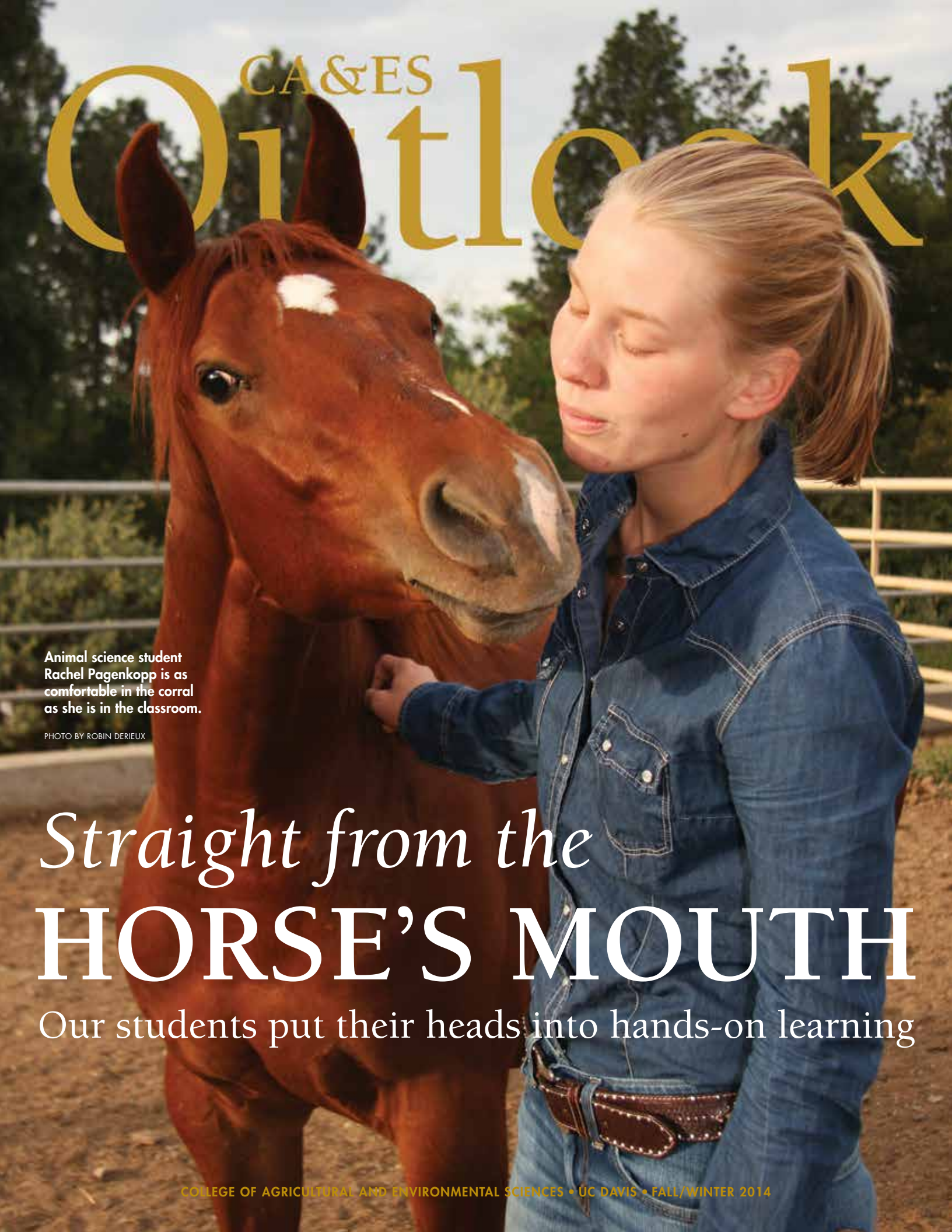
CA&ES Outlook



Animal science student Rachel Pagenkopp is as comfortable in the corral as she is in the classroom.

