Precious Drops
Cal Poly researchers conserve water, aid industry

$1 MILLION BABY
Donors seek support for Learn by Doing endowment
We started this new academic year with some major positive changes designed to enhance student success and Cal Poly’s already stellar reputation as a leader in polytechnic education.

Former Dean David Wehner is now interim vice president for strategic initiatives, continuing to successfully forge strong relationships with the private sector and strengthening Learn by Doing programs. As dean, Dr. Wehner did a tremendous job, and I thank him for laying a lasting foundation for the college.

I have some big boots to fill in taking his lead and making even greater strides in the years to come.

This fall 5,800 new students — 4,700 freshmen — enrolled at Cal Poly. That’s the biggest class we’ve ever welcomed. This fall’s freshman class has the highest grade-point-averages and test scores in the university’s history. We will continue to do our best to educate — with increased efficiency — the state’s young adults and transform them into tomorrow’s leaders.

For the first time since 2007, the state’s — and thus Cal Poly’s — financial picture looks brighter. We are not facing cuts in state funding for the first time in six years. We even rolled back tuition. Last year, we secured the largest amount in private support since our Centennial Campaign a decade ago, raising nearly $43 million in 2012-13, an almost 50 percent increase over 2011-12.

We welcome such positive changes but tenaciously hang on to the things that work. That philosophy remains central to our mission, and excellence is the standard for all that we do.

We know our work is not done; there are improvements to be made. Looking ahead, we aim to add more faculty and more classes and improve graduation rates.

President Jeffrey D. Armstrong has set a goal to double our four-year graduation rates by 2022, thereby enabling more students access to a Cal Poly education, reducing students’ total cost and responding to the urgent need for our graduates, particularly those in STEM-related (science, technology, engineering and mathematics) disciplines.

This year, we will also focus on developing greater student demand for our programs and increasing the quantity and quality of our industry partnerships.

Agriculture is central to every aspect of our life, from food and clothing to shelter and transportation. It is the key to a sustainable future. We have our challenges, to be sure. But we have the faculty, students, alumni, industry supporters and friends who will work collaboratively to meet the challenges of today and tomorrow.

The future success of the College of Agriculture, Food & Environmental Sciences depends on all of us being leaders who think strategically, holistically and with vision. Thank you for the opportunity to be of service. Together we can solve any problem and meet every challenge.
A TOAST TO DR. COOPER

Meet Jim Cooper, director of the Cal Poly Wine & Viticulture Department. Cooper comes from UC Santa Barbara, where he taught molecular, cellular and developmental biology. He founded Vanalytics, an enology testing and consulting company, in 2010. Cooper’s wine research interests include defining chemical and genetic determinants of grape and wine attributes and using modern genetic technology to develop disease-resistant grape rootstock.

Governor Appoints Nazmi to State Committee

California Gov. Jerry Brown has appointed nutrition Assistant Professor Aydin Nazmi to the Developmental and Reproductive Toxicant (DART) Identification Committee. As a member of the committee, Nazmi will review hazardous materials on the Proposition 65 list. This list contains chemicals that are linked to cancer, reproductive harm and birth defects. The committee will focus on chemicals that federal or international agencies have not previously reviewed.

Nazmi served as a postdoctoral research fellow at the University of Michigan School of Public Health from 2008 to 2009 and as a Peace Corps volunteer from 1999 to 2001. He is currently the interim director of Cal Poly’s Solutions Through Translational Research in Diet and Exercise (STRIDE) program.

ABOUT THE INTERIM DEAN

Andrew J. Thulin began his role as interim dean in July 2013. Prior to that, Thulin served for 15 years as head of the Animal Science Department. Under his leadership, the department grew to nearly 650 students and expanded its facilities, faculty and staff. Graduation rates increased to nearly 90 percent, and more than $16 million was raised for new laboratories and the construction of a new Beef Center, Animal Nutrition Center, Meat Processing Center, biotechnology labs and more.

