ADVANCING EDUCATION AND RESEARCH AT BERKELEY OPTOMETRY
Throughout the year I have the opportunity to hear from parents (sometimes grandparents) about how proud they are that their son or daughter (grandson or granddaughter) is attending the University of California, Berkeley, School of Optometry. They often recall the day the “admit letter” was received and the celebration that followed. Berkeley truly is a very unusual place—not only in the world we know best, optometry, but also in the fields of physics, chemistry, engineering, law, business, history, information science, and on and on. Earlier this year I participated, along with 56 of our faculty and students, in “Interview Day.” We interviewed a total of 111 prospective students, of which 67 are now enrolled in the Class of 2016. What was very clear from the candidates I spoke with was that Berkeley is overwhelmingly their first choice. Here are some of the comments I heard when I asked why that was so:

- “Berkeley Optometry has such a strong clinical program, where every graduate has approximately 2,500 patient encounters.”
- “Berkeley students start getting clinical experience in year one.”
- “All I had to do was look at the NBEO results and see Berkeley at the top of the list year after year for highest pass rates—that said it all.”
- “Berkeley’s clinical reputation, combined with its research prominence, puts it at the top of the list.”
- “With 85,000 patient visits annually at the on-campus clinic alone, the patient base at Berkeley has to be among the most diverse of any optometry school, if not the most diverse.”
- “Being part of a university system, in this case the number one public university in the world, is truly special.”
- “The fact that every student in good standing is not only eligible for but actually receives financial aid is a testament to the school’s commitment to and fairness toward students.”

A major reason Berkeley continues to excel in all fields is the students we attract. Our new class is extremely well prepared for the rigorous studies in optometry—several members have already published research papers. Academic accomplishments are not all these students bring—among the Regents’, Chancellor’s, and Gates Scholarship recipients are Eagle Scouts and Girl Scout Gold Award winners. Many have a broad variety of prior work experiences (including the FDA, human resources, biotech, and even one who started her own cooking show). The new class can also jam on piano, flute, alto sax, and tenor sax, while drinking wine a fellow classmate has crafted. It’s too bad Berkeley doesn’t have an NCAA table tennis team—we have a national title holder in this class. Another class member conquered her fear of heights by taking up skydiving!

As you can see, our students arrive with amazing accomplishments already under their belts, and they further Cal’s reputation for excellence both while they are here and after they leave. You can only imagine how proud I am to be dean of Berkeley Optometry. This is, and truly has been, a tremendous privilege.
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29 MEET JILL
Welcome to Jill Malko, our new Director of Philanthropy.
Kudos to Dean Dennis Levi!

This year’s feature article, “Gaming the Visual System,” is especially timely in that its author, our own Dean Dennis Levi, was awarded the Academy of Optometry’s highest honor in recognition of this research. He is the recipient of the 2011 Charles F. Prentice Medal for his work in developing cures for adult amblyopia, which many generations of optometrists have been taught could be cured only in the very young patient. His seminal articles, “Recovery of stereopsis through perceptual learning in human adults with abnormal binocular vision” and “Perceptual learning as a potential treatment for amblyopia,” have dramatically changed the way optometrists, ophthalmologists, and vision scientists think about providing treatment for amblyopic patients.

The Prentice Medal is awarded to outstanding scientists who have contributed significantly to the advancement of knowledge in the visual sciences. The award was established in 1958 and presented for the first time in 1963 to William A. H. Rushton. Berkeley Optometry alumni and faculty are well recognized among the recipients, having been presented this award 16 times (there are a total of 42 winners):

1967 Meredith Morgan
1974 Jay Enoch
1978 Monroe Hirsch
1981 Elwin Marg
1983 Irving Fatt
1986 Gerald Westheimer
1994 Colin Blakemore
1995 Lawrence Stark

1996 Merton Flom
1998 Richard Hill
1999 Arthur Jampolsky
2000 Ian Bailey
2002 Russell DeValois
2003 Anthony Adams
2008 Clifton Schor
2011 Dennis Levi

Berkeley Optometry has been associated with many outstanding individuals and accomplishments, and Dean Levi exemplifies both!

Letters to the Editor

Dear Editors:

That was one heck of a super-duper issue! Thank you very much for sending a copy to me. You have a great team on the PR side of things, and it was very informative. I learned a lot about diabetes from Tony Adams’ terrific article.

Many thanks.

Cordially,

Art
Arthur Jampolsky, MD, OD ’40

Dear Dr. Thal:

I am a proud parent of a first-year student attending your School of Optometry. I received the 2011 issue of your magazine and was overwhelmed with excitement and interest to actually be informed about and visualize the facility my daughter, Cristen Adams, attends for her studies. It’s one thing to speak with her about her studies and the campus environment, but another to actually receive information from the school as well. I have a better understanding, interest, appreciation and comfort level I can share with my daughter. This gave me the opportunity to see the campus. I’m so pleased. My hat goes off to all of you.

Sincerely Yours,

Dane Adams
Proud Mom
Charlie was raised in Los Angeles by parents who came to the United States as refugees from Vietnam. He attended UC Berkeley and majored in sociology and molecular and cell biology. As an undergraduate, Charlie was active in various grassroots organizations that served underprivileged and underrepresented communities, addressing persistent inequalities in access to education, workers’ rights, and healthcare. It was not until he joined Dean Levi’s lab to study amblyopia that he decided to pursue a career in optometry. Under the guidance of Dean Levi and Dr. Roger Li, Associate Researcher, Charlie has helped to publish papers and present at various conferences. He remains involved in Dean Levi’s lab and plans to continue to conduct clinical research.

Charlie cherishes his many friends and colleagues and the experiences they shared at Berkeley Optometry. He participated in two Volunteer Optometric Service to Humanity (VOSH) trips to Kenya and Vietnam and plans to continue serving on future VOSH trips with his colleagues.

Charlie was formerly the president of the student chapter of the American Academy of Optometry, UCOSA academic vice president, and UCOSA historian. As historian he had the privilege of designing the yearbook and taking photos for the school. Charlie is currently a resident at the Baltimore VA Medical Center.

Jaci attended Bucknell University in Lewisburg, Pennsylvania, and worked as a student athletic trainer for the Bucknell football team while obtaining her BS in biochemistry and cellular biology. She decided against becoming an orthopedic surgeon when she realized the impact a surgical specialty would have on her lifestyle. In the summer of her junior year she went to Asikuma, Ghana, with the Unite for Sight program. There she discovered she enjoyed optometry and realized how much she could help others by improving their sight. Upon her return Jaci applied to Berkeley Optometry’s summer Opto-Camp, where she learned both that she wanted to become an OD and that she wanted to come to Berkeley.

Anticipating a future in private practice, Jaci has been active in and served as president of Berkeley Optometry’s Private Practice Club. Jaci hopes to increase the alumni networking relationships among new and more experienced ODs from Berkeley. She still plans to incorporate sports into her career path—Jaci won the Walmart Optometry Foresight Business Plan Competition at the university level for a business plan of a sports vision therapy optometric private practice, and she competed for the national award in Salt Lake City, Utah. She hopes to create an optometric refractive philosophy geared toward athletes of all ages, giving her patients a visual advantage over their competition and the tools they need to succeed on and off the field.

Sabrina is a first-generation Sicilian-American, whose parents came to America on a boat passing through Ellis Island. She was raised in Atwater, California, where she enjoyed the simplicity of life in a country town. Her father has been a contractor and business owner for over 30 years, and her mother is an exceptional stay-at-home mom. After high school Sabrina attended UC San Diego, where she received a BS in microbiology. During her second year at UC San Diego she interned at an optometric group practice, which sparked her interest in a career in optometry. Sabrina sees the optometric profession as a unique blend of science, business, and healthcare, a natural fit for her educational and family background.

Community service has always enriched Sabrina’s life. Prior to optometry school Sabrina mentored at an under-privileged school, assisted in a special-education class, and volunteered abroad for a medical relief organization serving children. As an optometry student she has enjoyed participating in vision screenings and representing the Optometric Extension Program. Sabrina also serves as co-president of Beta Sigma Kappa, the optometric honor society. After graduating from Berkeley Optometry, she hopes to develop a practice in a small town where she and her fiancé can integrate themselves into the community. Sabrina is engaged to marry Dr. Kyle Shively ’10, whom she met right here in Minor Hall!
Faculty and Student Awards

Dean Levi Receives the 2011 Charles F. Prentice Medal

Dean Dennis Levi was awarded the American Academy of Optometry’s highest honor in recognition of his work in developing cures for adult amblyopia—which many generations of optometrists were taught could be cured only in the very young patient. The Prentice Medal is presented to outstanding scientists who have contributed significantly to the advancement of knowledge in the visual sciences. (See the feature article on page 6 of this issue.)

Schweitzer Fellow: Laura Leis ’15

Berkeley Optometry is thrilled to announce that Laura Leis ’15 has been selected as a Schweitzer Fellow. The Albert Schweitzer Fellowship was founded in 1940 to support Dr. Schweitzer’s medical work in Africa during World War II. Since Dr. Schweitzer’s death in 1965, the Fellowship has continued to provide direct assistance to the Schweitzer Hospital in Lambaréné, Gabon. The U.S. Albert Schweitzer Fellows Program (ASFP), established in 1991, has provided support for graduate students in the healthcare field to turn idealism into action in the United States. Each year 200 fellows across the country (12 in the San Francisco Bay Area) are chosen to design and implement individual service projects aimed at addressing health needs in their local communities. The goal of the fellowships is to give students the skills that will help them develop into leaders committed to serving the underprivileged, a key piece of the legacy left by Albert Schweitzer.

Laura’s project involves establishing a vision screening program for students of the American Indian Public Charter Schools and American Indian Public High School in Oakland, California. The project will provide a vision screening for each student enrolled and establish a program that will be continued annually for incoming students.

2010–2011 William C. Ezell Fellowships

Since 1947 the American Optometric Foundation has offered Ezell Fellowships to encourage talented persons to pursue full-time careers in optometric research and education. These fellowships support graduate students enrolled in a full-time program of study and vision-related research that leads to a Master’s or PhD degree. The following Berkeley Optometry vision science students have been honored with Ezell Fellowships:

Bausch + Lomb Ezell Fellow: Tatiana Ecoiffier, MEng, MS
Research focus: Investigation of corneal neovascularization mechanism

Visionary Circle Ezell Fellow: Mariana Garcia, BS
Research focus: A synthetic, injectable, customizable, and biodegradable polymer for control of axial myopia

White Coat Ceremony for Second-Year Students

Berkeley Optometry held its annual White Coat Ceremony at the end of the spring semester. The curriculum provides second-year students with significant patient care experience and results in a true milestone when the students reach their third year. This passage was marked by the White Coat Ceremony held on May 18, 2012, highlighted by the presentation of a white clinic jacket (provided by Alcon) to each student and a group recitation of the Optometric Oath.

