CaltechY

LEADERSHIP

ADVENTURE

CIVIC ENGAGEMENT

SERVICE

PERSPECTIVE

2014-15 Annual Report

Executive Director Discusses Evolving Programs

In 2016, the Caltech Y celebrates its centennial anniversary. Originally founded by and for students in 1916, the Caltech Y has remained steadfast in its mission to enrich student life and challenge students to grow into responsible citizens of the world. I believe that one reason for the Y's longevity is its ability to remain nimble in the midst of the changing needs and potential of the Caltech student body and its broader community. I focus here on the learning that happens on each and every trip and during Y programs, which have evolved and continue to change to serve the students and their changing society.

As we rethink and rework our programs, we are continuously trying to offer students different perspectives. We want them to have fun, but we also ask, "Can we add something deeper to the fun?"

Increasingly, we at the Y see that students want to experience things in an unfamiliar context, exploring the world outside of the confines of the lab and campus. That has led the Y to incorporate service projects into our programming, such as Alternative Spring Break projects in Mexico and Costa Rica. In the past decade, we have expanded our learning opportunities to include winter trips to explore science policy in Washington, D.C., and cultural learning and interchange in India. In addition, students can seek grants to study and travel, often working with a nonprofit organization abroad or independently exploring passions. In this Annual Report, we see what transpires as students and alums explore the wide world, either locally or globally. Two perfect examples are the reflections by our most recent Studenski recipients, Margaux and Alice. Both had transformative experiences, one in a local context and one in an international context.

We are better able to impact society when we think about issues affecting a community, and when we hear from its members. Each year, students learn more about how to work in concert with communities. We see similar thoughtfulness when students plan outdoors trips. They think and talk about their impact, say, of hiking in Yosemite. They don't just cut through the brush, because that would change the ecosystem.

All our programs build on our student-founders' strong interest in community, which has been handed down by students, staff, and supporters for nearly a century. In this issue we hear from John Andelin, who entered the Y scene approximately mid-century as an undergraduate. For almost a decade now, as a science-policy expert—and as a Y supporter with his wife, Ginger—he has shared his knowledge with students during Y science-policy trips.

Programming finds new and improved direction thanks to the dreams of Y constituents. In this issue we see how graduate student Jeremy Sandler takes Y outdoor adventures a step further by incorporating his philosophical and biological interests into a hike. We also see how Fred Shair—longtime Y visionary and Caltech professor—has been inspired by Y awards to dream of an expanded Studenski Award program. At the Y, dreams inspire discussion, and discussion inspires exploration.

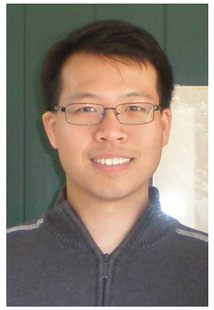
Service and learning programs have increased the Y's need for an expanded support base—one that brings knowledge and skills together with financial resources. To this end, we encourage your participation in the Y's Centennial Campaign.

We thank all Y participants and partners, including SURF, for the India interchange; the Caltech Employees Federal Credit Union, for the ACT Award; the Studenski family, for the awards described in this Report; and so many others. As support increases, more students can experience these and future opportunities, both domestic and international. The Y has remained a strong force for students and community, thanks to your generosity. Your contributions make the Caltech Y a family and give the students a place to test their ideas beyond the traditional lab.

We hope the conversations in the following report provide insight to our readers, and that they inspire you to tell us your stories about how the Y affects you. We invite you to keep in touch, and we'll endeavor to keep you in the loop as we prepare for the Y's second century together. Please consider joining us at a Y event—perhaps at an upcoming dinner as a Friend of the Y—and thanks for joining us here.

Best wishes,

Athena Castro
Executive Director of the Caltech Y



Student ExComm President Peter Hung Considers Leadership

As one of the smallest yet most impactful colleges in the U.S., Caltech is often referred to as a hidden jewel in Pasadena. Within Caltech, one of the hidden gems that makes the Institute spectacular is the Caltech Y. While the Y's daily operation is run by a small staff of five, the dedicated staff works tirelessly with the Student Executive Committee to plan more than seventy unique events each year and a number of year-round activities to enrich student lives and to challenge students to be responsible citizens of the world.

With the Y about to turn 100, I have been reflecting quite a bit about my experiences here. During my freshman year, the Y was the first campus organization I participated in, through the Union Station program where we prepared and served dinner to the homeless. Later that year, I founded the Caltech Science Olympiad club with advice and support from the Y staff. Even though I was only a freshman, the Caltech Y had started preparing me to be a leader. Throughout my career both as an undergraduate and graduate student, the Y has allowed me to stay engaged with the community through Make a Difference Day and various Explore LA trips and hikes.

As a graduate student, I continued my involvement with the Y and started leading events and the Union Station program. Three years ago, I joined the Caltech Y Student Executive Committee (ExComm) and started leading my own Explore LA trips; "The Book of Mormon" performance, being hilarious while raising cultural awareness, is my all-time favorite.

I also led the Washington D.C. Science Policy trip, which further expanded my horizon from knowing not only how science works in the lab but also how science works in our society and the impact that scientists can have through our government and policies. (For more on that impact, see John Andelin's D.C. story later in this Annual Report.)

Over the years, the Y has transformed me to become a leader with cultural and social awareness. The most rewarding part of joining the Y, however, is actually helping others to grow into leaders themselves.

The Caltech Science Olympiad club that the Y helped me start a decade ago has grown from twenty Caltech students to over 150 Caltech students today. The current student leaders, with the support of the Y staff, have won the bid this year to have Caltech host the Southern California State Science Olympiad Tournament for the first time, bringing 1,000 of the brightest high-school and middle-school science students to Caltech while providing additional volunteering opportunities for Caltech students.

The Y is truly an amazing organization and has made a huge difference in my life and the lives of many others. I want to take this opportunity to thank the Caltech Y staff, Friends of the Y, and my fellow student leaders for making this such a positive experience. As I finish my final year at Caltech, I know that the Y is going to be one of the most important things at Caltech that I'll miss. I look forward to all the exciting things that the Y will do in its next century of excellence.

Peter Hung
Caltech Y Student Executive Committee
President 2015-2016

Board Chair Sees the Y Progress in the Caltech Tradition of Excellence

In assessing the performance of the Y, it's useful to note that many Y supporters have been involved with the Y for a decade or more. This long tenure says a lot about the Y and its perceived value: it's clearly an organization worth supporting.

It seems logical to ask the question "What makes the Y an organization worth supporting—and supporting over a significant number of years?"

First, the Y has an organizational structure that is focused on the students. The students select, plan, and implement more than seventy activities each year. An Executive Committee of eighteen students does this selection, being mindful of budget constraints and what the larger student population wants to do. In this process the students come to "own" the resulting programs and are thus further motivated to make them successful.

Along the way the students develop skills not taught in the academic classrooms and laboratories. They learn the critical skills of how to work as a team, reach consensus among a large set of possible activities, stay within budget constraints, and coordinate and implement the selected activities.