Before joining Cal Poly, Thulin served as manager of technology development at Cargill Inc., the nation’s largest private company. At Cargill, he spearheaded new international business ventures and deployed new technologies to bring greater efficiencies and increased profitability to the company. Early in his career, Thulin held a three-way appointment in extension, teaching and research at Michigan State University. He earned a master’s and doctorate at Kansas State University. He and his wife, Teri, have two daughters.
Mark Shelton, associate dean of the College of Agriculture, Food & Environmental Sciences, has been named executive director of the California State University Agricultural Research Institute (ARI). ARI is a comprehensive applied agricultural and environmental research program that partners CSU’s colleges of agriculture with California’s agriculture and natural resources industries.

“Industry and higher education have benefited tremendously from the partnership,” said Andy Thulin, interim dean of the college. “Since the program requires industry to match ARI research dollars, our faculty and students have partnered with cutting-edge companies to improve crop and livestock health, develop novel ways to prolong the shelf life of fresh produce, reduce water loss in irrigation systems and analyze regulatory costs to farmers.”

Shelton has served as Cal Poly’s campus coordinator since ARI’s inception in 1999. “It’s been rewarding to see the program benefit faculty and students,” he said. “Over the past 13 years, I’ve seen this program build ties between faculty at sister CSU campuses, providing critical funding, research equipment and other agriculture-related professional development. Undergraduate and graduate students throughout California have had valuable opportunities to investigate new avenues of research and present their findings in publications and at professional meetings.

“When a research need surfaces,” he added, “we can now call on literally hundreds of scientists in the CSU and industry to work together to solve pressing problems.”

Cal Poly’s Dr. Bob Delmore, professor of animal science since 2003, has been named president of the American Meat Science Association (AMSA) through the 2014–15 academic year. Delmore has been a member of AMSA since 1991. In 2007 he received the Distinguished Achievement Award for his demonstrated scientific skills in muscle foods research and technology that contribute to the animal products industry.
A Sweet Multidisciplinary Partnership

Focusing on educating future leaders in the area of sustainability, growth and the success of the California strawberry industry, Cal Poly and the California Strawberry Commission have signed an agreement to create the first-of-its-kind Strawberry Sustainability Research and Education Center.

The newly created Strawberry Sustainability Research and Education Center is a unique concept rooted in the hands-on learning model that defines Cal Poly. The center will emphasize applied research that incorporates both teaching and learning experiences for Cal Poly students, faculty and California strawberry farmers.

Andy Thulin, interim dean of the College of Agriculture, Food & Environmental Sciences, commented, “By forming the Strawberry Sustainability Research and Education Center, we will enable some of the nation’s brightest students to work hand in hand with talented and dedicated faculty across disciplines — whether in agriculture, engineering or business — to provide practical solutions to the strawberry industry. Applying classroom learning to real-world problems is what Cal Poly is all about.”
Local Community Celebrates 30 Years Supporting State FFA Finals

In spring 2013, a dedicated group of local businesspeople celebrated 30 years of barbecuing for more than 2,700 FFA state finalists, judges and volunteers who convene at Cal Poly each May. Led by Farm Supply CEO Jim Brabeck, JB Dewar Inc. CEO Jack Dewar and Farm Credit West CEO John Boyes, this enthusiastic team of more than 60 community members has fed an estimated 70,000 FFA members, faculty, staff and other special guests since 1983. Thirty years ago, the team spent $3,000 for the meal. This year, it spent an estimated $15,000. “This is a shining example of the many ways our local businesspeople and alumni support the future leaders in California agriculture,” noted Bill Kellogg, Agricultural Education & Communication Department head. “Cal Poly and all of the state finalists say, ‘Thank you!’”

'GREAT GRAD' HONORS: ERIC LABOSSIÈRE-DUAUETE

ERIC LABOSSIÈRE-DUAUETE, a recreation, parks & tourism administration graduate, is a spotlighted member of the Cal Poly Class of 2013. Duarte, from Santa Maria, Calif., is passionate about building community, helping others and collaborating on transformative learning experiences.