Graduation with Style!

Optometry’s commencement ceremony was held on Minor Plaza Saturday, May 19, 2012. Under an elegant tent replete with blue and gold accents, we honored sixty-two new Doctors of Optometry. Graduates and attendees enjoyed faculty speaker Dr. Robert Dister and student speaker (newly minted) Dr. Jennifer Doan. We were also pleased to host special guest Dr. Lee Goldstein (‘66), President of the California State Board of Optometry, who led the Optometric Oath.

Admissions to Berkeley Optometry

Applications were up by 14 percent for the 2011–2012 admissions cycle. Of the 293 applicants for the Class of 2016, 111 were interviewed and 67 enrolled. For those admitted, the average Optometry Admissions Test (OAT) score was 351; the average GPA for biology, chemistry, and physics courses was 3.43. Of those offered admission at Berkeley over the last five years, as high as 93 percent have accepted.
Berkeley Optometry participates in the Association of Schools and Colleges of Optometry (ASCO) centralized application service, OptomCAS, which offers applicants an efficient and convenient way to apply to multiple optometry programs using a single web-based application. This eliminates the need for duplicate transcripts and letters of recommendation and also provides a real-time tool for applicants to check the status of their applications.

4ProsOptos
Starting with the Class of 2015, the Berkeley Optometry Admissions and Student Affairs Office added a new component to its suite of services. Called 4ProsOptos, this initiative is focused on producing the most academically, clinically, and professionally prepared graduates. Combining existing offerings with additional pieces, Berkeley Optometry is preparing students to face an ever-changing job market and shoulder the mantle of leadership in their distinct communities upon graduation. Covered in three modules, the 4Pros reinforce the following skills and values:

Professional and Proactive: Through a series of workshops, students are coached on the fundamentals of resume/CV writing, interviewing and networking skills, etiquette and attire, and job search strategies/self-marketing.

Prosperous: In this module, students learn to take control of their finances through workshops covering debt management, saving for retirement, and examining their value system as related to money. Students will explore how prosperity is measured not only in terms of income but also in terms of work/life balance and the satisfaction derived from “paying it forward.”

Prominent: In this module, which is presented during the school’s Optometry Professional Development Day (OPDD) conference, students in all four years of the program are encouraged to reflect upon aspects of optometry that fall outside of their traditional curriculum. In 2012 the theme was “Power and Privilege,” and the program included workshops such as Visioning Your Values, Giving the Gift of Feedback, and The Art of the Negotiation. The keynote speakers were Jonathan Poullard, Assistant Vice-Chancellor for Student Affairs and Dean of Students for UC Berkeley, and Senator Dr. Ed Hernandez, of California District 24.

Berkeley Optometry—A History Receives Accolades!
John Fiorillo, Berkeley Optometry’s historian/archivist, spent nearly four years compiling the events of our school’s history into a comprehensive, illustrated hardcover book. This remarkable volume includes a discussion of early optometry and offers a fascinating look at aspects of optometry that fall outside of our traditional curriculum. In 2012 the theme was “Power and Privilege,” and the program included workshops such as Visioning Your Values, Giving the Gift of Feedback, and The Art of the Negotiation. The keynote speakers were Jonathan Poullard, Assistant Vice-Chancellor for Student Affairs and Dean of Students for UC Berkeley, and Senator Dr. Ed Hernandez, of California District 24.

We are pleased to announce a comprehensive, illustrated history of the School of Optometry at Berkeley. Four years in the making, Berkeley Optometry—A History offers a lively and revealing look into the origins and evolution of a world-class institution, while featuring alumni and faculty who are among the visionaries and leaders in optometry and vision science, both past and present.

“The book is extremely well written in a style that keeps the reader’s full attention. It is one of those books that you can’t quit reading because it is so well done and so meaningful.”
—Lesley Walls, OD, MD, DOS

“John Fiorillo’s chronicle of the School ... is in turn magisterial, exhaustive, encyclopedic and candid... it paints an absorbing picture of an optometric educational powerhouse coming of age....”
—Gerald Westheimer, OD, PhD, FAAO

“This has to be one of the most comprehensive, and entertaining, histories of a modern health science program assembled to date.”
—Richard Hill, OD, PhD, FAAO

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Amblyopia (from the Greek amblyos—blunt, opia—vision) is a developmental abnormality that results from physiological alterations in the visual cortex and impairs “form” vision. Amblyopia is clinically important because, aside from refractive error, it is the most frequent cause of vision loss in infants and young children, occurring naturally in about three percent of the population. It is also of basic interest because it reflects the neural impairment that can occur when normal visual development is disrupted. The damage produced by amblyopia generally is expressed clinically as a loss of visual acuity in an apparently healthy eye, despite appropriate optical correction. Yet there is a great deal of evidence that amblyopia results in a broad range of neural, perceptual, oculomotor, and clinical abnormalities.
Amblyopia can be reversed or eliminated when diagnosed and treated early in life, so it is important that amblyopia and its risk factors are detected early. It has been estimated that as many as three quarters of a million preschoolers are at risk for amblyopia in the United States, and roughly half of those may not be detected before school age. Improved vision screening in early childhood and access to treatment could, in principle, eliminate amblyopia as a public health issue, but many social and economic obstacles make that goal difficult to achieve. Until recently, amblyopia has rarely been treated later in life.

In the last decade, however, there has been a sea change in our thinking about how amblyopia can be treated and when. This change has resulted from a new understanding of the underlying pathophysiology of amblyopia (based in part on new brain-imaging methods such as functional MRI), as well as a massive shift in our understanding of the ability of adult brains to adapt (plasticity), fueled by a number of important clinical trials, new animal models of amblyopia, and studies in human adults with amblyopia. Amblyopia and adult plasticity have been a major focus of studies by the Levi lab over the last 15 years or so.

**Critical Periods in Perceptual Development**

Examples of critical periods for experience-dependent plasticity are ubiquitous. They occur in virtually every species and for a wide range of sensory functions. Hubel and Wiesel were awarded the Nobel Prize in 1981 for their work demonstrating the importance of sensory experience in shaping neural connections during a critical period early in life. Their research was inspired in large measure by the eighteenth-century notion that early visual deprivation (for example, blindness at birth) resulted in brain changes that led to defective visual perception. Hubel and Wiesel’s work as well as subsequent anatomical and physiological studies have shown that while the visual cortex is by no means a tabula rasa, maturation and experience also play important roles in its development.

Much of the evidence for critical periods in perceptual development stems from work on the effects of altered sensory input in cats and monkeys, in particular monocular visual deprivation, strabismus, or unequal refractive error. If the sensory deprivation occurs early, the animal is left with a permanent visual impairment—amblyopia—and permanent alterations in the primary visual cortex.

In humans, amblyopia is almost always associated with an early history of abnormal visual experience: binocular misregistration (strabismus), image degradation (high refractive error, anisometropia), or form deprivation (cataract). The severity of the amblyopia appears to be associated with the degree of imbalance between the two eyes (for example, a dense unilateral cataract results in severe loss) and the age at which the amblyogenic factor occurred. Precisely how these factors interact is as yet unknown, but it is now clear that different early visual experiences result in different functional losses in amblyopia.

Clinicians are well aware that amblyopia does not develop after the age of 6–8 years, suggesting that there is a “sensitive period” for the development of amblyopia. Psychophysical studies of interocular transfer in humans with a history of strabismus provide an indirect estimate of the period of susceptibility of binocular connections. The results of these studies suggest that binocular connections are highly vulnerable during the first 18 months of life and remain susceptible to the effects of strabismus until at least the age of 7 years.

**Can Amblyopia Be Treated in Older Children and Adults?**

The finding that there is a critical period (or periods) for the development of amblyopia has led to the conclusion that there is also a critical period for the treatment of amblyopia. Over a hundred years ago, Claude Worth suggested that the presence of a “sensory obstacle” (for example, unilateral strabismus) arrested the development of visual acuity (“amblyopia of arrest”), so that the patient’s acuity remained fixed at the level achieved at the
time of onset of strabismus. In this view, the depth of amblyopia is a direct function of the age of onset of the “sensory obstacle.” Worth further suggested that if “amblyopia of arrest” were allowed to persist, “amblyopia of extinction” could occur as a result of binocular inhibition. In Worth’s view, only this “extra” loss of sensory function (that is, the “amblyopia of extinction”) could be recovered by treatment. Although this latter notion is open to question in the light of present knowledge, Worth’s ideas have had a powerful influence on both clinicians and basic scientists. Thus, many of our currently held concepts of amblyopia, such as plasticity, sensitive periods, and abnormal binocular interaction, were already described more than a century ago, and they gained currency with the work of Hubel and Wiesel and the many anatomical and physiological studies that followed. So while amblyopia can often be reversed when treated early, treatment is generally not undertaken in older children and adults. Our work calls into question this notion of a critical period for treatment of amblyopia.

For centuries, the primary treatment for amblyopia has consisted of patching or penalizing the fellow preferred eye, “forcing” the brain to use the weaker amblyopic eye. Although it is often assumed that amblyopia cannot be treated beyond a certain age, clinical trials suggest that treatment may be just as effective in older children (13–17-year-olds) who have not been previously treated as in younger children (7–12-year-olds). To date there have been no clinical trials in adults with amblyopia, but plasticity is evident in amblyopic patients whose visual acuity spontaneously improved after visual loss due to macular degeneration in their fellow eye. There are also reports suggesting that some adult amblyopes recover vision in their amblyopic eye following loss of vision in their fellow (nonamblyopic) eye. These studies are consistent with the notion that the connections from the amblyopic eye may be suppressed or inhibited rather than destroyed. Loss of the fellow eye allows these existing connections to be unmasked, as occurs in adult cats with retinal lesions.

In sum, the evidence suggests that there is brain plasticity in adults, although it does appear that brain plasticity is more restricted in adulthood than in early development. Our lab has focused on two new approaches to restoring brain plasticity in human adults with amblyopia: perceptual learning (PL) and videogame play.