Those participating in one or more of the seventy-plus activities each year constitute more than forty percent of the student population. The participants can access a wide selection of personal growth opportunities. These opportunities range from developing leadership skills to experiencing outdoor adventure, to civic engagement, to providing service to the local community, to developing perspective on many issues presented by invited speakers.

For a significant number of students, the Y activities also provide an important break from the rigors of the academic programs. This serves to relieve stress and gives the students needed perspective.

With the Y's Centennial approaching in 2016, the Y reached out to the following knowledgeable individuals to obtain their views on the Y's performance: two past Caltech presidents, the director of JPL, a former mayor of Pasadena, the director of Union Station, a life trustee of Caltech, and an emeritus faculty member. These people have responded with very favorable written statements supporting the Y. These, combined with testimonials from current and past Y students, provided a sound basis for evaluating the Y's performance.

Not to be forgotten in creating an excellent Y is the support of the Caltech Y Board Members—they clearly love the students, the Y, and Caltech; and the incredibly competent professional five-member staff of the Y. The Y staff provides what the students need to be successful in planning and pursuing their selected activities.

As the Centennial approaches, it's worth noting that excellence comes with the cost of supporting programs. A Centennial Campaign is underway to raise $5M for the Y Endowment to assure excellence in the future, and the generous gifts received thus far are much appreciated as we welcome additional participation. I hope everyone reading this will consider becoming a part of the Y to share in this grand student-inspired adventure.

Kirk Dawson
Chair of the Caltech Y Board of Directors

Shaping the Student Experience

Caltech is known worldwide for our brilliant students with a reputation for clever pranks and great accomplishments in science and technology. Outside our 124 acre campus and in the popular media, this is often the public image of a "Caltech student." But many of us know a very different narrative about our students, students that are learning about themselves, about each other, and about the world around them. Students who are curious to explore the outdoors and places beyond our borders; students who are thinking about their role in society, government and how they can effect social change; students who become leaders among their peers, social activists and community volunteers.

Caltech and the Caltech Y play an essential role in creating the environment and opportunities that enable the personal growth and civic engagement of our students. This mission has been the hallmark of the Caltech Y for the last 99 years. The Y has demonstrated the value of empowering students to initiate, create and lead an array of programs that hone their leadership skills, raise their awareness of local and global issues, and give them an opportunity to pause for self-reflection while developing a broader world view.

As someone who benefitted from Y programs as a student, I can attest to the difference that the Caltech Y has made in shaping the student experience and shifting the narrative about what Caltech students are like. My sincere thanks to the Y for working collaboratively with departments across campus and with community organizations so that our students have the opportunity to learn about themselves and their place in the world.

Professor Joseph E. Shepherd
Vice President for Student Affairs;
C.L. "Kelly" Johnson Professor of Aeronautics and Mechanical Engineering

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*indicates student member

Guernsey Award
Commends Students' Work with PasadenaLEARNs

Caltech students are bringing fun science directly to elementary schools, and three of them just received the Caltech Y's Lucy Guernsey Service Award for their work. Melissa Chang, Emil Khabiboulline, and Vansh Kumar volunteer with the PasadenaLEARNs program at Madison and Jackson Elementary Schools. The collaboration has blossomed to include individual tutoring, Science Olympiad coaching, and monthly interactive demonstrations for more than 200 Kindergarten to fifth-grade students.

The children were recently introduced to a Van de Graaff generator, watching "their hair stand straight out from their heads," as reported in the May 2015 Y Newsletter. Next, they "made a circuit, with one person touching the Van de Graaff and the others holding hands in a line. Their bodies were conducting the electricity, and when the last child in line touched a separate student, the circuit was completed. They all jumped when the flowing electricity delivered a shock!" Volunteers have introduced children to electricity, combustion, and other messy, fun adventures.

The Guernsey Award is given in recognition of Lucy Guernsey, a former Y executive director dedicated to students and Y volunteerism. It rewards exceptional service to the Y and the community, involvement with on- and off-campus service projects, and leadership in community and volunteer service efforts. By earning this award, Melissa, Emil, and Vansh are commended for their spirit of service.

Maria Toliver
Appreciates Caltech Y Participation in PasadenaLEARNs

PasadenaLEARNs

Maria Toliver loves to see the excitement in students' eyes when they are truly engaged in learning. She is the program coordinator and grant manager for PasadenaLEARNs, an after school program that offers enrichment, leadership, and learning opportunities for K-12 youth in the Pasadena Unified School District (PUSD). The Caltech Y has enjoyed a close partnership with PasadenaLEARNs over the course of the last three years by providing student volunteers to help in local schools—tutoring and leading hands-on science demonstrations.

"Caltech students bring so much passion. They come with so much energy and enthusiasm; it's contagious," says Maria. "Our students are just invigorated by the experience." Like the Y volunteers, who donate two hours every Friday afternoon, Maria is similarly enthusiastic and passionate about serving students.

Maria began her career with PUSD in 1994 as a classroom teacher. In 2009, she became a teacher on special assignment for PasadenaLEARNs, developing the curriculum and professional development for staff at school sites. Soon after she became the curriculum specialist for PasadenaLEARNs, aligning enrichment activities to state standards, among other responsibilities. Maria has served as the program's coordinator since 2013.

Based on the above experience and raising three children who attended Pasadena public schools, Maria says "it is so important to support kids and give them what they need so they can go out and be successful." It is this philosophy that guides her work in the schools and with community partners.

"The partnership with PasadenaLEARNs started over three years ago by happenstance," Maria recalls. In 2012, Caltech student and Y ExComm president Peter Hung was interested in getting involved after finding out that Pasadena was hosting a Science Olympiad competition. "Peter bridged the gap and started bringing Caltech students to coach at our schools and do hands-on science with our students. It started a wonderful partnership and relationship with the Y."

Current Caltech student leaders and volunteers, led by Vansh, Melissa, and Emil, now go to three Pasadena public schools—Jackson, Madison, and McKinley Elementary—to tutor and lead science demonstrations for kids of all ages. Maria believes the partnership gives Caltech students a sense of purpose and a connection to the community. "Working with children provides these bright college students with a sense of giving back to the community—to education." The fact that Caltech students take the time to share what they've learned is "an amazing gift."

John Andelin: Shaping Public Policy

As a Caltech student (BS '55, PhD '67), John Andelin learned as much physics and math as possible. In those days, he also "played with liquid helium" and continued this low temperature quantum mechanical exploration at Ford Scientific. Then at Harvard in 1968, he helped prepare a solar experiment for NASA's Skylab space station.

In an impromptu D.C. discussion last summer, John and his wife, Ginger Geoffrey, talked about the 1970 turning point in John's career. His group's Skylab project was going well, but Skylab itself was being rushed to the launch pad before it was ready. He was surprised that NASA wasn't delaying the launch.