PHOTO BY ROBIN DERIEUX

Straight from the HORSE'S MOUTH

Our students put their heads into hands-on learning

CA&ES Outlook

is a publication of the College of Agricultural and Environmental Sciences, University of California, Davis

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This publication is funded partially through gifts from the James G. Boswell Foundation.

PRINTED ON RECYCLED PAPER

COVER STORY

JOHN STUMBOS/UCDAVIS

UC Davis students (left to right) Alexis Fujii, Joseph Lowit, and Elaine Swiedler show off some fresh-picked produce from the Student Farm.

We look into the lives of undergraduates who have stepped outside the lecture hall to build practical skills and explore careers for their future. Whatever the job, our students are ready to dig in. **4**

◂ ALUMNI PROFILE

Horse vet Jeanne Bowers goes the distance for her patients. **19**

MAKING A DIFFERENCE

Professor's bequest helps plant sciences students. **21**

ALSO IN THIS ISSUE:

EVER READY

Strong leadership helps prepare CA&ES students to make an impact

OUR COLLEGE EDUCATES STUDENTS TO address global challenges we hear about every day—climate change, obesity, food security, sustainable food production systems, economic policy, labor, agricultural development, and environmental management.

Strategic planning and strong leadership help keep CA&ES at the forefront on these critical issues. One of the most important leadership positions in the college is associate dean for Undergraduate Academic Programs (UAP). After nine years of outstanding service as associate dean for UAP, entomology professor Diane Ullman has returned to teaching and research. Ullman has passed the baton to Susan Ebeler, a professor in the Department of Viticulture and Enology.

> "When they graduate, our bright and innovative students are ready to be leaders in their fields, primed to develop solutions to global challenges in agriculture, the environment, and human sciences."

Sue comes well-qualified for the job. She previously served as chair of the college's Undergraduate Program Review Committee, where she advocated for program needs in the areas of student advising and support for laboratory, field, and studio classes. She also is a member of the CA&ES Undergraduate Advising Review Workgroup. Sue is passionate about improving the undergraduate experience for CA&ES students.

Another member of my team dedicated to excellence in our college is Mary Delany, who has been appointed to a five-year term as CA&ES executive associate dean. Mary is a professor of animal science and has served in several key leadership roles in the college. She has been an associate dean, chair of the Department of Animal Science, and recently she led the college as interim dean for 17 months. I have worked closely with Mary since I began my appointment as dean, and I value her commitment to the college.

JOHN STUMBOS/UCDAVIS

One of the new CA&ES leaders to join Dean Helene Dillard (right) is viticulture and enology professor Susan Ebeler (left), who recently became associate dean for Undergraduate Academic Programs.

Strong leadership throughout our college helps us provide the quality of education our students deserve. Students are drawn to the College of Agricultural and Environmental Sciences for our first-rate academics, a sense of community, and our outstanding faculty and staff mentors. We currently offer 30 majors to the nearly 6,300 undergraduate students enrolled in our college.

Many of our undergraduates also go beyond the classroom to get hands-on training during their years at UC Davis. Through internships, part-time work, and research activities, our students learn on the job, applying their academic knowledge to real-world challenges.

When they graduate, our bright and innovative students are ready to be leaders in their fields, primed to develop solutions to global challenges in agriculture, the environment, and human sciences. We are proud of their abilities, and trust that you will be, too.

HELENE R. DILLARD, DEAN
COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

ROBIN DERIEUX/UC DAVIS

The UC Davis Horse Barn, run by the Department of Animal Science, gives students like foal manager Katie Berg (left) a chance to prepare for a career in the horse industry. After graduation, Berg will help run her family's equestrian boarding and riding facility.

Story by Robin DeRieux and John Stumbos

Hands-on learning makes a UC Davis education special. Through internships, jobs, and research activities, many of our students receive real-world experience that complements their academic training. In the pages that follow, we look into the lives of some undergraduate students who have stepped outside the lecture hall to build practical skills and explore careers for their future.

Getting our

Developing horse sense

Foal watch is 7 p.m. to 7 a.m. at the UC Davis Horse Barn. Horses typically give birth at night, and an electronic sensor attached to the mare sounds an alarm when labor begins. Student foal managers, who bunk at the barn when they're on foal watch, leap into action.