**Perceptual Learning**

Practicing visual tasks can lead to dramatic and long-lasting improvements in performing them, another example of “practice makes perfect.” In adults with normal vision, practice can improve performance on a variety of visual tasks. This is known as perceptual learning (PL), because it can be quite specific (to the trained task, orientation, eye, and so forth). In our lab PL involves requiring patients to practice a challenging visual task using only their amblyopic eye.

In our first studies of PL in amblyopia, we asked adults with amblyopia to perform a Vernier acuity task with their amblyopic eye repeatedly, with each observer completing 4,000 to 5,000 trials in which they judged the position of a “test” line relative to a “reference” line and received feedback after each trial. We trained 11 adults with amblyopia, and all showed significant improvement after practicing Vernier acuity at one orientation. Importantly, several amblyopes also showed improvements in Snellen acuity that were comparable to their Vernier improvement. Both the Vernier (squares) and Snellen acuity (circles) results of one of these amblyopes are shown in Figure 1. For this patient, Snellen acuity reached 20/20 after practicing the Vernier task.

Since our initial studies, there have been more than 20 studies of PL in amblyopia published to date, involving more than 300 amblyopic subjects in labs around the world (see Reference 1 for a review). These studies cover a range of tasks, including Vernier acuity, contrast detection, letter identification (both first- and second-order), position discrimination, spatial frequency discrimination, grating acuity, letter acuity, and motion coherence. Most of the approximately 300 amblyopic subjects showed improvement in the trained task, although the
amount of improvement varied substantially between both tasks and individuals, as well as in Snellen acuity.

Interestingly, age appears to have little influence on the outcome of PL. However, the more severe the amblyopia, the more time is required to obtain the maximal effect of PL, and the greater the benefit. It should be noted that there have been no systematic studies of PL in amblyopia in very young children (under 5 years old), when treatment might be expected to be most effective.

**A Rationale for PL as an Adjunct to Patching**

Occlusion (patching) is considered the “gold standard” method for treating childhood amblyopia. To date, there is no accepted treatment for adult amblyopia. In most PL studies, amblyopic subjects are occluded while performing the visual task, so it is reasonable to ask whether “active” PL provides an advantage over occlusion alone. We believe it does. In one study we found that PL improved both position discrimination and letter acuity in amblyopes who were not responsive to occlusion, and similar findings have been reported for contrast sensitivity. Also, the dose response rate for occlusion (in children aged 6–8 years) is slow, with acuity improving, on average, by a factor of \( \approx 1.6 \) after about 240 hours of occlusion. Our results suggest that occlusion plus PL may be more efficient than occlusion alone, by as much as a factor of 8—in other words, PL provides results much faster than patching alone. Combining occlusion with PL may be a useful method for obtaining the optimal treatment outcome in the shortest possible time. Eliminating or reducing the need to wear an eye patch in public would, at the very least, reduce the emotional stress that often accompanies occlusion.

**Why Is PL Effective in Amblyopia?**

Perceptual learning involves attending and making fine visual discriminations using the amblyopic eye, under conditions where the visual system is challenged, so the learning is both intensive and active. Subjects receive repeated exposure (up to 50 hours) to the same stimuli, and they also receive feedback. Thus we speculate that PL in amblyopia reflects the amblyopic brain learning to attend to and use the most salient or reliable information for the task when viewing with the amblyopic eye. This speculation is consistent with the amblyope's improved ability to use stimulus information more efficiently. It should be noted that during normal everyday life, an amblyopic patient wearing a patch may engage in fine visual discriminations without undertaking specific PL, and that may, at least in part, account for the success of patching. However, PL provides intensive, active, supervised visual experience with feedback, requiring attention and action using the amblyopic eye, and thus it may be more efficient than simply relying on everyday experiences. Nevertheless, perceptual learning has two important limitations—specificity and boredom.

In normal vision, perceptual learning is often highly specific to the trained stimulus and task. The specificity of perceptual learning poses some interesting issues. If the improvement following practice were limited solely to the trained stimulus, condition, and task, then the type of plasticity documented here would have very limited (if any) therapeutic value for amblyopia, since amblyopia is defined primarily on the basis of reduced Snellen acuity. But fortunately, perceptual learning in the amblyopic visual system does transfer, at least in part, to improvements in Snellen acuity. In addition to visual acuity improvement, other degraded visual functions such as stereoacuity and visual counting sometimes improve as well.

**Gaming the Amblyopic Brain**

To date, perceptual learning has had limited impact on clinical practice because of its limited transfer and the rather dull nature of the training, leading to boredom and compliance issues. Work by Shawn Green and Daphne Bavelier at the University of Rochester suggests that in normal vision, playing action videogames may result in improved vision. In contrast to perceptual learning, action-game play is extremely varied in its demands and offers a rich set of visual experiences. Green and Bavelier suggest that playing action games seems to train the brain to learn, on the fly, how to make the best use of the available information in the display, independently of the specifics of the display, allowing learning to transfer broadly and thus lead to possible improvements in quality of life.

We wondered whether playing an action videogame would also result in improved performance in amblyopia. The game's varied demands and rich visual experiences might counteract the PL limitations of specificity and boredom mentioned above. We asked adults (18 to 58 years old) with amblyopia to play an off-the-shelf action videogame (Medal of Honor: Pacific Assault) with their fellow eye patched. Acuity was measured after every 10 hours of game play for 40 hours. All of the amblyopes showed improvements in visual acuity from 13 to 44 percent. For two very mild amblyopes, after-play acuity improved to 20/20! (See Reference 2.) Figure 2 shows the average improvement in Snellen acuity as a function of the duration of game playing in the 18 observers who completed the experiments (diamonds). Although normal subjects do not improve after playing a non-action game (Tetris), amblyopic observers also improve when playing a non-action game (SIM City—the red triangles in Figure 2) for 40 hours, and may continue to improve when switched to an action game (Medal of Honor) for another 40 hours (red diamonds in Figure 2). It is interesting that the improvement in visual acuity with videogame play seems to parallel that for PL (green squares), although it is lower than the most effective PL results. It is also noteworthy that the improvement may not have reached a plateau, even after 80 hours of videogame play.

Other visual functions, such as counting and Vernier acuity, also improve following videogame play. Importantly, five
and discover new lands. This aspect of game play is seldom
enables players to reach goals, win battles, unlock mysteries,
addition, a key to a successful videogame is a good script that
games are challenging but also allow the player to progress. In
learnable environment. Game developers know that successful
give the player a fully integrated experience in a very rich yet
tasks. In contrast, entertainment videogames are designed to
exercises provide the player with a set of rather specific visual
clinical purposes often mirror the type of psychophysical tasks
used entertainment videogames rather than games specially
research to support the use of one game over another. We
for vision. However, there is a paucity of evidence-based
improvement in visual acuity (gray circle in Figure 2).
starting the action videogames, after which time they showed no
wear a patch over their nonamblyopic eye for 20 hours prior to
the patching. To test this, we had seven adult amblyopes
one might wonder whether the improvement was simply due
to the patching. To test this, we had seven adult amblyopes
wear a patch over their nonamblyopic eye for 20 hours prior to
starting the action videogames, after which time they showed no
improvement in visual acuity (gray circle in Figure 2).

Because the amblyopes played with their fellow eye patched,
their eyes could not fuse and perceive a common visual world
the lower limit of this test. Similar improvements in stereopsis occur
following monocular perceptual learning.

The idea of using a computer game to enhance visual skills
in amblyopia is far from new. There are several computer-based
programs that are now being advertised as being good
for vision. However, there is a paucity of evidence-based
research to support the use of one game over another. We
used entertainment videogames rather than games specially
designed for vision training, reasoning that games developed for
clinical purposes often mirror the type of psychophysical tasks
typically used in vision laboratories (reading letters, looking for
a geometric shape among other geometric shapes, etc.). Such
exercises provide the player with a set of rather specific visual
tasks. In contrast, entertainment videogames are designed to
give the player a fully integrated experience in a very rich yet
learnable environment. Game developers know that successful
games are challenging but also allow the player to progress. In
addition, a key to a successful videogame is a good script that
enables players to reach goals, win battles, unlock mysteries,
and discover new lands. This aspect of game play is seldom

anisometropic amblyopes showed substantial improvement in
stereoaucity after 40 hours of action videogame play (see Figure
4, discussed further below), three of them to 20 arc sec—the
lower limit of this test. Similar improvements in stereopsis occur
following monocular perceptual learning.

Because the amblyopes played with their fellow eye patched,
one might wonder whether the improvement was simply due
to the patching. To test this, we had seven adult amblyopes
wear a patch over their nonamblyopic eye for 20 hours prior to
starting the action videogames, after which time they showed no
improvement in visual acuity (gray circle in Figure 2).

The idea of using a computer game to enhance visual skills
in amblyopia is far from new. There are several computer-based
programs that are now being advertised as being good
for vision. However, there is a paucity of evidence-based
research to support the use of one game over another. We
used entertainment videogames rather than games specially
designed for vision training, reasoning that games developed for
clinical purposes often mirror the type of psychophysical tasks
typically used in vision laboratories (reading letters, looking for
a geometric shape among other geometric shapes, etc.). Such
exercises provide the player with a set of rather specific visual
tasks. In contrast, entertainment videogames are designed to
give the player a fully integrated experience in a very rich yet
learnable environment. Game developers know that successful
games are challenging but also allow the player to progress. In
addition, a key to a successful videogame is a good script that
enables players to reach goals, win battles, unlock mysteries,
and discover new lands. This aspect of game play is seldom

present in games developed for clinical purposes; yet it is likely
to be important in the arousal and reward players seek in the
videogame experience.

By capitalizing on the “fun” factor, action videogame play
provides the ideal training tool by fostering deliberate practice.
Videogame play is popular in part because it is an arousing and
extremely rewarding activity (after all, people are ready to pay for
these games because they like playing—not because they believe
it may be good for them). These games may therefore trigger the
appropriate neurochemical milieu that fosters brain plasticity.
For example, playing a simple action videogame (shooting
cartoon tanks) is associated with significant release of dopamine
in the brain. This does not mean that ambylopes have to play
action games to benefit from playing. Indeed, persons with
degraded vision due to amblyopia can also benefit from non-
action videogames. Finally (and probably related to these last
points), getting patients to comply with the training regimen, a
thorny issue for more standard training methods, is made much
easier with an activity as engrossing as videogames.