His desire to bring more cross-disciplinary experiences to campus led him to help organize the first two Startup Weekend SLO events in 2012 and 2013. “I realized that the students and faculty lacked cross-college collaboration to innovate and execute entrepreneurial ideas,” Duarte said. “An electrical engineering student was never in the same room collaborating with someone in art and design; marketing students weren’t meeting with computer science students to explore ideas and make magic. Startup Weekend SLO was an opportunity to change the culture, unite students, and provide an event that could increase interdisciplinary collaboration and entrepreneurial innovations.”

Duarte said that Cal Poly’s Learn by Doing approach taught him to “get in the mix and accomplish goals by using strategic and creative approaches. Anyone wearing a cap and gown on graduation day at Cal Poly has learned something invaluable: how to work hard.”

Duarte is currently an intern at George P. Johnson, a global experiential marketing agency in San Francisco, where he is involved in project management, concept development and event coordination and management.
“Sadly,” writes Food Science & Nutrition Professor Peggy Papathakis, “Malawi is ranked the world’s third worst place to be a mother. In rural areas, about half the mothers deliver their own babies, many while en route to a clinic for that purpose. The country’s maternal mortality rate is among the top 10 in the world; one in 36 mothers die related to pregnancy and/or delivery.”

Papathakis noted those grim statistics on her blog while on sabbatical in 2012 in Malawi gathering information for a study proposal on undernourished pregnant women.

Papathakis is collaborating with Mark Manary, a colleague at Washington University in St. Louis, who has already made enormous contributions feeding malnourished infants and young children with Chiponde, a concoction of peanut butter, nonfat dry milk, oil, vitamins and minerals made by Project Peanut Butter, a non-governmental organization. Chiponde has saved thousands of lives. It’s 90 percent effective as the sole source of nutrition for recovery from severe malnutrition.

“There are no international standards to diagnose malnutrition in pregnant women,” Papathakis said. With the goal of contributing to international public policy development, she wanted to see what happens “on the ground” in a developing country. Malnourished people don’t function at their optimum, Papathakis said, calling the situation a “huge human capital loss.”

“I want to focus on policy-relevant research in nutrition,” she said. “I want to fill that gap. I went to Malawi to study pregnant women. Malawi, in southern Africa, is a small, very poor, but safe country.”

And primitive. “The clinic is under a tree, and the office is the back of a truck. Some had walked more than an hour to get there.”

—Professor Peggy Papathakis

“The clinic is under a tree, and the office is the back of a truck. Some had walked more than an hour to get there.”

“The United States Agency for International Development (USAID) is interested in looking at what we do for undernourished pregnant woman,” Papathakis said. “We don’t know the best way to help women recover from malnutrition during pregnancy.”

Papathakis and collaborator Manary have received $1 million in grants to conduct a large-scale study to compare standards of care with a new product targeted to malnourished pregnant women. The grants will fund an intervention trial, to begin in early 2014, for 1,800 pregnant women with malnutrition in Malawi.
WATERWORKS

AT CAL POLY, VISIONARY RESEARCHERS ARE COMING UP WITH INNOVATIVE SOLUTIONS TO PROTECT PRECIOUS NATURAL RESOURCES
I solve industry problems. This is what I do. The whole idea at Cal Poly is to support more sustainable food processing with our training and research so the food industry can produce healthy and safe food products. ... I tell my students, if you can help your employer cut waste and water use to save money, you’ll increase your job security.

—Gour Choudhury, Ph.D.

Our Choudhury, Ph.D., stood on a factory floor near a conveyor belt watching intently as hundreds of peaches moved down the line. Automated machines briskly sliced and pitted each ripe piece of fruit, bathed them in lye to loosen their skins, then peeled each in a flash with a jet of water.

To Choudhury, head of Cal Poly’s Food Science & Nutrition Department, that water was a problem. Each day of peach processing required more than half a million gallons of it, and treating wastewater wasn’t cheap at $250,000 a month. If the water to process fruit could be dramatically reduced, food processing plants could save tremendous amounts of money and conserve a precious natural resource at the same time.

