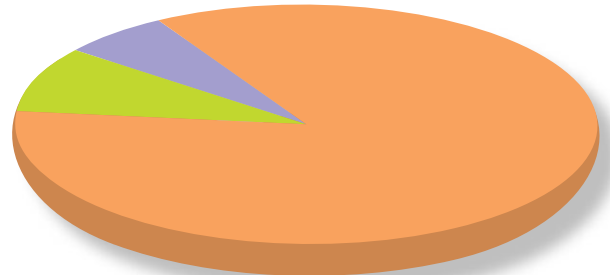
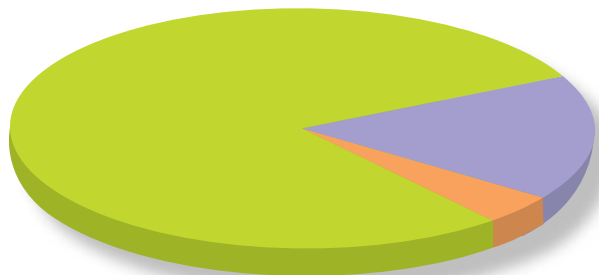
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Fundraising Review: That Man May See Generated Funds



Sources of Funds	Direct to TMMS	Via Other UCSF Entities*	Total	%	Application of Funds	Actual	%
Donations and new pledges from Individuals, including bequests and trusts	\$1,785,050	\$1,499,428	\$3,284,478	79%	Research, Education, Patient Care and Community Services	\$3,554,201	85%
Donations and new pledges from Corporations and Foundations	\$617,103	\$99,200	\$716,303	17%	Fundraising	\$364,705	9%
Earnings on Deposited Funds**	\$179,571		\$179,571	4%	Management and Administration	\$261,446	6%
Total Revenue	\$2,581,724	\$1,598,628	\$4,180,352	100%	Total Expenses	\$4,180,352	100%

*Board of Regents and UCSF Foundation
**Includes fee reimbursements from UCSF

Stopping a Blindness Epidemic Dr. Keenan Leads Major Trial

A volunteer tracks a boy's growth (left). New hand-dug wells will use manual pumps to access fresh water. A covered latrine reduces disease spread.



Dedicated to the eradication of trachoma, **Jeremy Keenan, MD, MPH**, leveraged seed funds provided by donors to That Man May See for a pilot study, and promising results merited \$2.5 million from the National Eye Institute for a randomized clinical trial. In partnership with the Carter Center and others, UCSF's Francis I. Proctor Foundation for Research in Ophthalmology will carry out the hygiene and sanitation study in 68 Ethiopian communities.

Proctor Foundation vision scientists have proven that mass distribution of antibiotics slows the spread of trachoma, the leading infectious cause of blindness worldwide. However, many experts agree that improvements in public health are required to eliminate the disease.

Antibiotics Plus WASH

The new study will determine the impact of improvements in water, sanitation, and hygiene, the so-called WASH intervention. The Proctor Foundation's **Tom Lietman, MD**, and **Travis Porco, PhD**, also will play key roles. WASH expert Matthew Freeman, PhD, of Emory University is also a co-investigator.