Our current studies, in collaboration with Daphne Bavelier at
the University of Rochester and Jessica Bayliss at the Rochester
Institute of Technology, combine both the highly motivating
aspects of playing videogames with the efficient (but boring)
aspects of PL. Using Unreal Tournament as the platform, we have
developed an action videogame that is played under dichoptic
conditions to reduce suppression (inhibition) and promote
fusion and stereopsis. We have embedded a psychophysical
resolution task within the game, enabling a more targeted
approach and allowing us to track changes in visual performance
during play. Figure 3 displays a screen from the game. We plan
to make the game available once we have completed our trials.

**Recovery of Stereopsis**

Perceptual learning has generally been aimed at improving
visual acuity and visual performance of the amblyopic
eye. However, as noted above, some amblyopes (mostly
anisometropes) have also registered improvement in stereopsis
as a consequence of the improved acuity and/or contrast
sensitivity. The black symbols in Figure 4 show stereoaucity
before and after monocular PL. Points below the diagonal
gray equality line indicate improved stereopsis, in some cases
from no measurable stereopsis before training (points inside
the vertical blue rectangle). The green symbols show a similar
improvement in stereopsis in five anisometropic amblyopes
following monocular videogame play.

Recent work in our lab provides the first evidence for the
recovery of stereopsis through perceptual learning in human
adults long deprived of normal binocular vision (see Reference
3). We used a novel training paradigm that combined monocular
cues with perfectly correlated depth cues. Following PL
(thousands of trials) with stereoscopic gratings, adults who were
initially stereo blind or stereo anomalous recovered substantial
stereoscopic vision. Importantly, these subjects reported that

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**Figure 2: The improvement in Snellen acuity in the amblyopic eye following videogame play (red and blue symbols) or patching (gray circle). (See Reference 2.) For comparison, the effect of PL (green squares) over the same time course is shown.**

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**Figure 4: A summary of improvement in stereopsis quantified as stereoacuity following monocular PL and patching. The horizontal line indicates the lower limit of test performance. The green symbols show a similar improvement in stereoacuity in five anisometropic amblyopes following monocular videogame play.**
depth “popped out” in real life, and they were able to enjoy 3D movies for the first time. Their recovered stereopsis is based on perceiving depth by detecting binocular disparity, but it remains limited by reduced resolution and precision.

Summary

Amblyopia is, aside from refractive error, the most common cause of visual loss in children and is therefore a serious public health issue. When diagnosed and treated early, the visual losses may be reversed. In fact, with early detection and treatment, amblyopia could conceivably be eliminated. However, amblyopia is frequently not detected early. Although treatment for amblyopia generally is undertaken only in children, there is now considerable evidence that PL and videogame play may also be effective in improving vision in adults with amblyopia. These findings, along with the results of new clinical trials, suggest that it might be possible to remove the brakes on our notions of plasticity in the adult amblyopic visual system.

References

Berkeley Optometry continues to support and participate in both local and international philanthropic efforts. In this issue we present reports from student participants in Volunteer Optometric Services to Humanity (VOSH) programs in Nicaragua and Belize. In existence since 1971, VOSH facilitates the provision and sustainability of vision care worldwide for people who can neither afford nor obtain such care. Partnered with the World Health Organization since 2001, VOSH has pledged to eliminate preventable blindness by the year 2020.

VOSH NICARAGUA
MONICA LIOU ’14

In January 2012, sixteen students from Berkeley Optometry’s Volunteer Optometric Services to Humanity (VOSH) program joined a group of seven optometrists from VOSH Connecticut to provide free eye care to local Nicaraguans in San Juan del Sur, Nicaragua. The sixteen students ranged from first-year to third-year optometry students and included three students who had attended the same VOSH clinic the previous year (Daniel Cheng ’14, Melissa Lester ’13, and Megan Lee ’13). This was VOSH Connecticut’s eleventh annual eye-care clinic in San Juan del Sur, and Monica Liou ’14, the student leader of the trip, worked closely with the director of VOSH Connecticut to make the arrangements. In addition to optometrists, VOSH Connecticut also brought along dispensary assistants, translators, and helpers to assist with pretesting—which created an efficient way to provide the necessary care, given the limited number of doctors available.

The exams took place in a local elementary school, where the team set up six examination rooms. Two to three optometry students and one doctor were in each room. The students were able to perform ordinary procedures such as VAs, retinoscopy, trial frame refraction, and direct ophthalmoscopy on their own patients, but they were also able to receive guidance from the attending doctor as needed. This allowed
the students to use analytical and problem-solving skills to a degree they had not yet experienced in their educational clinics. Patients were seen over a period of four days; by the end of the experience, a total of 2,772 patients were helped by the team.

A total of 6,300 glasses were brought to San Juan del Sur to dispense—single vision, multifocal, readers, and sunglasses. Numerous pharmaceuticals were also provided by Alcon Laboratories, Inc. and Allergan Pharmaceutical. Students were able to see and diagnose many pathologies and conditions that are not commonly seen in developed countries—mature cataracts, pterygia, advanced glaucoma, corneal foreign bodies, toxoplasmosis, and even some cancers.

The trip was a huge success. With the help of the doctors and translators, students were exposed to a setting different from that of the Berkeley Optometry clinics. This not only “opened the eyes” of students to different pathologies but also helped them gain confidence in future clinical situations. Our continuing work with VOSH Connecticut helps maintain the strong connection between VOSH Connecticut and Berkeley Optometry, which we plan to extend in the years to come.

**VOSH BELIZE**

**JAZZI JUNGE ’14 AND SERENA SUKHJIA ’14**

Also in January, a group of eleven Berkeley Optometry students and four doctors (including Berkeley Optometry alums Adriana Aceves ’06 and Marisa Chung ’07) traveled to Dangriga, Belize, in Central America to deliver free eye care to the underprivileged through VOSH. Dangriga is known as the cultural capital of Belize and is located in the Stann Creek district of Belize; it is the largest town in southern Belize. Serena Sukhija ‘14, the trip’s organizer, made arrangements with the Belize Council for the Visually Impaired (BCVI) and coordinated four clinic days in surrounding towns and villages, as well as in the city of Dangriga. Clinics were set up in various schools and community centers, and BCVI publicized the VOSH visits.

During the trip, students were able to apply problem-solving skills and improve their exam techniques, especially retinoscopy, direct ophthalmoscopy, and binocular indirect ophthalmoscopy. Students brought over 1,400 pairs of glasses to Belize, the majority of which were dispensed to patients throughout the four days of clinic. The remaining spectacles were donated to BCVI for future use. Most patients seen were hyperopic, and there were also many patients with diabetic and hypertensive retinopathy. In addition to spectacles, students dispensed approximately 300 units of artificial tears to help those with dry eye complaints, as well as a limited number of prescription ophthalmic drops for special cases such as infection. All of the equipment and ophthalmic medications were generously donated by Pioneer International and Alcon.

Patients were seen by clinicians with an attending doctor available to check student findings. Patients who needed further care were sent for referral through BCVI’s referral system. As a result, patients who required more complicated procedures such as cataract removal or pterygium excision were able to receive proper care. Although most patients spoke English (the national language of Belize), students also encountered patients who spoke only Spanish or Mayan dialects.

In the end, the group was able to see about 750 patients in four different locations around Belize. More importantly, traveling to Belize for the first time has created a working relationship between Berkeley Optometry’s VOSH program and BCVI, which will allow future Berkeley Optometry VOSH students to continue to provide eye care to the people of Belize.
Helping ODs Become Glaucoma Certified

The enactment of Senate Bill 1406, Chapter 352 (which became effective January 1, 2009), provides a mechanism for optometrists licensed in California to gain certification in the diagnosis, management, and treatment of glaucoma. The credentialing process specifically allows course materials to be provided online. The two-part program consists of the following:

1. A didactic course of not less than 24 hours in the diagnosis of glaucoma and the pharmacological and other treatment of the disease. (This part is required for optometrists who graduated prior to May 2000.)
2. A minimum 25-patient case-management requirement. Any or all of the 25 patients may be seen under a preceptorship arrangement with a glaucoma-certified OD or ophthalmologist. This preceptorship may be accomplished by the use of telemedicine, electronic submission of information, etc., as mutually agreed to by the consulting and treating doctors. (This part is required for optometrists who graduated prior to May 2008.)

This bill created a unique and timely opportunity for entities that provide education meeting the requirements of SB 1406. To compete with organizations such as the California Optometric Association (COA) and Southern California College of Optometry (SCCO) and provide another avenue for optometrists in California to earn glaucoma certification, Berkeley On-Line Lectures and Demonstrations (BOLD) was created as a 501(c)(3) organization, a tax-exempt entity established and operated exclusively for educational purposes, to offer online video-based courses for glaucoma diagnosis and treatment and glaucoma case management. The courses comply with the provisions of SB 1406 and have been approved by the California State Board of Optometry. The goal of the BOLD glaucoma courses is to enable optometrists to become competent in diagnosing and treating glaucoma. These 24/7/365 online courses are designed to be taken at the individual’s own pace and at any time of the day or night. They are convenient for optometrists to fit into their busy schedules and are priced competitively with courses being held in residence elsewhere.

BOLD Course Descriptions

Renowned optometrists and ophthalmologists from Berkeley Optometry faculty and elsewhere provide the online presentations. BOLD’s partner, Boston Reed College, provides online registration, marketing, and use of the Boston Reed course-delivery platform; employs the course lecturers; and issues the course-completion certificates and IRS Form 1099s. The 24-hour course emphasizes detection, diagnosis, treatment, and management of glaucoma. Case presentations are used to enhance learning and retention, as well as to provide clinical applications. Multiple-choice questions are provided throughout the lectures, and an exam is given at the end of the course to demonstrate the optometrist’s comprehension of the material.

In addition to receiving credit toward glaucoma certification, ODs also may use the continuing education (CE) hours for license renewal. For ODs not seeking glaucoma certification, these online glaucoma courses may be taken to upgrade their diagnostic skills, as well as for CE credit. Optometrists who are already glaucoma certified are also encouraged to take the course to refresh their knowledge and to learn about recent developments and advances in glaucoma, as well as to earn CE credit.

Initially available only to California optometrists for glaucoma certification and online continuing education, Berkeley On-Line Lectures and Demonstrations will soon offer these courses and others as continuing education to nearly 40,000 optometrists across the nation.

24-Hour Didactic Glaucoma Course

BOLD launched the 24-hour didactic glaucoma course in the spring of 2011. It provides presentations on the detection, diagnosis, treatment, and management of glaucoma in compliance with SB 1406 through online video-based lectures given by nationally renowned optometrists and ophthalmologists from Berkeley Optometry as well as other institutions. The 27 video-based PowerPoint presentations are provided by 18 lecturers. Online attendance and time are recorded and monitored by BOLD.