Water presents similar challenges across the agricultural and food industries, and persistent drought adds to the concern. That’s why Cal Poly faculty and students in the College of Agriculture, Food & Environmental Sciences are leading the way to develop sustainable solutions for water management across a range of disciplines. What follows are three very different stories of water innovation, each showing how hands-on ingenuity can turn tough challenges into success stories and new business opportunities.

SAVING WATER IN FOOD PROCESSING

Choudhury relishes a good challenge.

“I solve industry problems. This is what I do,” said Choudhury, who collaborates frequently with food companies and whose work has produced seven patents. “The whole idea at Cal Poly is to support more sustainable food processing with our training and research so the food industry can produce healthy and safe food products.”

Take the peach processing puzzle. Choudhury invented a technology that uses blasts of high-velocity air, instead of water, to wring the skin off a peach with ease. He and students — working at Fresno State more than a year ago — scaled up a protocol to use in the Wawona Frozen Foods plant in the Central Valley. With this new process, the plant can reduce its water use by 80 percent and add thousands of dollars to its bottom line in reduced wastewater treatment costs.

At Cal Poly, Choudhury continues to refine this peeling process. He and his students have created a version of it for tomato peeling. Pears are next. This innovation could eventually be used across the industry and help companies remain competitive as they conserve major amounts of water.

“I tell my students, if you can help your employer cut waste and water use to save money, you’ll increase your job security,” he said.
By working together, investigators from different departments can tackle these complex biological, chemical and engineering-based problems. ... Our students are very interested in sustainability projects. They get excited. I think they’re a little ahead of their professors on this, and that’s great because they’re the future.

—Brian Hampson, Ph.D.

SUPERSIZED RAINWATER HARVESTING

Present a water-saving idea to a rancher and you’ll definitely get his attention. As the West becomes more arid, raising cattle is a greater challenge. Even on Cal Poly’s own ranch lands in the Morro Bay watershed — which only receives approximately 23 inches of water per year — water security is a key issue. In the dry summer months, drawing water from shallow wells in the area can eventually reduce water flow in area creeks, impacting steelhead trout, a federally protected species. How can Cal Poly staff maintain reliable water access for livestock while remaining good stewards of the land?

Enter an “innovation” that is a few thousand years old: rainwater harvesting. Cal Poly’s Animal Science Department and a handful of partner organizations have erected a demonstration project to capture 260,000 gallons of rainwater per year from the roofs of four large buildings on the feedlot, including the Cal Poly Beef Center. Three massive storage tanks connected to troughs provide cattle with fresh drinking water during dry months.

“This is a win-win solution because it helps us address water quantity and water quality issues,” said Mike Hall, former Cal Poly beef cattle specialist. Water quality becomes an issue during heavy rains when a catchment lagoon near the feedlot overflows. This lagoon is meant to capture water contaminated by manure from reaching nearby creeks. Rainwater harvesting not only captures a precious resource but helps prevent these overflows.

The rainwater system is an engineering feat. Raindrops that pound the Beef Center’s corrugated roof roll into gutters and shoot down PVC pipes to a collection barrel that spins the water...
and filters out debris. From there, the water races through a pipe to four tanks at the bottom of a hill. A solar pump drives the water back up the hilltop to the three main storage tanks, each connected by pipes to cattle troughs.

This demonstration project, completed in September 2012, was developed in collaboration with the Morro Bay Estuary Program, the National Oceanic and Atmospheric Administration, and the California Conservation Corps using funds through the American Reinvestment and Recovery Act (ARRA). Hall says the system can now be used to educate students, landowners and ranchers about the benefits of rainwater harvesting.

WHEN WATER GOES GREEN

Water conservation is a cornerstone of sustainable business, but a far greener water solution is being cultivated at Cal Poly. In the lab of Brian Hampson, Ph.D., food science professor emeritus, a pair of 20-liter jugs hold the greenest water you’ve ever seen — literally — because it’s teeming with algae, a tiny organism that could help solve enormous environmental problems.