John explains the context of his subsequent career change: "Those were tumultuous times, with the Kennedy and King assassinations, student unrest, and the Vietnam War. When I looked at the most straightforward technological organization—NASA—and saw that even they were screwing up, I decided to go look at what was going on in Washington." (Fortunately, a Caltech colleague solved a problem with the H-alpha telescope before launch, allowing it to guide the other instruments to interesting regions of the sun.)

His "look" into D.C. policymaking meant that John was no longer an expert "in a narrow technical field" but a "generalist" or "superficialist" in a broad-based political arena. He worked as a volunteer staffer, then a paid staffer, for Congressman Mike McCormack, as one of only two PhD scientists on the House of Representatives staff. This was followed by his job as subcommittee staff director for the House Committee on Science and Technology. During this time, John and his colleagues collaborated on what became some of the earliest, if not the first, laws in support of solar and geothermal energy, electric and hybrid cars, and energy conservation.

"Our only significant mistake is that we didn't foresee fracking. If I had been trained as an environmental geophysicist, maybe we'd have taken that into account. Unfortunately, Oklahoma is now up to its ears in earthquakes."

John is dismayed that the solar power laws were "ignored or mangled after being passed. They were authorized," he explains, "but if Appropriations doesn't come up with the money, the authorization doesn't help. It's like having your dad say, 'Yes, you can go to a movie,' but he doesn't give you money. And even when funds were appropriated, the Executive Branch pretty much wasted it. I'm disappointed, because we wrote good laws," he adds. "Still, solar power is catching on, slowly."

John's wife, Ginger, agrees, pointing out that this solar power work is "a history people can build on."

"Yes," says John. "For instance, twenty-somethings are interested in solar power, and they're lobbying for it."

In 1980, John joined the Congressional Office of Technology Assessment, as assistant director of OTA's Science, Information, and Natural Resources Division, continuing in that role until he retired in 1993. At the OTA, it was John's job to provide Members of Congress with guidance on addressing issues with major technological components and political consequences. John's division produced dozens of book-length reports, shorter reports and summaries and even brief talking points to serve busy politicians.

"Legislators consider more than 5,000 bills every Congress," he says. "Given so little time to decide on each bill, they depend on staff, the press, and lobbyists." John wrote about the challenge of being on such a staff in a 1978 Caltech *E&S* article: "The time demands put upon congressional staff are so great," he noted, "that we are constantly wishing we had time to know something better."

John speaks with measured pride about OTA's role in shaping public policy. "Though many of our reports are more than 25 years old, people continue to build on and refer back to them, including those on climate change, management of federally funded research, physical and electronic infrastructure, and software copyright.

When John meets with Caltech students during the Caltech Y's annual D.C. policy trip—"before they learn about the OTA's influence—they sometimes ask, 'Why did you do it?'"

John has given this question some thought. "There's a common belief that people switch from science to policy because they don't like the science they're doing—or it's not going well." But for John, "this was just another interest." Apparently it was a long-term one.

John's interest in policy grew while he was an undergrad at Caltech. One might find this surprising, considering that he and his classmates balked at having to take humanities classes. "Oh, come on," he and his peers would protest. "I just want my physics and math." But those history and public affairs classes got John thinking about societal issues and obviously came in very handy later.

The Caltech Y added to that, John points out. "The public figures invited by the Y to speak and meet with students challenged us to compare and understand diverse points of view. Two Y [Leaders of America] guests that were particularly memorable were Robert Oppenheimer and Abraham Maslow. Some of the facts we learned in class suffered over time, but the Y's attitudinal lessons about ethics, acceptance and compassion became only more relevant."

John Andelin and Virginia Geoffrey

John has seen the Y continue to build and refine its philosophy for six decades. He and Ginger support its "inclusive" philosophy by supporting the Caltech Y financially and in person, spending time with Caltech students, for example. (Likewise, they gave their time to discuss the Y with me last summer, as we sought refuge from a D.C. heat wave in a restaurant known for its California rolls.) Also dedicated to their local community, the couple works to improve education, social justice, green living, and public discussion of societal issues. Ginger, a speech therapist by training, supports refugees from around the world as she and John help them integrate into society. When newspapers have reported on the couple's "volunteer" work in the past, John prefers to call this "real-people" work.

Discussing civic engagement, John laments that the news we consume in the U.S. "is becoming more and more polarized."

"Everyone we know listens to NPR," Ginger points out. "I haven't heard of anyone listening to Rush Limbaugh in years."

Polarization "is a societal issue," says John. "Communities need better media outlets, such as the BBC, ironically, to help us see our country as a whole" and solve its problems. "Societal issues are always complex," he adds, and they therefore require careful coverage and public discourse. Unfortunately, complex issues are often poorly served by what John calls the "dishonesty of oversimplification." John presents evidence of this in the form of conflicting headlines describing a single scientific study. One headline claims that the chemical dioxin is dangerous, and another claims that it's not. The confusion can come when headline writers don't read the fine print and when people don't understand the complexities.

Is there reason to be optimistic about our future? Yes, "if people take an interest in society and act on it."

Is there reason to be optimistic about our future? Yes, "if people take an interest in society and act on it," says John. "And that, by the way, is a plug for the Y."

Where will a person's interest in society lead, whether inspired by the Caltech Y or other experiences?

"My sense of life is that we normally have goals and plans," says John. "Yet we recognize that things always happen along the way. We may simply adjust to this, or we may find an opportunity to move over here." John did the latter, and that has made a difference.

STUDENT REPORTS

Studenski Memorial Award Adventures

Alice Michel

The Studenski Memorial Award is a grant of up to $6000 established in memory of Paul Studenski, a Caltech student who was killed in an automobile accident while traveling across the United States in 1974. It is awarded to a Caltech undergraduate who has reached a crossroads in life and would benefit from a period away from the academic community to obtain a better understanding of self and to explore possible directions for the future. Two recent awards, administered by the Caltech Y, helped Alice Michel engage in wildlife conservation, far afield, and helped Margaux Lopez practice science education at San Francisco's Exploratorium. Read on about their accounts of what they did and learned.

Alice Michel
2015 recipient

Margaux Lopez
2014 recipient

STUDENT REPORT

BY *Alice Michel*

This past summer, the Studenski Award allowed me to volunteer as a wildlife conservation research assistant in South Africa. At Caltech I study geobiology with an emphasis on microbiology, but I have always loved animals, nature, ecology, and the idea of trying to actually do something, first hand, about the global loss of biodiversity. Until this summer, I assumed this dream was unrealistic. This summer totally changed that, and more.

I volunteered with Operation Wallacea, a UK-based organization that matches undergraduates interested in wildlife conservation with organizations around the world that are seeking volunteers. I chose to work at Thanda Private Game Reserve in South Africa on a project assessing the impact of elephants and other large herbivores on total biodiversity in a relatively small private game reserve. What began as the choice that fit my schedule best and involved large elephant populations. At Thanda, that means that all the females are on contraception, and they need volunteers every winter (our summer) to figure out how the ecosystem is functioning and if they can afford to let the elephants reproduce. In managing a reserve, it is important to gather data on biodiversity in general.