16-Hour Glaucoma Case Management Course

In October of 2011, BOLD launched the 16-hour glaucoma case management course. Its goal is to provide a wide range of glaucoma cases for California optometrists seeking glaucoma certification, and it accounts for 15 of the 25 patients specified in the case-management requirement of SB 1406. The format is similar to the 24-hour course, in that it provides online video-based lectures given by renowned optometrists and ophthalmologists. Approximately 50 cases are covered during the video-based PowerPoint presentations, with an average length of 15 minutes per case. The disease severity ranges from moderate to advanced glaucoma. Various treatments are discussed and reasons for final treatment choices are explained. Many cases provide follow-up findings and management lasting over 10 years. A multiple-choice exam is given at the end of the 16-hour case management course.
Berkeley Optometry’s Grand Rounds Program

SB 1406 also provides that a portion of the 25-patient case-management requirement can be satisfied by completing either a preceptorship or a grand rounds program. Berkeley Optometry’s glaucoma grand rounds program provides access to Berkeley Optometry faculty working with patients from the Meredith W. Morgan Eye Center at UC Berkeley, which sees over 3,500 patients diagnosed with glaucoma annually. On average, the patients selected for grand rounds have been treated for glaucoma for 12 years and range in age from 32 to 90 years. The types of glaucoma patients seen during grand rounds include primary open-angle, normal tension, ocular hypertension, mixed, pseudoxfoliative, and pigmentary. During the two-day course at the Eye Center, attendees retrospectively review the care and history of the glaucoma patients, perform examinations on these patients, and work both individually and collaboratively to develop treatment plans. Completion of this program satisfies 10 of the 25 patients specified in the case-management requirement of the law.

Progress in Action

The impact of the new law has been dramatic. Before SB 1406 was implemented, only 204 optometrists were certified to treat glaucoma; now over 1,500 optometrists have been certified. (Recent graduates—those who earned their OD degrees in 2008 or later—obtained this training in their optometry school curriculum and need no additional training.) Many more glaucoma-certified ODs are in the pipeline.

The success of the BOLD glaucoma certification courses is evident in the number of registrations, the number of completions to date, and the testimonials of the course participants. There have been nearly 700 individual registrations for the BOLD courses, and nearly 250 optometrists have completed courses. The online format is extremely popular. Dr. B. says, “I never could have left my rural California practice long enough to satisfy these requirements. Thank you for creating a certification program that I can complete mostly from my own study, in the evenings, and without sacrificing my availability to my patients.” Dr. W. said, “I have saved countless dollars and hours by being able to complete my certification without travel, hotel, or meal expenses, without losing time from my practice, and most of all, without losing time from my family.” Dr. G. says, “This is the best CE I have ever had! It is practical and current, and best of all—I can go back and review it over and over until I really get it. I always miss much of what is being said while I take notes, but if I don’t take notes then I don’t remember later. The online format allows me to do both—to take notes or not, and listen, over and over and over if necessary. I love it and am looking forward to many more hours of online CE. Thank you!”

For more information about the BOLD glaucoma treatment certification and Berkeley Optometry glaucoma grand rounds programs, please visit optometry.berkeley.edu/bold.

If you’ve put off glaucoma certification, your next step should be BOLD.

If you’ve been hearing good things about the BOLD Glaucoma courses, so have we. And we’d like you to be part of them.

There’s our 24-hour online course that’s video-based, covering diagnosis, treatment and management, plus six hours of glaucoma cases.

And there’s our 16-hour case management course, which will provide nearly 40 glaucoma cases ranging from routine to complex, and fulfills 15 of the 25-patient requirement.

With renowned OD and MD speakers, these self-paced courses can take you to the next level—online and on your own time schedule. BOLD programs also count for continuing education credits.

Visit us at: optometry.berkeley.edu/bold
Contact us at: CE@BOLDOptometry.org or 800-201-1141

Supported by educational grants from Alcon and Zeiss and contributions of faculty and staff from Berkeley Optometry
MENG C. LIN, OD, PhD, FAAO

Meng C. Lin is a Taiwanese native who grew up among three generations of ophthalmologists and has been fascinated by the eye since she was a child. Meng studied biochemistry at Columbia University and then received her OD degree from Ohio State University. She received further training in specialty contact lens fitting and ocular disease management and treatment during a one-year residency at the University of Alabama, Birmingham, School of Optometry. There she was introduced to patient-based clinical research, an experience that inspired her to pursue a graduate degree in vision science. She later received her PhD from UC Berkeley.

Dr. Lin is currently an associate professor at Berkeley Optometry. She co-teaches a contact lens course and is a guest lecturer in other didactic courses. She is also the founding director of the Clinical Research Center (CRC), established in April 2004. She is expanding the scope of the research conducted at the CRC by collaborating with scientists involved in vision-related research in other departments on the UC Berkeley campus. Her goal is to make the CRC not only a world-class vision research center but also a resource for undergraduate, optometry, and vision science students, as well as optometry residents interested in patient-based clinical research.

Dr. Lin’s research focuses on the anterior segment of the eye, including the effect of contact lenses and lens-care solutions on the rheology of human tear film, the effects of ethnicity on contact lens wear and topical ophthalmic solutions, understanding genetic and environmental factors on dry eye diseases, and the factors affecting post-lens aqueous tear mixing under soft contact lenses. In addition to research, Dr. Lin enjoys providing direct patient care in the newly established dry eye clinic, where she is a co-chief.

Meng lives in Dublin, California, with her husband, Eric, and their one-year-old identical twins, Alex and Brian. Life has been quite entertaining since their arrival!

NANCY MCNAMARA, OD, PhD

In addition to her position as associate professor of clinical optometry and vision science at Berkeley Optometry, Nancy McNamara is an associate professor of anatomy and ophthalmology at the Francis I. Proctor Foundation, UC San Francisco. Her laboratory has studied the interplay of mucosal epithelial cells with the innate and adaptive immune systems for over a decade. Her research began during graduate school at Cal, where she conducted human-based laboratory studies of corneal physiology with special attention to mucosal epithelial structure and barrier function.

A K23 award from the National Eye Institute allowed Dr. McNamara to extend her research into cell and molecular-based studies of mucosal immunity. During five years of postdoctoral training at UC Berkeley and UC San Francisco, she turned her focus to the pathogenesis of severe dry eye in patients with autoimmune disease. She continues to pursue a better understanding of mucosal biology in health and disease. As a Sjögren’s International Collaborative Clinical Alliance (SICCA) investigator, Dr. McNamara examines and collects biospecimens from patients with autoimmune disease for the Sjögren’s Syndrome Registry. Direct contact with Sjögren’s syndrome patients has provided a conduit for clinical studies to confirm and extend her investigations of autoimmune eye disease. Because of the severe consequences of dry eye and the unmet demand for targeted therapy, Dr. McNamara worked with Drs. Meng Lin and Kenneth Polse to establish the dry eye clinic at the Meredith Morgan Eye Center. Dr. McNamara has received numerous research awards, including the Irvin M. and Beatrice Borish Award from the American Academy of Optometry and a Research Scholar award from the American Cancer Society to explore the mechanism whereby cigarette smoke promotes malignant transformation of airway epithelial cells.

Nancy was born and raised in a small college town in northern Michigan and moved to Berkeley in 1991 for a cornea/contact lens residency. Driving down Telegraph Avenue for the first time, she realized she “wasn’t in Michigan anymore.” Nancy met her husband, a native San Franciscan, while she was doing her postdoc at UCSF, and they are blessed with four children. She enjoys spending much of her free time on outdoor activities, including running with her family. Having “discovered life” at UC Berkeley, Nancy is thrilled to have joined Berkeley’s distinguished faculty.

MARIA LIU, OD, PhD, MPH

Maria Liu started her position as assistant professor of clinical optometry and vision science in January 2012. She came to the United States a decade ago from Beijing, China, where she obtained her MD and completed an ophthalmology residency. Dr. Liu received her OD degree from Pacific University College of Optometry in 2005. She received an MPH from UC Berkeley’s School of Public Health in 2007.

Dr. Liu is the first PhD at Berkeley Optometry to be funded by an NIH/NEI K12 grant, a program that supports clinicians to engage in academic research full time. The focus of her research is to investigate optical influences on emmetropization and the development of myopia. Combining her clinical experiences, research expertise, and training in epidemiology, Dr. Liu plans to conduct clinical studies that would translate the promising anti-myopia results of novel optical corrections from animal models into clinical treatments for the control of human nearsightedness.

Although she is a new faculty member at Berkeley Optometry, Dr. Liu’s relationship with the school dates to her ophthalmology residency in China, where she helped coordinate the educational collaboration between Berkeley Optometry and Peking University’s Department of Medicine. In that position she had the opportunity to work closely with fourth-year Berkeley Optometry interns during their preceptorships in Beijing. As a faculty member, Dr. Liu hopes to continue to facilitate international collaborations with medical institutions in China. In addition to benefiting Berkeley Optometry, this would allow her to fulfill her personal goal of improving the accessibility and quality of vision care in her home country.

In her spare time Maria enjoys swimming, playing tennis, traveling, reading, and playing videogames.
VIETNAM AND CAMBODIA

Explore the world with Berkeley Optometry! Don’t miss our trip to Vietnam and Cambodia—two of Southeast Asia’s most fascinating countries! In October 2013, Berkeley Optometry Alumni will travel to the Mekong Delta, visit the Imperial Citadel, and tour the Forbidden Purple City. Over the course of a two-week trip we will explore the temple complex at Angkor Wat as well as the culture and history of Phnom Penh, Ho Chi Minh City (Saigon), Dalat, Nha Trang, the old imperial city of Hue, Da Nang, and the French-accented capital of Hanoi. We hope you can join us on this wonderful adventure!

ALUMNI DIRECTORY AND ONLINE COMMUNITY

Berkeley Optometry has developed an online provider directory, exclusively for alumni and faculty. This directory is located on the Berkeley Optometry website and serves as a great way to advertise your practice and keep your information up to date with the school and your classmates. If you have not already done so, please log on to optometry.berkeley.edu to create or update your profile. Community members can choose which information is available for public access and can also search for classmates, communicate by e-mail, and post announcements. Be a part of it!