Hampson and his students teamed with Professor Yarrow Nelson of the Civil and Environmental Engineering Department to test a radical idea: Could algae gobble up one of our worst smog-forming air pollutants, nitrogen oxides (NOx)? Small-scale results showed that algae absorbed 97 percent of the noxious gas. That means that NOx captured by industrial smokestack “scrubbers” can be fed to algae, which absorb the nitrogen, then bloom and grow to become a nutritious food crop for livestock.

“By working together, investigators from different departments can tackle these complex biological, chemical and engineering-based problems,” says Hampson, who recently retired from teaching but continues his research.

On a separate project, student engineers, biologists and food scientists from three colleges collaborated to push the envelope on algae’s use as a biofuel. They fine-tuned a more cost-effective method to break down algae cells and extract their oil, using perfectly calibrated pulses of electricity through water.

“Boeing funded this research because in the future they want to run their planes on biofuels,” Hampson explained. “But they also want to train biologists to communicate well with engineers and vice versa because that’s reality in the workaday world. So in this experiment, we also validated that Cal Poly can produce good students who know how to communicate well.

“Our students are very interested in sustainability projects. They get excited,” Hampson added. “I think they’re a little ahead of their professors on this, and that’s great because they’re the future.”

DROUGHT AND WATER SCARCITY CHALLENGES

Two consecutive years of extreme drought across the United States underscore the pressing need for water management innovations. In Texas, for example, agricultural losses from the 2011 drought totaled $7.62 billion, the costliest drought in state history. In 2012, more than half the nation experienced moderate to extreme drought, and the ripple effect has been devastating to the agricultural industry, from crop losses that could exceed $10 billion to record food prices and increased incidences of aflatoxin, a highly toxic fungal byproduct that can flourish in drought-stressed grain. The past two years could be a harbinger of things to come: The duration and intensity of drought are predicted to worsen as our climate changes.

“Water is probably the most important resource we should be concerned about,” says beef cattle specialist Mike Hall, “and that’s why Cal Poly has been so aggressive with water conservation.”
We’re Committed to Learn by Are You?

These generous donors form the foundation of a $1 million-plus endowment

In 2009, 10 innovative agriculture leaders who recognized the distinct advantage of a hands-on education came together to form the Learn by Doing Endowment, supporting the College of Agriculture, Food & Environmental Sciences’ renowned tradition of excellence. Each of these generous philanthropists committed to support the next generation of students with a gift of $100,000, to create a $1 million endowment to fund hands-on learning activities. Furthermore, they pledged to match each future $12,500 endowment gift to double the impact of others who join the campaign to support hands-on programs in the college.

“Cal Poly’s approach to education means more than simply learning the theory,” explained Ed Boutonnet, a founding partner of the Learn by Doing Endowment and a crop science alumnus. “It means getting your hands dirty and your mind engaged. It’s the best way to ensure understanding and success. I’m proud to support the future leaders in this industry.”

“In light of the state’s ongoing budgetary challenges, our college has worked hard to streamline many of our classes to be more efficient and effective, without compromising educational quality,” added Andy Thulin, interim dean of the College of Agriculture, Food & Environmental Sciences. “Even so, it remains expensive to enable students to run a dairy, harvest and make honey, monitor a forest stream, breed horses, make compost and develop food products. This endowment helps keep these robust programs intact.”
Lend Your Support
Join these generous founding members in funding Learn by Doing

b. Charles (B.S., Agricultural Engineering, ’81) and Diane (B.S., Ornamental Horticulture, ’81) Harrington
c. Richard (B.S., Poultry Industry, ’79) and Kathleen (B.S., Food Science, ’80) Zacky
d. Al (B.S., Farm Management, ’67) and Gail (B.S., Home Economics, ’67) Montna, A & G Montna Properties
e. Rick (B.S., Crop Science, ’79) and Tonya Antle, Tanimura and Antle Inc.
f. RCO Ag Credit Inc., Glenn N. Janzen. Pictured: Mitchell W. Metzler
g. John and Sheila Lake, Rain for Rent
h. The Oreggia Family Foundation. Pictured: Bob and Leslie Taylor, foundation trustee
i. John (B.S., Crop Science, ’67) and Carol Salmonson, Monterey Ag Resources
j. Ed (B.S., Crop Science, ’62) and Rosa Boutonnet, Ocean Mist Farms