An average day on the reserve began at 5am, with breakfast, after which we piled into the back of the white Toyota pick-up before the sun had begun to rise. Every day we collected bird diversity data using bird point counts at randomized locations throughout the reserve. Once the sun was up, we set out to collect the bulk of the data during the habitat assessment, in which we measured vegetation—trees, bushes, and grasses, all of which, it seemed, have thorns in Africa!—and we looked for the effects of elephants, rhinos, porcupines, fire, and termites, among

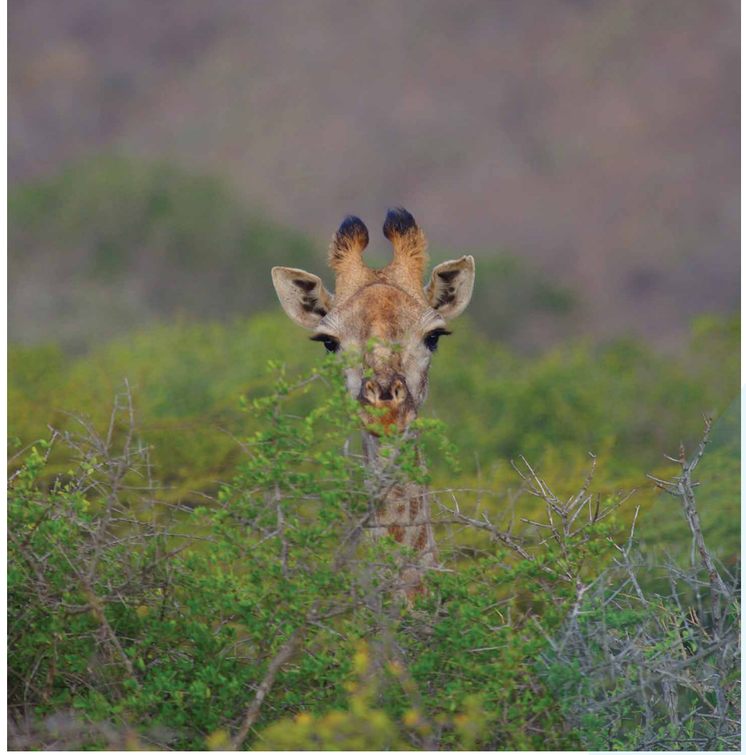
I assumed this dream was unrealistic.

This summer totally changed that...

mammals turned into a love of the whole South African country—the people, animals, nature, all of it. This is a dramatic comment to make, but I honestly think it changed me. Many of the people I met thought differently down there; life wasn't so much a race, a path with a goal. Maybe those were the answers I was seeking going into the experience, but I found them, again and again, nonetheless.

The project itself was amazing, interesting, and very exciting to help with. In most of the reserves in South Africa, there are too many elephants, which is sadly ironic given their general state in Africa, especially East Africa. Nonetheless, elephant overpopulation is a huge problem because they are highly destructive. They are naturally ecosystem engineers—felling trees and transforming forest ecosystems into savannahs, and, in the process, creating habitats for a myriad of other species. That is how things worked before humans put up fences. Now, with nowhere to migrate to, elephants wreck the environment to the point of ruin, so reserves have to manage their other things. One effect of the critically endangered black rhino, for example, is that branches are bitten at a 90-degree angle. We would return to the main camp for lunch, and afternoons consisted of data entry, lectures on management techniques and spoor and scat recognition, helping other scientists who passed through Thanda, and game transects, in which we would drive along relatively straight paths and count zebra, impala, nyala, kudu, giraffe, and anything else we encountered.

The most memorable day for me started out with a habitat assessment in Thanda Main. The reserve is divided into three sections with different histories. In this section, driving out, we saw two male lions, and on the way back we saw three bull elephants, the Cape buffalo herd, and even a jackal. This was super exciting and not normal! In the afternoon, two of the other twelve research assistants and I volunteered to help a graduate student visiting from the University of Minnesota who was doing her thesis on predator-prey interactions. This consisted of dragging a



cut-out wooden lion on a cart from a Toyota and observing the reactions of the "prey"—impala, kudu, wildebeest, and zebra.

Being from Caltech, I was skeptical. But I am now convinced. It was really interesting to see the reactions of the "prey," with their attention and concern definitely focused on the "lion." I got to see a kudu bark, zebra stamp their feet, and wildebeest snort, while giraffes stared on with a mildly phased look. The graduate student also had an impala cut-out, as a control, which had remarkably minimal effect on the herbivores. After our work was over, we drove back. The sunset that day was one of the best. I found out later, while reading a book, that the graduate student's PI (principal investigator) is one of the best ecologists in the world.

There were other days that were less exciting but also interesting. We discussed controversial management techniques like culling and trophy hunting in lectures, and in the evenings we played cards and tried to dream up solutions to what I now think is one of the most complicated problems on earth.

After three weeks on the reserve, we drove to the coast to do a week of coral reef ecology and become certified PADI scuba divers. This week was designed for the volunteers in my group who wanted to go into marine conservation. I had not thought of myself as interested in marine biology, but now I am. Diving pushed my comfort boundaries more than I expected it to, but it was very worth it for seeing parrotfish, a moray eel, and blue spotted ribbon rays. In addition, I had heard about the state of our oceans, but diving in it and hearing first-hand from people who work on ocean conservation drove it home.

Volunteering in wildlife conservation in South Africa was truly the most incredible experience I could have asked for, and I am so, so grateful for the Studenski Award for making my wildest dreams a reality. The experience was not only more fulfilling and exciting than I imagined, it made me realize how important and possible working on a game reserve could be for me.

There is a lot of science and hard fact involved, but morality, philosophy, and working with people come into play just as much. I like that balance, and now I know that it is something I want to look for in whatever I do in the future. I also want a job or school that keeps me outside. Looking towards the future, I want to continue to pursue wildlife conservation or, merging it with my geobiology interests, ecology and evolutionary biology, whether in graduate school, as work, or as a volunteer.

STUDENT REPORT

BY Margaux Lopez

As a senior in mechanical engineering, I struggled to bridge the gap between my love for science and my passion for education. I am incredibly grateful to the Caltech Y and the Studenski family for giving me the opportunity to explore a new-to-me aspect of science education: children's science centers.

I used the Studenski Award to support myself while working as a volunteer at the Exploratorium in San Francisco for five weeks. The Exploratorium is an interactive science center targeted to kids but fun and educational for everyone. I wanted the chance to work there because science museums connect science with fun in a unique way, and I thought that it might be a viable career path. I wanted to learn about exhibit development, and interacting with guests, and how to make science fun and accessible to kids—exploring how to most effectively share my passion for science and engineering with these kids.

I worked with thirty-some paid Field Trip Explainers who work three years before moving on to another position there or elsewhere. Thus these positions are meant to encourage self-discovery as well as foster teaching skills. I had three main jobs: greet field trips, run demos, and roam the museum floor. Demo stations located around the museum: a cow eyeball dissection, a lightbulb demo, a magic card trick table, a botany station, a plankton station, and some others. The remaining Explainers roamed the museum floor, tidying up messy exhibits and interacting with visitors in a more organic way. I also had an hour of training every morning before the museum opened. Sometimes the resident scientist would help us understand one of the exhibits more deeply, and other times we would do experiments and activities ourselves such as measuring the tidal levels of the San Francisco Bay or learning how to count atoms and explain how small they are to a kid.