ALUMNI RECEPCIONS AND ALL-ALUMNI REUNION

The Office of Alumni Relations looks forward to seeing you at our events and programs throughout the year. Each year we host several receptions at meetings and events. Look for us every year in the OptoWest Exhibit Hall—we have a booth and love having our alumni stop by to say hello. Also, be sure to keep an eye out for us at the American Academy of Optometry and the American Optometric Association meetings, where we host evening receptions for the Berkeley community. And we always enjoy seeing you each year at the COA House of Delegates Meeting.

OPTOMETRIC TECHNICIAN TRAINING

Having a skilled workforce is critical to delivering services to patients effectively and maximizing your time as an eye-care professional. This course combines 148 hours of classroom instruction (over 21 weeks) with a 120-hour externship for a comprehensive learning experience. The program provides thorough practical instruction and training to prepare participants to work as optometric technicians, optical assistants, or ophthalmic technicians under the supervision of licensed eye-care professionals. For more information and discounts for employees of Berkeley Optometry alumni, contact Boston Reed College at 800-201-1141 or visit their website at BostonReedCollege.com.

LEGAL SERVICE CONSULTATIONS

Berkeley Optometry has a relationship with two prominent law firms in San Francisco. If you need an attorney or have a quick legal question, call 888-392-1960 for a free 15-minute consultation from attorneys at Sideman & Bancroft LLP and Futterman & Dupree LLP. Many matters can be dealt with in that amount of time. If more time is needed, you may take the information you’ve already received to any attorney of your choice, or you may engage the attorney you just spoke with at rates discounted 20 percent or more. The services offered cover both transactional and litigation matters and encompass employment/human resources, state board regulatory issues, state and federal tax, commercial law, business contracts, real estate, professional liability, partnership formation and dissolution, and leasing, among others.

For additional information on our alumni programs and services, visit our website at optometry.berkeley.edu, or contact us at optoalumni@berkeley.edu or 510-642-2622.
The Berkeley Optometry Alumni Association

The Berkeley Optometry Alumni Association (BOAA) has been in full swing for just over one year, and business is booming! BOAA has become an official part of the School of Optometry, which means that now all alumni of Berkeley Optometry are automatically lifetime members of this association. All Berkeley Optometry grads are encouraged to participate in the programs and services offered. Please keep your contact information current in order to keep up with the latest news and events. Visit the Berkeley Optometry website (optometry.berkeley.edu) or contact the Alumni Relations Office (optoalumni@berkeley.edu or 510-642-2622) to update your contact information and learn more about our programs and services.

The former Optometry Alumni Association of UC Berkeley (OAAUC) established traditions that have served as guideposts for the BOAA board and professional staff. Last year we hosted the annual fall meeting in conjunction with the All-Alumni Reunion CE Conference and Celebration at Pyramid Brewery in west Berkeley. Additionally, we held events at the American Academy of Optometry conference in Boston, the California Optometric Association House of Delegates, OptoWest, and the American Optometric Association’s meeting in Chicago. The Alumni Relations Office recently led a campaign to encourage alumni to update their professional and personal information and complete a survey to learn how best to serve alumni needs. Stay tuned for updates on how the BOAA will be using alumni input to develop new initiatives and further enhance our existing programs.

The mission of the BOAA is to engage alumni (now over 3,400 strong) in the advancement of Berkeley Optometry and, in turn, to provide superior opportunities for personal and professional growth through a lifetime connection to the Berkeley Optometry network. To that end, the BOAA will be designing and delivering programs and services that allow our alumni to grow professionally, connect to one another, share knowledge globally, and lead in the profession.

The current BOAA board, installed in 2011, is made up of Berkeley Optometry alumni from many different class years who live and practice across the United States. The current board includes private practitioners, members of the Department of Veteran’s Affairs, and clinical faculty. BOAA board members serve for a term of three years.
In addition to the ongoing changes in the BOAA, the Alumni Relations Office professional staff has experienced new growth in the past year. In the 2011 edition of Berkeley Optometry Magazine we met Kristen Williams, Executive Director of Alumni Relations and Career Services for Berkeley Optometry. Kristen has extensive experience in alumni organization and community building. Sarah Segal, Assistant Director of Alumni Relations, has joined the team to spearhead events, programs, and processes for the alumni office. Look for Kristen and Sarah at the registration table during the next event!
Don't wait a whole year to find out what is happening with your classmates—connect with Berkeley Optometry alumni via Facebook (facebook.com/BerkeleyOptometryAlumni) and LinkedIn (UC Berkeley School of Optometry Alumni).

Joe Farrington passed away in Sacramento on May 5, 2012, at age 91. He served as California Optometric Association president in 1970 and was voted Optometrist of the Year by COA in 1976. In 1992 he was presented the Paul Yarwood Memorial Award, COA’s highest honor. Joe was a founding member of the Optometry Associates of Benjamin Ide Wheeler.

John Austin passed away on February 28, 2012.

James L. Lawson and his wife, Marge, feel quite fortunate to be born in a country where hard work and a conservative lifestyle can lead to a comfortable retirement. The couple now spends six months of the year on the Caribbean Island of Bonaire, scuba diving twice a day. The other six months of the year they spend in Klamath Falls, Oregon, where James races his sailboat on Oregon’s largest lake.

Louis Warshaw died in December 2011. Lou was the son of Polish immigrants who came to this country in the late 1920s. He was the first of six children to be born on American soil. He proudly served in the U.S. Navy and then used his GI Bill to enroll in college. He was the very first recipient of the Gold Retinoscope Award, which identified him as the top clinician in his class. After completing an MPH he accepted an academic position at Ohio State University and then at Ferris State University. He retired from optometry after serving as chief optometrist at the Veterans Administration Hospital in Saginaw, Michigan.

Michael Harris was the senior member on the alumni trip to southern Africa last October. Michael is officially retired from Berkeley Optometry, but he continues to serve on committees appointed by the Chancellor, as a Pleasant Hill city council member, and as president of the Berkeley Optometry Alumni Association.

Bill K. Dorrance sold his Moreno Valley, CA, optometry practice and office building to Jenny Vu, OD, in July 2011. He and his wife, Jill, have retired in Anacortes, WA, where he has joined the Fidalgo Island Rotary Club. He would enjoy hearing from classmates via e-mail at wkdorrance@yahoo.com.

Rod Keener and Larry Thal ’75 had a great time on this year’s alumni trip to South Africa, Botswana, Zimbabwe, Swaziland, and Lesotho. Rod is still enjoying private practice in Walnut Creek, CA, and (when not visiting his son Matt on his foreign assignments with the U.S. State Department) coaches girls’ basketball, still plays a lot of tennis, and has taken up golf. Oh—and he has a private pilot license. He still believes in the motto, “You never know what’s ahead, so eat dessert first.” After an unplanned landing in a midwestern corn field in July, this motto is even more meaningful to Rod.

Thomas Chong, martial arts practitioner and instructor, demonstrated complex moves using various weapons to amaze Cal alums and Bear Backers at the Berkeley Breakfast Club’s Asian Occasion, welcoming the Year of the Dragon 4710. Tom is a first-degree black belt in Tae Kwon Do and third-degree black belt in Choy Lay Fut Kung Fu. Shown with Tom is Stephen Chun ’74, who served as program chairman for this event and arranged for Tom’s talk and demonstration.

Ronald G. Seger traveled to New York City on March 8, 2012, to accept an award from Reuters/Lipper Analytical on behalf of the Berkshire Focus Fund, a mutual fund he co-founded in 1997. The fund received the award for the best three-year performance for a multi-cap mutual fund for the years 2009–2011.

Page Yarwood completed his term as California Optometric Association President. We would like to
congratulate Page on his accomplishment and thank him for his service. Hopefully Page was able to provide sound advice to Governor Brown on financing public education in California.

Jane Ward and husband Steve Waller (both OD MDs) had Air Force careers as optometrists, flight surgeons, and ophthalmologists. Steve is now an associate professor of preventative medicine and epidemiology at the Uniformed Services University in Bethesda, MD, and Jane is once again a graduate student, this time in a master of public health program at George Washington University in Washington, DC. As part of her MPH, Jane fulfilled a lifelong goal of biking across the nation with two of their daughters, a 5,500-mile bicycling trip from Key West, FL, to San Francisco called Ride America for Safe Routes. The ride’s mission is to raise awareness across the country of the fun and health benefits of cycling and walking, as well as to highlight the need for improved safety for bike and pedestrian travel. While advocating for communities to be safer, more accessible, and friendlier to cyclists and pedestrians, Jane promotes healthy lifestyles based on increased exercise and improved nutrition. Learn more about Ride America for Safe Routes at rideforsaferoutes.com.

Robert Torres has been busy traveling. In December 2011 he traveled to Vietnam, Cambodia, and Thailand. Early this year he and classmate Allen Brantz embarked on a CE cruise to Aruba, Costa Rica, Grand Cayman Island, and Cartagena, Columbia, passing through the Panama Canal along the way.

Chiyotaka Nomura has been dubbed “the best optometrist in Santa Barbara” by the Santa Barbara Independent newspaper. He and wife Dawn live in Carpinteria with their two children, Ben and Natalie. Chiyotaka serves as head optometrist at the University of California, Santa Barbara, Eye Clinic, and also maintains a private practice in Goleta.

Don Mutti was honored as Berkeley Optometry’s 2011 Alumnus of the Year. Barry Weissman ’72, PhD ’79, the 2010 Alumnus of the Year, presented the award. Don is currently the E.F. Wildermuth Foundation professor in optometry at the Ohio State University College of Optometry. He is a co-investigator with classmate Karla Zadnik on the Collaborative Longitudinal Evaluation of Ethnicity and Refractive Error (CLEERE) Study, a National Eye Institute–funded study of normal eye growth and risk factors for myopic refractive error, now in its twentieth year.

Mary Gerhart gave up solo private practice in October 2009 and now works part-time for another optometrist in Rocky River, Ohio. Still working (17 years now) for Cleveland Sight in the low-vision clinic, Mary also serves as a part-time clinical instructor in the ophthalmology department of Case Western Reserve University, teaching low vision to ophthalmology residents. She hopes to see many of her classmates in 2013 at the reunion!

Janie Evans and her husband, Robert, are celebrating their 37th anniversary this year! The couple, who are also celebrating Robert’s retirement and Janie’s semi-retirement, plan to use their new-found free time traveling and visiting their children, four-year-old grandchild, and other extended family.