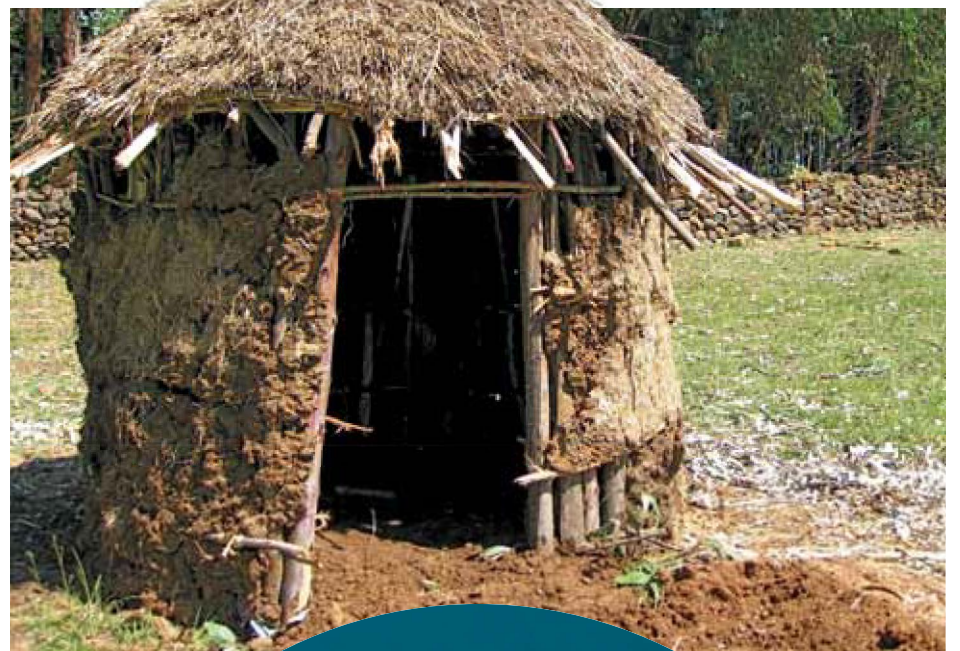
Millions of rural communities without plumbing lack effective sanitation and hygiene tools, and few understand how disease spreads. Not only does contagious eye disease proliferate, but common childhood illnesses often result in death.

Investigators will monitor for trachoma over three years. Half of the sites will receive the WASH intervention early in the study, and the other half will receive them at the study's end.

Halting Infectious Disease

The WASH intervention is costly and challenging to implement. Outcomes will help scientists, governments, and philanthropists discern its value in ending trachoma-related blindness. Water and sanitation improvements should also reduce transmission of other harmful bacteria, so the investigators will collect information on childhood growth and mortality. Hopes are high that the WASH intervention will lead to better sight and quality of life around the globe. ●

Pilot study seed funds were provided by the Sara and Evan Williams Foundation through That Man May See and other Proctor Foundation donors. To learn more about ways to support vision research at UCSF, contact Kathleen Rydar at 415.476.4016, rydark@vision.ucsf.edu, or thatmanmaysee.org.



WASH Intervention

Clean Water: Community wells will be constructed at strategic locations of each study site, reducing time needed to haul water.

Washing Stations: Researchers will help families construct tippy-taps, cheap and convenient washing aids that reduce germ spread.

Home Latrines: Families will receive assistance to create covered latrines, reducing the spread of disease by flies.

Education: Messages to promote sanitation and hygiene will be incorporated into posters, brochures, and workshops.

Luminary Adds to Proctor Endowment

The Francis I. Proctor Foundation for Research in Ophthalmology has gratefully received a multi-million dollar gift from the estate of **Phillips Thygeson, MD**, who led the foundation from 1959 to 1972. The funds will establish two faculty chairs: the Elizabeth C. Proctor Distinguished Professorship and the Ruth L. and Phillips Thygeson Distinguished Professorship.

Dr. Thygeson was a postgraduate student when he joined **Francis Proctor, MD**, and others to find the causative agent of the blinding disease trachoma. In 1934, Dr. Proctor helped Dr. Thygeson organize a trachoma research laboratory

at Fort Apache, Arizona. The disease was widespread on the Fort Apache Indian Reservation. That laboratory worked on finding the etiology of trachoma, which was eventually eradicated in the United States.

During World War II, while Dr. Thygeson served in the Army Air Corps, he consulted with Mrs. Elizabeth Proctor on the establishment of a UCSF research laboratory to honor her husband's memory. Dr. Thygeson joined the faculty at its founding in 1947. In 1950, Dr. Thygeson was the first to publish details of an opacifying eye disease that was then named for him: Thygeson's superficial punctate keratopathy. ●

In Memorium



Strengthening UCSF Ophthalmology in Perpetuity

Beloved friend of That Man May See and the Department of Ophthalmology, **Theresa M. Caygill** died in July and is greatly missed. Since the 1970s, Terry and her late husband, ophthalmologist Wayne M. Caygill, MD, supported the vision of a world-class eye center at UCSF. The couple generously funded clinical improvements, education, and long-term endowments. They established

the Theresa and Wayne Caygill Ophthalmic Library in the Department of Ophthalmology's Koret Vision Research Laboratories.