My favorite part about working at the museum was seeing that "Aha!" moment when I really got through to a visitor and made them excited to learn.

I thought that interacting with visitors while roaming would be easy, but it was much harder than I initially expected. I really wanted to go up and talk to everyone, but I also didn't want to interrupt their museum experience or bore people that weren't super interested in the science behind the exhibits. It took me a couple weeks to develop an effective strategy, but by the end I was pretty good at recognizing the visitors that would be open to a discussion. I usually targeted the people (both young and old) that stayed at a certain exhibit for more than a minute, because that means they are really trying to figure it out and not just playing with it in passing. I also found that the elderly were a lot more receptive to chatting about exhibits than parents (who were trying to watch their kids) and kids (who were distracted quickly by other things). Throughout my weeks at the museum I became much better at approaching people and finding a way to get them interested in the conversation right away, which was especially important when talking to younger kids.

My favorite part about working at the museum was seeing that "Aha!" moment when I really got through to a visitor and made them excited to learn. There was one demonstration table that involved talking about different types of light bulbs (incandescent, fluorescent, and LED) and making our own demo light bulb with some wires, a battery, and a coil of metal wire. When I showed the light bulb demo to one particular girl, she became really interested in why the glowing metal coil only lasted about a second. To help answer her question, I had her make a couple of different coils to test—some long, some short, some with tighter coils, some looser, and we tested them all. I loved seeing her curiosity and excitement about our mini-experiment, and I could tell that the lesson would stick.

My absolute favorite demo at the Exploratorium is the chain reaction machine. In a roped-off section of the museum, there are several tables set up with a giant wooden domino on each end, and the goal is to connect the two such that knocking over the first domino creates a chain reaction that triggers the final domino. In the picture, the first dominos are pushed over, which knocks the weighted cup off the table and pulls the pink string. The rotating wooden hammer knocks over the silver cup, allowing a ball to roll down the track, bounce on the red rubber "trampoline," and land in the funnel. The ball is directed to bounce down the xylophone, and at the bottom it knocks over a wooden block covered in aluminum foil. This block completes the circuit, allowing the black motor next to the "output" block to move and knock over the block. As seen from the picture, the tables were connected such that the output block from one table would knock over the input block from another table. After each group had finished their table, one giant chain reaction machine could be triggered. It was a lot of fun to watch, but I particularly enjoyed working with a small group of kids as they spent 30-45 minutes working on their table. I liked helping them through engineering challenges and helping their imagination come to life, and it was great to see the transition from beginning to end as the visitors went from imaginative ideas to a working machine.

For me, the less rewarding part of the job was only getting to see the visitors once. Most of the interactions are short, less than a minute, and I rarely got to talk to the same family twice in one day. While I loved seeing visitors get excited about the exhibits, I didn't get to see any lasting changes. Did the "aha!" moment that I witnessed transform into another at the next exhibit? Did the visitor leave with a stronger appreciation for science? I don't know, because I never saw the visitor again. I prefer teaching in a classroom setting because seeing change and improvement over time is powerful and rewarding. This is why the chain reaction demo was my favorite—I had the chance to work with visitors all the way through completing a challenge, and it was rewarding to see their hard work pay off in a final project.

The other hard part of the job was focusing on all of the simplified science. I wanted to know the details behind the rainbow colors on soap film (due to destructive interference of the light waves), but I couldn't explain to a 5th grader how destructive interference works. I was definitely challenged to explain more complicated phenomena in simple terms, but I also wanted to go deeper myself and learn more, which was hard because only one of the other Explainers had a strong scientific background like mine. While I understand the importance of being able to explain scientific phenomena in an easily understandable manner, I would rather learn and teach the more nuanced scientific principles because I find them incredibly interesting. I do, after all, have a Caltech science background.

In the end, this experience allowed me to explore this new world within the realm of science education. I learned that a classroom setting is more fitting to my style of teaching because it allows for more intimate interactions. I want to teach the same person over a period of time so that I can see growth and development. However, I loved the flexibility of teaching style that the Exploratorium offered. I learned to tailor my scientific explanations to something that the visitor was interested in. For the girl who wanted to know about light bulb filaments, I was able to do a mini experiment with her right there. For a boy that loved dinosaurs, I was able to help him make a chain reaction machine that included a dinosaur chasing a toy car.

I believe that people learn best when they are excited and interested by the subject matter, so being able to cater to people's interests when teaching is a powerful tool that I was able to begin developing at the Exploratorium.

Margaux Lopez

2014-15 Programs

Social Programs

- ✔ **Orientation Open House**
- ✔ **Explore LA**
  - Little Tokyo
  - Galaxy Game
  - The Nutcracker Ballet
  - Piano Guys
  - Horseback Riding (Winter & Spring)
  - Matilda
  - Wicked
  - Legend of Korra/Avatar: The Last Airbender Tribute Exhibition
- ✔ **Decompression** (Fall, Winter, Spring)
- ✔ **Pre-Frosh Ice Cream Social**
- ✔ **Life Skills Talk: Bike Repair**

Outdoor Adventures

- ✔ **Y Hike Backpacking Trip to the Sierras**
- ✔ **Undergrad Orientation Kayaking Trip**
- ✔ **National Park Camping**
  - Grand Canyon
  - Yosemite National Park/Centennial Grove
- ✔ **Adventure 101: Hiking in Los Angeles**
- ✔ **Hikes**
  - Mt. Waterman
  - Mt. Baldy
  - Full Moon Hike
  - Native Plants Hike
  - Smith Mountain
  - Oakwilde
  - Iron Mountain
  - Strawberry Peak
  - SURF Student hike

Community Service

- ✔ **Undergraduate Student Orientation Service Project, Boys & Girls Club**
- ✔ **Community Service and Advocacy Fair**
- ✔ **Food Drive**
- ✔ **LA River Clean Up**
- ✔ **MLK Service Day with Pasadena Unified School District: "A Day On, Not Off"**
- ✔ **Alternative Spring Break Trips: Catalina Island & Malibu Science Camp**
- ✔ **Kids Reading to Succeed**
- ✔ **Make-A-Difference Day**
- ✔ **On-going Community Service Opportunities**
  - Union Station Homeless Shelter (monthly)
  - Hathaway Sycamores (weekly)
  - PasadenaLEARNs (weekly, October through May)
  - Rise Tutoring Program (4 days/week, October through May)