Germaine Noel Burke and husband Jerry Burke, an SCCO grad, have just opened their own practice, Burke Optometry, in Lodi, CA. Check them out at burkeoptometry.com or on their “Burke Optometry” Facebook page. They remodeled the building at 441 S. Ham Lane to accommodate a 3,000 sq. ft. office with an additional 2,000 sq. ft. available for lease in the adjacent suite.

Gina Grasso and Doug Morse ’00 welcomed their first child, daughter Alyssa Rose Morse, on October 20, 2011. Congratulations to the young family; we wish them all the best!

Keri Owyang-Chapman hosted a
mini-opto reunion on St. Patrick’s Day, 2012. Among the attendees were Katy Stout-Bautista and Victor Bautista ‘07, who are expecting their first child, a girl (future alumnus, Class of 2038).

10 Former UC Davis student athlete Tiffany Chan has been inducted into the Cal Aggie Athletics Hall of Fame. Tiffany captured seven All-America awards, including four national titles, at the USAG Collegiate Championships from 2002 through 2005. She also won or tied for three Mountain Pacific Sports Federation championships, twice earning an individual at-large qualifier to the NCAA West Regional. Originally from nearby Nevada City, Tiffany still shares UC Davis records on balance beam (9.900) and floor exercise (9.950). She scored 9.900 or better on floor exercise eleven times. Between her undergraduate and optometry school studies, she was hired as a “background elite gymnast” in the 2006 movie, “Stick It.” Tiffany is currently doing a post-residency fellowship in low vision at Johns Hopkins School of Medicine in Baltimore, MD. Her proud parents are Gerald “Jerry” Chan ’75 and Lisa Moon ’76.

Jane W. Lo was married this year in Santa Cruz and enjoyed a honeymoon in Thailand. She and husband Jimmy Lin adopted a doxie-poo named Moka from the Humane Society of Silicon Valley and feel very fortunate to have her. Jane and Jimmy also traveled to India this year for classmate Shradha Sanghvi’s wedding, an amazing cultural experience. Jane practices primary eye care in Los Gatos and San Jose, with emphasis on specialty contact lenses, pediatrics, and refractive/cataract surgery co-management. She has been serving as the membership co-director and access program coordinator for the Santa Clara County Optometric Society. She loves what she does!

11 David Leong has made his way back to Berkeley Optometry as a faculty member in the Eye Wear Center and hopes to see some familiar faces.

Jennifer Che has had a busy and exciting year—since her graduation she has gotten married and at the end of March gave birth to a little boy, Ruei. Having returned from maternity leave, she is completing the remainder of her residency program at Los Angeles VA Ambulatory Care Center. Congratulations, Jennifer—we wish you all the best!

12 Michele Lomelino took the stage with her fiancé, Sergeant Alex Valencia, at this year’s Berkeley Optometry graduation ceremony. Alex missed his own college graduation at San Francisco State University to honor Michele at her graduation. After twelve years of military service in the United States Army, a deployment during Operation Iraqi Freedom, and 10 years of college, Alex is the first person in his family to graduate from college. Congratulations, Alex and Michele!

In Memoriam
Dr. Irv Silberstein ’42
Dr. Winston T. Nielsen ’49
Dr. Joseph Farrington ’51
Dr. John R. Austin ’52
Dr. Edmond Chong ’52
Dr. Robert Jensen ’53
Dr. Scott W. Smith ’82
Dr. Louis Warshaw ’61
Dr. Edward “Randy” Nell ’78
Dr. John R. Austin ’52
Dr. Jeffery Bruff ’64
Dr. Emad Elmorsy ’63
Dr. David M. Leibel ’41
Dr. Loran Mebine ’36
Dr. Darrell Drew Fullbright ’63
Dr. Robert Jensen ’52
Dr. George Rose ’51
Dr. Louis Warshaw ’61
Dr. Edward “Randy” Nell ’78
Dr. Scott W. Smith ’82
The Campaign for Berkeley Optometry

The $20-million campaign for Berkeley Optometry is well on its way to attaining our goals. The school has led the campus in creating new Professional Student Support Fund endowed scholarships, strengthened our resources for faculty recruitment and research through endowments and fellowships, and increased the annual fund support that maintains our breadth of excellence. The chart below summarizes our cumulative progress to date.

Capital Campaign: Enhancing Facilities

Recognizing the teaching opportunities of the 21st century, Berkeley Optometry has initiated substantial, targeted renovations in Minor Hall—focusing on areas little changed since the school first occupied Minor Hall in 1948. A key goal of the Capital Campaign is to ensure that Berkeley Optometry has both the facilities and the infrastructure it needs—not only to maintain our excellence but also to continue to lead the profession in optometric education and vision research. Private support is critical to providing essential resources for student support, scholarship, research, and community health.

Focus on People: Enriching Services for Students and Alumni

Phase one of the project, inaugurated in spring 2012, is the renovation and renewal of our Student Services Center in Minor Hall (ground floor), which allows us to expand and centralize advising and support of both optometric and vision science students. Phase two (which will begin at the end of 2012) includes the addition of our Alumni, Continuing Education, and Development Services in the same corridor, creating a central access point for both students and alumni to Berkeley Optometry.

Renewing the Classrooms and Clinical Labs

Upgrading facilities in the School of Optometry (phase three) will include capturing new space under the breezeway between Minor Hall and Minor Addition and better using our existing space to provide the following improvements:

- Upgrades and renovations to current clinic and pre-clinic exam rooms, enabling a state-of-the-art clinical experience for future optometrists
- Improved access for students and visitors with a centralized entry to Berkeley Optometry academic and business centers
- New, flexible state-of-the-art classrooms that support scholarship
- An enlivened exterior plaza outside Minor Hall and Minor Addition
- New student lounge, providing space for student collaboration and relaxation
The Minor Hall Capital Campaign is designed to accelerate the teaching, support, and learning of today’s optometry students. Please join us in our campaign to ensure that Berkeley Optometry has the world-class facilities and infrastructure it needs to continue preparing the next generations of optometrists, vision science researchers, and optometric educators. In recognition of your gifts to Berkeley Optometry, we offer a variety of naming opportunities:

- Main Entrance and Breezeway $1,000,000
- New state-of-the-art Lecture Hall (ground floor Minor Hall) $250,000
- Minor Plaza $200,000
- Eyewear Center $150,000
- Dean’s Suite $100,000
- Lecture Hall (Minor Hall 489) $100,000
- Tang Student Health Center $75,000
- Student Lounge $50,000
- Lecture Hall (Minor Addition 100) $50,000
- Pre-Clinic Lecture Hall $50,000
- Pre-Clinic Suite (teaching modules) $50,000
- Student Services Suite $50,000
- Alumni Association Suite $50,000
- Specialty Service Reception Areas $50,000
- Research Laboratories $20,000
- Berkeley Optometry Archives $15,000
- Clinic Examination Rooms $10,000
- Lecture Hall Chairs $1,000
- Endowed Chair $2,000,000
- Endowed Professorship $1,000,000
- Endowed Fellowship $500,000
- Endowed Scholarship $250,000
- Endowed Fund (named for specified purpose) $50,000

*reserved

Supporting Faculty and Student Excellence
Endowments provide income in perpetuity to recruit, retain, and support an exceptional faculty and outstanding students. Naming opportunities begin at the $50,000 level.

Please contact Jill Malko, Director of Philanthropy at Berkeley Optometry, to learn more about these giving opportunities. Jill can be reached by e-mail (malkoj@berkeley.edu) or phone (510-642-1877).
On this and the following pages, we recognize our many generous supporters and highlight the variety of ways in which you can support Berkeley Optometry. The Meredith Morgan Society consists of those donors who support Berkeley Optometry through the Annual Fund. The Endowment Funds are substantial gifts pledged over a number of years, intended to provide long-term financial resources for the school. The Optometry Associates of the Benjamin Ide Wheeler Society consists of those donors who have included Berkeley Optometry in their estate planning.

The list below recognizes those who have made gifts, pledges, and pledge payments to funds at Berkeley Optometry other than the Meredith W. Morgan Society Annual Fund from July 1, 2011, through June 30, 2012.

$500,000 plus
CooperVision, Inc.

$100,000–$499,999
Maxine Burlington Estate
Robert Cibull ’57 and Jeannette C. Close-Cibull
Juvenile Diabetes Research Foundation
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Bay Area Optometric Council
Karen Walker Brandreth ’68 and Roy Brandreth ’53
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Jeffrey Ko ’73 and Cynthia Ko
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Jennifer Y. Lu ’12
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Vision West Inc.
Karla Zadnik ’82, PhD ’92

Under $1,000
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Arthur J. Jampolsky ’40 and Margaret C. Jampolsky
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The Lancaster Family
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Judy Mikesell
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Dan Sanders ’63
Danute Nitecki, PhD
The Meredith W. Morgan Society
Berkeley Optometry Annual Fund Donors (July 1, 2011 to June 30, 2012)

Class year denotes year of OD degree. All other degrees as noted.

Dean’s Circle ($1,000 and up)
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Eyeexam of California
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Kathy Tran ’05
Tan N. Truong ’04
Kevin K. Tsuda ’91
Kazu H. Ueno ’63 and Gail Ueno
Richard Van Buckirk ’99
Samantha K. Ward ’04
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Chutsung S. Weeks
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Jasmine Y. Wong ’08
Stephen Wong
Ellin Wu ’08
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Shizuko Yamaguchi
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The Foundation for Excellence: Berkeley Optometry’s Endowment

An endowment supports students, faculty, and programs in perpetuity. The principal of the gift is invested, and a portion of the return is used each year to support the school or program designated by the donor. The remainder of the return is reinvested so that the endowment will grow and keep pace with inflation. Generous gifts of endowment from alumni, parents, faculty, and friends, along with the careful stewardship of their investments, have provided the financial resources necessary to preserve and protect Berkeley Optometry’s preeminence for nearly a century. Endowments may be established for a wide variety of purposes, including student support, faculty chairs, program support, and research. Endowment gifts of $50,000 or more may be named for the donor or someone the donor wishes to honor or memorialize. For further information about establishing an endowment or making a gift to an existing endowment at Berkeley Optometry, please contact Jill Malko at 510-642-1877 or malkoj@berkeley.edu.