Over the years, strong bonds were formed with faculty, especially a lifetime friendship with former department chair **Creig Hoyt, MD**, and his wife Debbie. They shared a love of books, world history, and architecture. Her living room showcased stunning examples of Mid Century Modern furnishings.

The Caygills established ophthalmology's first endowed professorship, held by Department Chair **Stephen D. McLeod, MD**. One of Terry's final gestures was a generous upgrade of the Theresa M. and Wayne M. Caygill, MD, Chair in Ophthalmology to a distinguished professorship, an endowment now valued at more than \$2.5 million.

In addition, she left a significant bequest for ophthalmology to the Regents of the University of California.



Legacy Supports Proctor Foundation

Thomas Browning Inglis Jr. supported vision health around the world and was a generous friend of UCSF's Francis I. Proctor Foundation for Research in Ophthalmology. When he passed away in March, he left the foundation a \$1 million bequest to establish the Harper-Inglis Memorial Fund for Eye Research at

the Francis I. Proctor Foundation at the University of California, San Francisco. Tom had previously set up a charitable gift annuity to support the study of global solutions for infectious and inflammatory eye diseases that cause vision disability and blindness.

Tom had a distinguished career in Naval Intelligence and then worked as a management consultant. He was an avid reader and a collector of rare books. Blessed with a keen and inquisitive mind, his interests included history, art, antiques, government, and finance.

In the words of his nephew George Hecksher of San Francisco: "Both in his working life and in retirement, Tom served with integrity, intelligence, and independence of thought. Those who knew him will never forget his informed and engaging personality."

"For over 20 years, Tom and I shared many hours together talking about how the world could be made a better place for all of us," says **Jack Witcher, MD, MPH**. "He firmly believed that this could only happen through better access to education and health care. Tom remained a cheerful curmudgeon, in the best sense of the word, and was a true humanitarian. I will miss his guidance."

Leader of That Man May See

Longtime That Man May See board member **William Henry "Bill" Green** died in June. He and his loving wife Frances contributed generously to UCSF vision research for nearly four decades.

Bill served as That Man May See's board chair during the pivotal time when the ophthalmology department built its Beckman Vision Center and Koret Vision Research Laboratories. His passion for healthy sight and concern for others helped engage a philanthropic community to support the major building and research campaign, contributing to UCSF Ophthalmology's strength as a leading eye center.

After serving as a Captain in the Army in World War II, Bill was the owner of Parsons, a chain of optical stores in the Bay Area. His easy-going style, subtle wit, and caring friendship will be missed. Many friends and family members have contributed to That Man May See, as Mr. Green's wishes were that charitable donations be sent to That Man May See, 10 Koret Way, Box 0352, San Francisco, CA 94143-0352, or made at www.thatmanmaysee.org.

Bringing Art to Science

Continued from page 1

featured on the covers of *Neuron* and the *Journal of Neuroscience*.

"I am obsessed with how the retina works," says Dr. Dunn. Her goals are to understand and increase survival of diseased retinal cells and to help restore sight to those blinded by retinal degenerations. Twelve years of doctoral and postdoctoral vision research at the University of Washington prepared her for her new position.

Protecting Retinal Cells

An extension of the brain's neural system, the retina's fine network of layers and channels is a primary tool of sight. When light reaches a healthy

retina, electrical responses travel from the photoreceptors through the bipolar and ganglion cells to the rest of the brain for processing.

"The bipolar cells are vital, but their roles are less understood than those of the photoreceptors," says Dr. Dunn. Retinal diseases often kill photoreceptor cells first. By understanding how bipolar cells begin to degrade as they lose contact with dying photoreceptors, Dr. Dunn will gain insight into potential targets for therapies to help the bipolar cells survive. This could slow the cascade of disease progression.

"The bipolar cells are vital, but their roles are less understood than those of the photoreceptors."

– Dr. Felice Dunn

Improving Sight Technology

Dr. Dunn also wants to establish how bipolar cells transmit signals and whether multiple signals stimulate responses from more of the retinal circuitry. If so, she will seek to replicate those signals for use in next-generation vision prosthetics.