Cultural & Educational Programs

- ✔ **Leadership Lab: "The Uncertainty Principle" with Tim Boyd, Marian Fu, and Nathan Czubaj**
- ✔ **World Fest** (co-sponsored with Caltech International Offices)
  - Entrepreneurship in Guatemala
  - Top Ten Things I Learned in India
  - International Food Fair & Culture Show
  - The French Connection with Anastascia Terrell
- ✔ **India Ki Khoj International Trip** (co-sponsored with Student Faculty Programs & Indian Institute of Technology, Gandhinagar)
- ✔ **Science Policy Trip to Washington, DC**
- ✔ **Martin Luther King, Jr. Commemoration Week** (co-sponsored with Caltech Center for Diversity): Focus on Freedom Summer
  - Documentary Screening: "Mississippi: Is this America?" (1962-1964)
  - We'll Never Turn Back: Pursuing Happiness from Freedom Summer to Ferguson with Peter J. Harris & David Crittendon
  - Those Who Lived It: Finding the People Who Were Changed By Freedom Summer and Telling Their Stories with Susan Goldman Rubin
  - A Fight for Civil Rights in Mississippi with Dale L. Gronemeier

- ✔ **Social Activism Speaker Series**
  - Reproducibility in Science Seminar Series:
    - o A Conversation with Prof. David J. Anderson
    - o Flying Blind: Reproducibility in High Energy Physics with Prof. Frank Porter
    - o A Conversation with Prof. Pietro Perona
  - Science of Brewing Tour/Tasting at Progress Brewing
  - The Ebola Crisis: Ethical Challenges with Dr. Wendy Kohlhase
  - Courage and Resistance Tour: Panel Discussion & Movie Screening with Betty Medsger and the "Activist Burglars" (co-sponsored with the ACLU)
  - A Discussion with the Civil Liberties Protection Officer of America: Alex Joel
  - The Black Panthers and the Fight for Civil Rights: A Conversation with Hank Jones (co-sponsored with Caltech Center for Diversity)
  - Hydrodynamic Instabilities, Painting and the Story of a Mexican Rebel with Prof. Robert Zenit
  - Homelessness and Domestic Violence Panel Discussion and Easter Basket Drive (co-sponsored with the Caltech Center for Diversity)
  - Science Policy Lunch Series
    - o Dr. William Graham
    - o Prof. David Goodstein
  - The Implications of U.S. Space Policy Choices with Dr. Scott Pace (co-sponsored with the Keck Institute for Space Studies)

STUDENT PROFILE

Jeremy Sandler Encourages Students to Tread New Trails

"For me, research and hiking are similar things," says Jeremy Sandler. He is attracted to both, as a biology PhD candidate and as chair of the Caltech Y Outdoors Committee. What's the connection and the attraction?

"Whether I'm hiking over a pass or designing an experiment, I can predict the outcome or anticipate the trail, but the experience isn't always what I expected," he says.

Not everyone would crave such challenges, but Jeremy does, and he inspires undergraduates to share his enthusiasm.

His "drive to explore and see new things" was nurtured by a mountain-climbing father and his entire family of outdoors-oriented Seattleites. Skiing at age two, sailing to islands to camp with fellow Boy Scouts, and hiking on and near the Pacific Crest Trail led naturally enough to Jeremy's undergraduate biology studies at the University of Washington. There he enjoyed ecology classes and Mount St. Helens field studies.

Living on the slopes of the volcano in the Summer of 2007, he and peers studied how flora was recovering from recent eruptions. "We memorized every plant on the volcano" in order to speed up the field work. Several years later, as a transplant to California, Jeremy found the same plants in the Sierras—only at higher elevations in California than in western Washington. Finding such similarities, on Y hikes, helped to lessen the culture shock of moving from a "green" town to L.A.

Jeremy saw L.A. as a "big, sprawling, flat, not very green" place and immediately sought refuge in the mountains "above campus." He participated in Caltech Y hikes and, as often happens to Y participants, he soon became a leader.

"I love exploring the unique environment of the Sierras," he says. As a Caltech Y student leader, he especially likes leading freshmen on physically challenging and philosophically rewarding hikes. He finds that undergrads show up at Caltech without knowing what to expect from their education. Rarely challenged in high school, these top-notch students "soon encounter challenges they've never faced before," says Jeremy. His grad-school peers, on the other hand, have already "learned how to excel as college students."

Jeremy tries to prepare the newcomers. On a recent hike, his group approached the 12,260-foot Koip Peak Pass on the border between Yosemite National Park and the Ansel Adams Wilderness, where the trail is literally out-of-sight for a while. When the steep trail came into sight, "a few freshmen doubted themselves. We shifted the packs to redistribute weight to the more experienced hikers, and everyone made it to the top, dropped their packs, and collapsed."

That's the perfect time for Jeremy to have his conversation with students: "The pass is an analogy for a new challenge you haven't faced," he tells them. "You worked together, and you all made it. This is basically what you'll do at Caltech. Some problem sets will be too hard for any one person to solve, so you'll come together to solve them."

Jeremy knows about their problem sets because, as a Teaching Assistant, he writes them. In end-of-semester evaluations, his problem sets are "consistently ranked as the most challenging … and rewarding."

Besides leading hikes, committees, and the like, Jeremy tutored in the Caltech Y's Rise program for two years, until grad school became too busy. He and his wife have attended Y lecture-discussions and have seen "Wicked" as part of the Y's Explore L.A. series.

"Part of the Y's message," says Jeremy, "is how important it is to take time away from classes and do something for yourself."

Do students take advantage of Y opportunities? Jeremy thinks his committee reaches a majority of students, at fairs and via email, but he adds that there's always going to be an untapped group.

"The key is to find out what the students are passionate about. Not everyone is excited about climbing mountains or going to talks, so we need to let students know the Y is open to them to explore what they'd like." That's what Y leaders did at a recent Y discussion of opportunities. One student said she wants to explore L.A. as part of a culinary adventure.

Jeremy says the Y's diverse programming allows busy students to explore many interests "without being spread too thin." For this, he thanks Y staff members including Greg Fletcher. Jeremy refers to Greg as "the glue that holds all the student programs together." (In addition to staff support, the Y provides equipment funded by the Moore Hufstedler Fund, Student Investment Fund, Caltech Alpine Club, Da Vinci Club, GSC, and personal contributions. New adjustable hiking backpacks allow for one-size-fits-all convenience, kind of like the Y itself.)

"It's important that students be able to just show up at Y meetings and events, put in time if they want, and come away with something."

Jeremy comes away from Y hikes refreshed and ready to write his three research-papers-in-progress, complete his PhD program—"The end's in sight!"—and search the horizon for his next professional peak … perhaps outside Earth's gravity field, as he pursues becoming an astronaut. Still, the day-to-day climb must be grueling, in the lab, as on some hikes.

"There were times on the Y hike when I struggled on the trail. I usually carry the heavier gear to help out. Being with people helped me get over the pass sometimes."

Climbing peaks, literally and figuratively, "was easier before we had our baby," says Jeremy. Having a fourteen-month-old is not only a new challenge, it gives Jeremy a new perspective from which to view life. But even this new adventure has connections to old ones.