Learn by Doing means getting your hands dirty and your mind engaged.
—Ed Boutonnet, (Crop Science, ’62), President and CEO of Ocean Mist Farms in Castroville, Calif.

To learn more about the Learn by Doing Endowment fund, visit http://cafes.calpoly.edu/supportlearnbydoing.html.
Agribusiness Team Takes Second in International Trading Competition

Claims top U.S. honors among 300 teams from six countries

As part of a quarter-long class project, a team of five agribusiness undergraduates enrolled in Intermediate Agribusiness Finance took second place in the preliminary round of trading in the Chicago Mercantile Exchange Commodity Trading Challenge in February. The team — consisting of Kevin Gee, Ela Lusky, Bud Orebaugh, Ryan Purser and Harry Rindler — beat out Duke University, Penn State, Notre Dame and every other American university this year, claiming the top U.S. team position in the contest. More than 300 teams from nearly 180 universities and colleges around the world competed. The Commodity Trading Challenge is a four-week electronic trading competition in which teams of undergraduate and graduate students can trade crude oil, gold and corn futures in a simulated trading environment on a real-time professional trading platform.

FSN Students Take Top Honors at International Competition

In July, food science & nutrition (FSN) students placed first and second in their respective categories at an international competition held by the Institute of Food Technologists (IFT). The competition, which took place during IFT’s Annual Meeting & Food Expo in Chicago, judged student teams on their ability to develop nutritious food solutions for a variety of real-world challenges. Cal Poly’s undergraduate FSN students competed against 67 domestic and international universities, including undergraduate and graduate students.

FSN students were awarded first place in the Disney–IFTSA Product Development Competition. The team was challenged with creating a market-relevant, nutritious and delicious snack that integrated a fruit or vegetable in a product targeted to children under age 12. The team developed a sweet fruit-based dip with a serving of baked apple that contained one full serving of fruit and a vegetable component. Team members included Rima Abukazam, Alison Shapira, Adam Yee, Taryn Yee and Andrea Zeng.

FSN students took second place in the Developing Solutions for Developing Countries category. Their challenge was to create food product supplements to address malnourishment of patients served by HIV clinics in developing nations. Cal Poly’s team developed Malawi Mix, using local ingredients such as Malawian fish. The product provides children infected with HIV essential daily nutrients in a sweet and salty paste that is easy to swallow. The team included Rebecca Flores, Maxine Funk, Matthew Goldstein, Ashley Long, Christina Neumayr, Emma Sandquist, Jaime Savitz, Jade Stenzel, Kyler Walters, Adam Yee and Andrea Zeng.
Celebrate where it all began.

For generations, our alumni have returned to campus with their sons and daughters, the next generation of Mustangs. This proud tradition is powered by the passion for Learn by Doing. This legacy runs deep through the thousands of alumni who will forever call Cal Poly home.

Every day in the College of Agriculture, Food & Environmental Sciences, students are inspired by what they experience in labs, enterprise classes, senior projects, classroom learning, paid student assistantships, special problems courses and more.

Through your gift to the College of Agriculture, Food & Environmental Sciences, you can make Cal Poly part of your family legacy.

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CAL POLY GRADUATES IN THEIR REGALIA AT SPRING 2013 COMMENCEMENT

For the 21st year in a row, U.S. News & World Report has named Cal Poly the best public master’s-level university in the West! We were also ranked among the 10 best universities overall in the region. Read more about the latest honor at www.calpoly.edu.