The "bionic retina" approved by the U.S. Food and Drug Administration in 2012 stimulates ganglion cells to restore some basic sight. An experimental

prosthesis now being developed directly stimulates the bipolar cells. Dr. Dunn's replicated bipolar signals could help the device capture more subtleties of the natural retinal response, improving users' sight experience. ●

Donors to That Man May See provided recruitment funds to establish Dr. Dunn's research laboratory. To learn more about how to support vision research, please contact That Man May See at 415.476.4016, rydark@vision.ucsf.edu, or thatmanmaysee.org.

Faculty News

Dr. David Chang International Recognition

The Asia-Pacific Academy of Ophthalmology recently awarded renowned cataract specialist **David F. Chang, MD**, the José Rizal International Medal. Bestowed each year, the medal honors an international ophthalmologist

for exceptional contributions to ophthalmology in the Asia-Pacific region. Ophthalmologist Dr. José Rizal was a Filipino national hero.

Dr. Chang is adjunct clinical professor of ophthalmology at the Chinese

University in Hong Kong and serves on the international advisory boards of Project Vision and the State Key Laboratory of the Zhongshan Ophthalmic Center in Guangzhou. Dr. Chang is a clinical professor at UCSF and an alumni of its ophthalmology residency program. ●



Richard L. Abbott, MD

Invited Lecturer: “Latest medical and surgical strategies for the diagnosis and management of bacterial keratitis,” Russian National Eye Congress, Moscow

Dr. Abbott was also honored with the first Fyodorov Honorary Professorship at the S. Fyodorov Eye Microsurgery Federal State Institute in Moscow.



Nisha Acharya, MD

Election: Secretary, Fellowship Compliance Committee Board of Managers of the Association of University Professors of Ophthalmology

Dr. Acharya will help oversee fellowships in ophthalmology, assuring that quality of training at these programs meets national standards.



Michele M. Bloomer, MD

Invited Lecturer: “Brain, mind and eye block,” School of Medicine, Koç University, Istanbul



David R. Copenhagen, PhD

Publication: Delwig A, Majumdar S, Ahern K, LaVail MM, Edwards R, Hnasko TS, **Copenhagen DR.** “Glutamatergic neurotransmission from melanopsin retinal ganglion cells is required for neonatal photoaversion but not adult pupillary light reflex,” *PLoS One*, 8(12):e83974

Dr. Copenhagen’s team has been studying two types of light-induced behavior: Photoaversion and Pupillary Constriction. This paper proved that photoaversion in this neonatal lab model relied exclusively on neurons that used glutamate as a neurotransmitter. However, pupillary constriction in adults relies on glutamate and some other unidentified neurotransmitter. These results suggest that premature infants may rely on two complementary neural circuits to mediate pupillary constriction but a single type of circuit very soon after birth.



Jacque L. Duncan, MD

Selection: Bertke UCSF Academy of Medical Educators

From UCSF’s faculty of approximately 2,000, Dr. Duncan was selected to join the 101-member UCSF Academy of Medical Educators. The academy provides a cross-departmental community of 101 dedicated educators working to strengthen their own teaching and promote excellence in teaching throughout the School of Medicine.



Matthew M. LaVail, PhD

Lead Organizer: 16th International Symposium on Retinal Degeneration, Pacific Grove, California

Considered the most important international conference in its field, this biennial meeting attracts more than 250 leading vision scientists to discuss progress toward potential therapies for retinal diseases. Travel scholarships allowed 40 promising younger scientists from around the world to attend.



Shan Lin, MD

Chair: Two ophthalmology symposia; **Senior Instructor:** Training course, Asia Pacific Academy of Ophthalmology, Hong Kong

Angle-closure glaucoma and surgical techniques for glaucoma, two areas of Dr. Lin’s expertise and research interest, were the focus of these academic sessions.



Nancy A. McNamara, OD, PhD

Publication: Vijmasi T, Chen FY, Balasubbu S, Gallup M, McKown RL, Laurie GW, **McNamara NA.** “Topical administration of lacritin is a novel therapy for aqueous-deficient dry eye disease,” *Investigative Ophthalmology and Visual Science*, 2014 Jul 17;55(8):5401-9.