Jeremy has long understood "how important it is to share the outdoors with other people," and he has "always done this with the Y." But now, "with my son," he explains, "it's more of a personal mission to me than it was before. One of my passions has been introducing him to everything available. And sometimes when he's in my backpack for a hike, he'll grab a leaf and hold and study it for a long time."

Jeremy's studies led him to ponder the workings of a fertilized Drosophila (fruit fly) egg. Patiently toiling in the lab of Professor Angela Stathopoulos, he focuses on the phase when the egg's embryonic genome turns on. He asks, "How is the genome activated, and how do the embryonic cells communicate?"

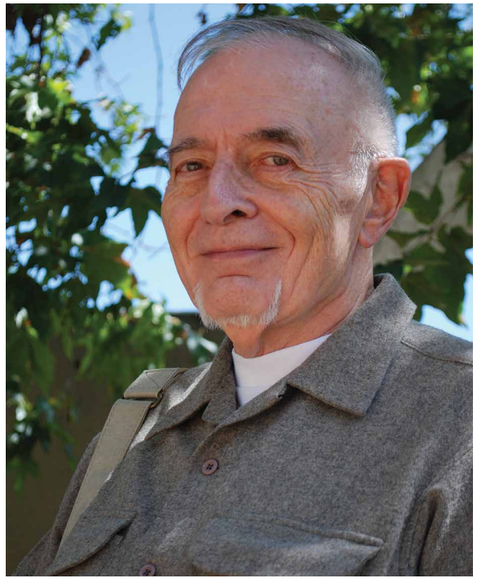
What determines anyone's path? What communication happens along the way to alter the course? How does one's nature, one's environment, and the interaction of the two, lead a person to question and explore? Such questions are obviously beyond the scope of today's adventure story, but Jeremy can at least now say that, somehow, he has come to love the rugged Sierras more than the emerald Cascade Mountains and the Pacific Crest. That wasn't expected.

He especially likes visiting the Caltech Centennial Grove in Yosemite. Caltech Y Director Athena Castro says, "Jeremy has led the Yosemite trip for a few years now, and thanks to him, we've actually had good luck finding the grove the last few years…. The students have benefitted greatly from Jeremy's leadership."

Similarly, Jeremy says, "I think that, without the Y, I wouldn't have gotten out there and really pushed myself to explore."

FACULTY PROFILE

Fred Shares the Components of a Dream



In the late seventies, Caltech students gained perspective in laboratories and in meeting halls, thanks in good part to Professor Fred Shair. That's when Fred founded SURF—the Institute's pioneering Summer Undergraduate Research Fellowship program—which brought undergraduates into labs in growing numbers.

At that time, Fred also helped Walt Meader, the Caltech Y director from 1974 to 1982, to launch the student-faculty conferences. These conferences have given students a forum to voice their concerns for nearly forty years, and they continue today under the leadership of the Associated Students of Caltech. Fred continued his commitment to Caltech with long-time service on numerous faculty committees and on the Caltech Y's board of directors.

Why has Fred found time for the Y throughout his tenure as a chemical engineering professor (since 1965) and as an active member of the campus community? For decades, as Fred has tracked faculty-student-society interactions, he has seen the Y as a place where students figure out how to impact society with the support of Y staff, the Institute, and involved supporters. He sees how the Caltech Y—as a focused yet interdisciplinary, creative place—is perfectly positioned to respond to changing times.

As someone who is always thinking of the next step, and dreaming, Fred shares his worldview circa 2015. He notes that "top universities throughout the country are trying to understand and respond to substantial changes in our society." A friend sent him an MIT Sloan School of Management report on the matter, which concluded that prefrosh applicants also "want to contribute significantly to important global challenges."

From his observations of students who contribute through the Caltech Y and SURF, Fred believes that Caltech applicants are a lot like the ones in the MIT study. He wants to help them make a difference, as Y director Athena Castro discusses in this annual report. Fred looks to the Caltech Y, whose mission includes challenging students "to become responsible citizens of the world." In particular, he looks at the Y's independent-exploration awards, which exemplify this mission and could be expanded at least a hundredfold.

He wants to give every rising Caltech senior the opportunity to propose and carry out a "flexible, individualized summer program" that could include travel, service, leadership, or all three. Toward this end, Fred seeks help from people including Caltech faculty and alumni worldwide, and he seeks at least initial funding from Caltech. He describes his ideas as the "components of a dream" because this dream would call for the effort of many people in order to be lasting and effective.

Fred refers to his dream program as "the perfect complement to SURF." Just as SURF gets hundreds of undergrads into labs to do significant research, the Caltech Y's Studenski and ACT awards get students out into the world to do significant work and to explore what they might do someday. Like SURF, Y awards also call for students to share what they learn with their peers. (See student reports in this publication, as well as recent annual report write-ups by Studenski awardee Teo Wilkening and ACT [Advocating Change Together] awardees Janani Mandayam Comar and Amol Kamat.)

Now Fred wants the Y awards to mirror SURF awards in number, and he hopes they'll involve more input from Caltech alumni far and wide. He's particularly familiar with the Studenski Memorial Award program and focuses on it.

"Such a program would be 'evergreen' because it would tap into the creativity of students, faculty, and alumni worldwide," says Fred. "It could include a special Studenski Day—similar to that for SURF—in which final reports and oral presentations would serve to attract other students and potential donors."

Thinking of the five-pillar structure that forms the basis for Y programming in general, Fred says his dream program would allow many more enthusiastic, bright young people to:

1) develop their leadership abilities;
2) engage in civic activities;
3) grow through service to others;
4) reflect while engaging in well-planned adventures; and
5) develop a more comprehensive perspective of others.

Fred suggests expanding the Studenski awards committee to include Caltech, JPL, and alumni representatives. In "the good old days," he saw how interaction among these many actors created "an environment where leadership, self-reflection, and service to others was stressed." Fred sees a need for more such interaction today, all across campus.

"Were Caltech and the Caltech Y to develop such a program," he says, "it would certainly expand our undergraduate students' perspective, sensitivity, and opportunities for leadership."

Fred adds that "it would strengthen the Caltech community throughout the world by providing new links between alumni, faculty, and students. Also, other colleges would try to follow Caltech."

"I have always thought of Fred as a visionary," says Y Director Athena Castro, "and we greatly appreciate such input as we usher in the Caltech Y's next century."

If you would like to support Fred's dream of funding programs that help students make a difference and expand their worldviews, please see "Giving to the Caltech Y" on page 25.

2014-15 Individual Donors

We are grateful to the hundreds of people who support our mission through the annual campaign and additional contributions. Here, we recognize those who have donated so generously this past year from October 1, 2014, through September 30, 2015. Thank you!

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Gifts and Pledges received for the Centennial Endowment Campaign as of September 30, 2015

The Caltech Y would like to recognize the following donors for their contributions or pledges to our centennial endowment campaign. Through the campaign, the CaltechY seeks to increase its endowment to ensure a robust financial base and to enable the Y to broaden the range and availability of programs offered to students. The Caltech Y is committed to raising $5 million dollars through the Centennial Campaign.