### Student Support Endowments

<table>
<thead>
<tr>
<th>Endowment Name</th>
<th>Fund</th>
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<tr>
<td>The Tony and Elina Adams Optometry Student Diversity Support Fund</td>
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<td>The Alameda Contra Costa Counties Optometric Society (ACCCOS) Professional</td>
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<td>The Dr. John R. and Norma M. Austin Optometry Student Support Fund</td>
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<td>The William J. Burlington Memorial Scholarship</td>
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<td>The Drs. Stephen R. Chun and Doris Sue Chun Professional Student Support</td>
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<td>The Ciba Vision Endowed Student Scholarship</td>
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<td>The Theodore Cohn Vision Science Fellowship Fund</td>
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<td>The Contact Lens Clinic Faculty Professional Student Support Fund</td>
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<td>The Jorge Cuadros Community Optometry Support Fund</td>
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<td>The Russell DeVitois Vision Science Fellowship Fund</td>
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<td>The Dr. Raymond L. Eng Family Professional Student Support Fund</td>
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<td>The Professor Irving Fatt Graduate Student Support Fund</td>
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<td>The Myrna, Maricela and Javier Flores Family Professional Student Support</td>
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<td>The Rupert E. Flower Scholarship Fund</td>
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<td>The Pamela Fong and Family Graduate Student Support Fund</td>
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<td>The Dr. Cheslyn Gan and Dr. Linda Cushing Optometry Student Support Fund</td>
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<td>The Robert Greenwood Private Optometric Practice: Patient Management</td>
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<td>The Robert and Jeanne Greer Professional Student Support Fund</td>
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<td>The Harris Family Scholarship Fund</td>
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<td>The Dr. Michael G. Harris Conneal &amp; Contact Lens Residency Graduate Student Support Fund</td>
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<td>The Dr. Michael G. Harris Excellence in Leadership Professional Student Support Fund</td>
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<td>The Thomas B. Hewitt, O.D. Volunteer Public Service Grant Fund</td>
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<td>The Curtis W. Keswick Alumni Veterans’ Affairs Residency Low Vision Student Support Fund</td>
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<td>The Ko Clinic/UC Optometry Alumni Professional Student Support Fund</td>
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<td>The Jeffrey and Cynthia Ko Family Optometry Student Support Fund</td>
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<td>The George Lee/UC Optometry Alumni Ophthalmic Optics Professional Student Support Fund</td>
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<td>The Dr. Robert W. Lester Professional Student Support Fund</td>
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<td>The Dennis and Marilyn Levi Optometry Student Support Fund</td>
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<td>The Jimmy and Lillian Low Optometry Scholarship Fund</td>
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<td>The Ming Paw Low Professional Student Support Fund</td>
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<td>The Carl Moore Contact Lens Professional Student Support Fund</td>
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<td>The Optometry Alumni Association of the University of California (OAUC)</td>
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<td>The Peng Family/UBCSO Alumni Association Professional Student Support Fund</td>
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<td>The Morton Server Vision Science Fellowship Fund</td>
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<td>The Dorothy Bates Seearls Endowed Fund</td>
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<tr>
<td>The Elizabeth Grenier Smider Memorial Professional Student Support Fund</td>
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<tr>
<td>The Dr. Joseph Singer Memorial Scholarship</td>
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<td>The Larry Stark Vision Science Fellowship Fund</td>
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<tr>
<td>The Michael E. Stern Ocular Surface Research Fellowship</td>
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<tr>
<td>The Drs. Bernhardt N. and Lawrence S. Thal Professional Student Support Fund</td>
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<tr>
<td>The UC Optometry Alumni Ocular Disease Professional Student Support Fund</td>
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<td>The UCOAS Optometry Student Support Fund</td>
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<tr>
<td>The Dr. Karen Walker-Brandreth Excellence in Optometry Education Professional Student Support Fund</td>
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<tr>
<td>The Meredith M. Whiteside and Richard C. Van Slyuters Professional Student Support Fund</td>
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<tr>
<td>The Dr. Keith Young Memorial Optometry Student Support Fund</td>
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<td>The UCBSO Class of 1973 Professional Student Support Fund</td>
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<td>The Berkeley Optometry Class of 1975 Professional Student Support Fund</td>
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<td>The UCBSO Class of 1986 Professional Student Support Fund</td>
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<td>The Berkeley Optometry Class of 1999 Professional Student Support Fund</td>
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<td>The Berkeley Optometry Class of 2008 Professional Student Support Fund</td>
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<td>The Berkeley Optometry Class of 2009 Professional Student Support Fund</td>
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<td>The Berkeley Optometry Class of 2011 Professional Student Support Fund</td>
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<td>The Berkeley Optometry Class of 2012 Professional Student Support Fund</td>
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<td>The Berkeley Optometry Class of 2013 Professional Student Support Fund</td>
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### Faculty and Program Support Endowments

<table>
<thead>
<tr>
<th>Endowment Name</th>
<th>Fund</th>
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<tbody>
<tr>
<td>The Class of 1964 Optometry Support Fund</td>
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<tr>
<td>The Solon M. and Pearl A. Braff Chair in Clinical Optometric Science</td>
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<tr>
<td>The Weylin and Roselyn Eng Endowed Fund</td>
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<tr>
<td>The Dr. Weylin and Roselyn Eng Family Endowment in Optometry</td>
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<tr>
<td>The Pamela and Kenneth Fong Chair in Optometry and Healthcare</td>
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<td>The Dr. Harry Harps Optometry Support Fund</td>
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<tr>
<td>The Edwin B. Mehr Fund for Training and Research in Low Vision</td>
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<tr>
<td>The Meredith W. Morgan Memorial Fund</td>
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<td>The Benjamin Nerenberg Distinguished Lectureship Fund</td>
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<td>The Elwin Marg Memorial Fund</td>
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<td>The Optometry Endowment Fund</td>
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<td>The Thomas H. Peters Memorial Fund</td>
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<td>The Josh Portnow Endowed Fund</td>
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<td>The Morton D. Sarver Memorial Chair</td>
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<td>The Roberts J. Smith Clinical Research Center Fund</td>
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<td>The Lloyd J. and Eleanor A. Schweigend Vision Research Fund</td>
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*Italics indicate new funds established in fiscal year 2012.
WHY JOIN OABIWS? Of course, becoming a member is a generous way to guarantee the continued excellence of Berkeley Optometry, but it is also a way to benefit children and grandchildren who may follow in our footsteps. What better legacy than a planned gift to ensure that Berkeley Optometry will continue to be the most prestigious optometry school with the foremost facilities, instructors, and researchers?

Most of our OABIWS members are optometrists who have retired or will soon retire, but I recently learned of a 2010 graduate who is committed enough to the profession to start an endowment for student support. Dr. Joy Ohara established the Ming Pow Low Endowment to honor her mother-in-law, who became legally blind due to retinitis pigmentosa. Joy and her husband wanted to “give back” to Berkeley Optometry and to continue the tradition of serving the needs of people with poor vision. In addition to creating the Ming Pow Low Endowment, they have included a planned gift in their estate dedicated to this fund. Joy and her husband have inspired her classmates to contribute, and a number of them have followed her example.

Many of us will be able to fund an endowment at some point; all of us can join OABIWS and commit to a bequest without adversely affecting our retirement, our children’s inheritance, or college education expenses for future generations. Gifts can be bequests in wills or living trusts; gift annuities or charitable trusts; and beneficiary designations of retirement plans, brokerage accounts, and life insurance policies. These gifts may also provide beneficial federal and state tax consequences.

Please consider joining 2010 graduate Joy Ohara in becoming a member of OABIWS. Jill Malko, Director of Philanthropy at Berkeley Optometry (510-642-1877), will help you find the right way to provide your own legacy to your education and profession.

Let’s continue the excellence of Berkeley Optometry; Go Bears!

Ernest K. Takahashi, OD ’68
President, OABIWS
What does a development officer do?
The job of a development officer can vary a lot, depending on the most pressing needs. My priorities are to build awareness and educate donors about the philanthropic opportunities that exist at Berkeley Optometry. To meet the needs of Berkeley Optometry students and faculty, I identify individuals who will support our strategic initiatives and raise money to realize them. The annual fund, major gifts, grants from foundations and corporations, and planned gifts (generally estate gifts) are my primary tools.

Tell us a bit about your path to UC Berkeley.
Although I was born in Berkeley, grew up a Bear fan, and am the daughter of a Cal alum, I spent most of my youth on the East Coast. But I always wanted to return to California and reconnect with my extended family. A few years after graduating from college, I escaped the freezing Boston winters to come “home.” Soon after, I began coaching lacrosse at Cal.

As head coach, one of my responsibilities was to raise money for the lacrosse program. It was my first exposure to fundraising professionals and the support they provide to the University. I was inspired not only by the passion Bear fans have for their teams but also by how proud they are to have attended UC Berkeley. After more than a decade of coaching I decided to spend more time with my two young sons, but I remained very committed to Cal. I believe in the public university education mission that UC Berkeley embodies and have been inspired by the breadth of excellence across campus.

Joining University Relations, the central office supporting all campus fundraising efforts, allowed me to play an active role in supporting public university education. The “big shop” environment was a great training ground, and I saw many facets of the campus. My primary focus was to meet with alumni, friends, and parents of students who lived in Silicon Valley. I encountered a tremendous variety of people who shared a passion for Cal.

What attracted you to Berkeley Optometry?
I liked the idea of working in a small academic unit, and the health science component was also very appealing. It was only as I learned more about the school that I realized what great work is going on here. Dean Levi has a distinguished and well-deserved reputation across the entire University, particularly for his emphasis on student support, which I find compelling. Additionally, Berkeley Optometry has been very successful in this most recent campaign. I also know Tammy Spath, my predecessor, and her personal encouragement to consider the position was convincing. The more I learned about the collegiality of the school and the tight-knit nature of the student and alumni body, the more I realized what a great opportunity Berkeley Optometry would be for me.

Why is fundraising important?
In this era of ever-diminishing support from the State of California, fundraising is essential to maintain the distinctive status of a Berkeley Optometry degree. In addition, fundraising makes it possible to recruit and retain exceptional faculty, advance cutting-edge research, and support our amazing students. In the four short years I have been raising money to support Cal, I have seen state support go from the number one source of revenue to the fourth highest source. Fortunately, philanthropy has been able to take the lead in filling some of that gap. Donations of all sizes will continue to play a crucial role in maintaining our excellence—it is exciting to be part of that effort.

How can alumni reach you?
My e-mail address is malkoj@berkeley.edu, and my phone is 510-642-1877. We can also always be reached at our main office number, 510-642-2622, or by e-mailing us at optoalumni@berkeley.edu.
The Class of 2012 has some fun on graduation day.