Dr. McNamara and her team demonstrated the therapeutic value of a naturally occurring tear glycoprotein, lacritin, for aqueous-deficient dry eye.



Ayman Naseri, MD

Appointment: Executive Editor for the next edition of *Basic Principles of Ophthalmic Surgery*, published by the American Academy of Ophthalmology

This textbook is one in the Basic and Clinical Sciences series that every resident nationwide receives at the start of ophthalmology training.



Yvonne Ou, MD

Invited Lecturer: “Who’s lost first? Selective vulnerability of subtype-specific retinal ganglion cells in glaucoma,” David L. Epstein Scientific Symposium, Duke University, Durham, North Carolina

This symposium honored Dr. Ou’s most influential mentor, an internationally renowned glaucoma specialist.



Saras Ramanathan, MD

Invited Lecturer and Core Faculty Member: “Reliable methodology for creating a reproducible capsulorrhexis,” Harvard Intensive Cataract Training Course, Boston

Dr. Ramanathan continues her efforts to offer excellent cataract surgery education not only to trainees at UCSF but also around the country. Findings of this study can help improve residency training programs by highlighting areas of greatest impact to patient visual prognosis after surgery as well as to health care costs. Residents can also use the study to help counsel their patients.



Robert Stamper, MD

Guest of Honor: Pacific Coast Oto-Ophthalmological Society meeting, San Diego



Jay M. Stewart, MD

Publication: Menda SA, Driver TH, Neiman AE, Naseri A, **Stewart, JM.** “Return to the operating room after resident-performed cataract surgery,” *Journal of the American Medical Association Ophthalmology*, 2014 Feb;132(2):223-4.

Findings of this study can help improve residency training programs by highlighting areas of greatest impact to patient visual prognosis after surgery as well as to health care costs. Residents can also use the study to help counsel their patients.



Erik M. Ullian, MD

Invited Lecturer: “Visual System cortical plasticity regulated by an unexpected guest,” Federation for European Neuroscience Annual Meeting, Milan, Italy



M. Reza Vagefi, MD

Invited Lecturer: “Orbital Surgery Options in Graves Eye

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That Man May See

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Printing

Sungold Litho
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**That Man
May See
Annual Report**

Welcome New Residents Class of 2017



Joseph B. Alsberge, MD
MD: Weill Cornell Medical College
Internship: Virginia Mason
Medical Center

Kareem Moussa, MD
MD: Duke University
Internship: Santa Clara Valley
Medical Center

Gregory J. Bever, MD
MD: Boston University
Internship: Montefiore New
Rochelle Hospital

Julius T. Oatts, MD
MD: Yale University
Internship: Yale New
Haven Hospital

Joey Y. Hsia, MD
MD: Case Western Reserve
University
Internship: Santa Clara Valley
Medical Center

New Residents (left to right): Drs. Gregory
Bever, Joseph Alsberge, Kareem Moussa,
Joey Hsia, and Julius Oatts

Community Service New Specialists Enhance Patient Care



The Bay Area's most vulnerable will benefit from additional expertise in ophthalmology, thanks to a major gift from the **Koret Foundation** to That Man May See. The founding contributor for the Koret Vision Research Laboratories at UCSF three decades ago, the Koret Foundation is further helping the Department of Ophthalmology to attract three new faculty members. The foundation's generous \$300,000 contribution is instrumental in leveraging support from others.

Joining the department will be a senior specialist in cornea and external disease and two pediatric ophthalmologists. These new UCSF clinician scientists will see patients on the Parnassus campus as well as at San Francisco General Hospital and Trauma Center, providing important medical services to everyone in San Francisco, regardless of ability to pay.

The new faculty members also will teach and conduct research to solve the most challenging eye conditions causing vision loss and blindness. **The David and Elva Sinai Foundation** joins the Koret Foundation with major support for pediatric ophthalmology, providing expert care for low-income families from California, Nevada, and beyond. **Don and Judy McCubbin** are providing additional leadership support toward establishment of the new cornea specialist. ●