As of September 2015, we are 50% to our goal. If you wish to contribute to the endowment or help us reach our goal, please contact Agnes Tong, Director of Marketing & Development, or Athena Castro, Executive Director.

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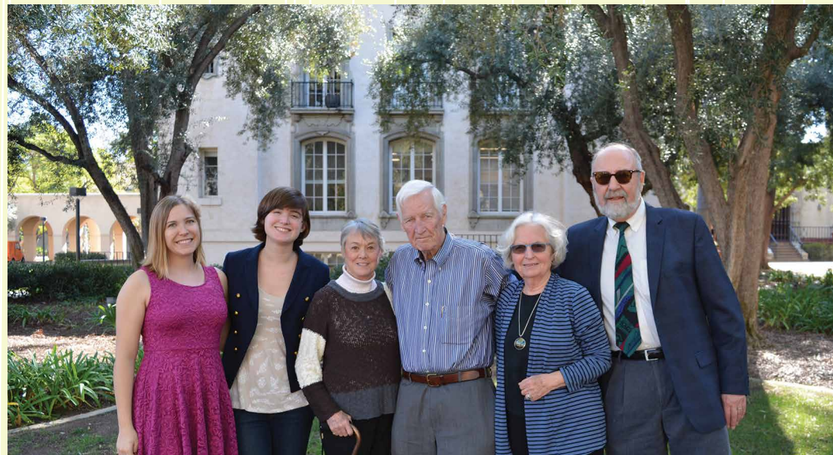

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Rational USA
Seeley Brothers
Swinerton Builders
Sysco Los Angeles
The Spot Gourmet
Utility Refrigerator

Individual Support

Iram Parveen Bilal
Tim Boyd
Don Brown
Charles and Valerie Elachi
Mike Gabelman
John and Barbara Gee
Pam Hemann
Nancy Lan
Tom Mannion
Peter and Doreen Mason
Jean Paul Revel
Gordon H. Sasaki, MD
Doug and Debbie Smith
Ed Stone
Charles Vorsanger

Community Support

Aquarium of the Pacific
Arthur Murray Dance Studio
Athenaeum
Blick Art Supplies
Bob Smith Toyota
Caldwell Vineyard
Caltech Parking
Einstein's Bagels
El Portal Restaurant
Fortanesce and Associates Physical Therapy
Fresh and Easy
Green Street Restaurant
Industry Hills Golf Club
Kidspace Museum
LACMA/Decorative Arts Department
Laemmle Theater
Lake Arrowhead Resort and Spa
Matt Denny's Ale House
Mission Wine
Oakley
Pacific Palms Resort
Pasadena Playhouse
Pasadena Police Department
Pasadena Tournament of Roses Association
Pie 'N Burger
Round the Clock Cleaners
San Diego Zoo
Santa Anita Race Track
UCLA Athletics
Ventura Beach Marriott
Wundabar Pilates

Giving to the Caltech Y

When you make a gift to the Caltech Y, you can choose how the funds will be used as you consider many options for making your donation. Unrestricted Gifts allow the Caltech Y to allocate funds wherever the need is greatest. Your gift may be used across the entire spectrum of Caltech Y annual programs or to build the Caltech Y endowment to insure a healthy future. Directed Gifts allow you to choose the Caltech Y area of interest that most suits your intention. All donations are tax deductible.

Here are options to consider when making your Unrestricted or Directed Gift:

Charitable Gifts from IRAs: You can rollover your IRA to the Caltech Y and exclude the entire amount of that gift from your taxable income (certain limits apply). You can also create a charitable remainder trust as the beneficiary of your IRA, so that your heirs receive income from the trust, and the Caltech Y receives any principal remaining.

Cash Gifts, made directly to the Caltech Y, are easy. A minimum gift of $200 per person or $400 per couple qualifies you as a Friend of the Caltech Y for that year.

Gifts of Real Estate such as a second property, vacant land, or income generating property, can provide a much needed boost to the Caltech Y endowment and provide you with an enormous tax savings. By making a gift of property, donors avoid the capital-gains tax and simultaneously receive a charitable deduction for the full fair-market value of the asset.

United Way Pledges: You can contribute indirectly through the United Way throughout the entire year. If you are a Caltech employee, please designate the Caltech Y to receive a 100% Institute match. Other companies offer United Way matching as well. Please inquire at your workplace.

Gifts of appreciated securities, stocks, and bonds can provide a considerable tax advantage if transferred to the Caltech Y before they are sold.

Planned Gifts include bequests, life-income plans and other blended gift options. Your estate gift is an effective and tax-efficient way to make an enduring legacy gift to the Caltech Y.

The Caltech Y can help you with the many giving options.

For more information, please call our office at (626) 395-6163.

CALTECH Y BALANCE SHEET as of 9/30/15

Assets

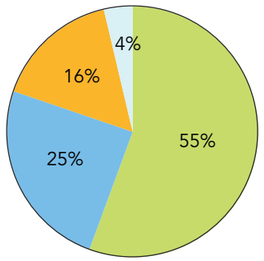
Cash ($8,156 restricted for endowment)	$	156,445
Receivables		13,385
Prepaid Expenses		10,678
Fixed Assets, net		31,847
Endowment Fund Investments, at cost ($2,269,158 fair market value)		2,186,179
Total Assets	$	2,398,534

Liabilities and Fund Balances

Liabilities		
Accounts Payable	$	15,317
CIT Account Payable		66,831
Deferred Revenue		7,075
Total Liabilities		89,223
Fund Balances		
Operating Fund		114,976
General Endowment Fund		1,032,923
Caltech Y Centennial Endowment Fund		264,047
Gumpel Endowment Fund		122,532
Hershey Endowment Fund		105,273
Johnson Endowment Fund		100,554
Housner Endowment Fund		151,409
Naecker Endowment Fund		97,848
Beschorman Endowment Fund		95,506
Dawson Endowment Fund		48,941
Haaga Endowment Fund		19,570
Studenski Endowment Fund		155,732
Total Fund Balance		2,309,311
Total Liabilities & Fund Balances	$	2,398,534

The Institute holds income beneficiary funds, for the benefit of the Caltech Y, with valuation and annual income of approximately $1,505,000 and $75,000 respectively.

REVENUE & EXPENSES year ending 9/30/15



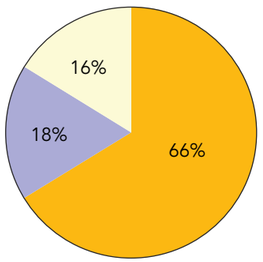
Revenue and Support

Revenue and Support

Contributions and Grants *	$	433,078
Trust and Endowment Income**		191,747
Program Service Revenue		125,187
Special Events, net		28,734
Total Revenue and Support	$	778,746

* includes donations restricted for the endowment totalling $123,445

** excludes net realized and unrealized gains and losses



Expenses

Expenses

Program Activities	$	415,596
Management and General		109,951
Development		101,763
Total Expenses		627,310
Excess Revenue over Expenses	$	151,436

CaltechY ...making a world of difference

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Federal Tax ID 95-1684790