"You wake up in the middle of the night to this piercing alarm, you clear your head, and then you're hurrying past all the stalls to see which mare is foaling," said foal manager Rachel Pagenkopp, an animal science major from Whittier. "It's quite an adrenaline rush."

Horse Barn manager Joel Viloria is alerted electronically at home and arrives at the barn to guide student interns through the first few births of the year. After that, students fly solo, calling for backup from Viloria or a veterinarian only if there are complications with the delivery. If needed, a webcam in the stall also lets Viloria view the birth from home.

"We wait for three things," said Pagenkopp, who has handled three foal deliveries on her own. "The foal has an hour to stand, two hours to nurse, and the mare has three hours to pass her placenta. After that, whoever's on foal watch can go back to bed."

The following day, foal managers run blood tests to make sure the new foal's immune system is functioning properly. If the foal's antibodies are insufficient, students learn how to intervene with stored colostrum or plasma.

hands dirty

"We try to run this operation as close to the horse breeding industry as possible," said Viloria, (B.S., '06, animal science). "In the real world, you don't call the vet for every little procedure. If it's a bad problem, we use it to instruct students that this is the kind of situation when we need to call a vet."

Located across the street from Meyer Hall, the Department of Animal Science Horse Barn is a breeding, teaching, and research facility with a herd of approximately 40 donated horses, including four stallions, and two male donkeys. The Horse Barn runs on student power, with guidance and instruction from Viloria and animal science professor Janet Roser. Each quarter, approximately 10 to 20 entry-level student interns learn to handle horses, clean stalls, assist the farrier, exercise horses, and do other chores that contribute to the welfare of the herd. Advanced interns manage the reproduction duties.

Professor Roser teaches equine science courses that are required for students who intern as foal and stud managers each year from January through June. It's important to Roser that they master the theory behind the hands-on training they get at the barn.

"Someone could give them a handbook that lists all the steps to follow," said Roser. "But when they learn the anatomy, physiology, and endocrinology behind it all, then what needs to be done comes to them more easily. We're training these students to be managers, not just employees."

Foal managers handle 15 to 25 births per season. At the end of each school year, the Horse Barn sells off yearlings and two-year-olds that were bred and trained by students.

Stud managers collect semen from stallions several times per week. Picnic Day demonstrations of the semen collection process at the Horse Barn arena show what a memorable task this is.

"It's scary collecting the first time," said Alexandra Paul, one of four stud managers at the Horse Barn. "But Joel shows us how to do all three jobs involved—handling, hygiene, and collecting." Immediately after collection, stud managers process and store the semen for future use. Stud managers also track the reproductive cycle of the mares and artificially inseminate them.

Stud manager Paul is an animal science major from

ROBIN DERIEUX/UC DAVIS

Alexandra Paul (left), who interns as a stud manager, and Horse Barn manager Joel Viloria perform a palpation and ultrasound to track the mare's reproductive cycle.

Visalia who hopes to work in the horse industry after graduation. Her six-month internship at the Horse Barn requires a minimum of 20 hours a week, in addition to academic obligations. Paul estimates that she spends almost twice that. "This is what I've always loved," she said. "For me, the commitment to interning at the Horse Barn is worth it because it gives me a taste of what my life will be like after college."

Barn manager Viloria is committed to giving students the hands-on experience they will need to become veterinarians or to work in the horse industry. "By the time students leave this program, they will have done everything," he said. "I am here to help direct, but the students do it all themselves. The beauty is that they learn the theory in class, and then they come here and apply it."

JOHN STUMBOS/UCDAVIS

Student Farm still growing strong

Since 1977, the 20-acre Student Farm has given thousands of students with an interest in sustainable agriculture plenty of hands-on opportunities through internships, courses, and part-time jobs.

The heart of the operation is the Market Garden, managed by organic farmer Raoul Adamchak, and the Ecological Garden, managed by horticulturist and educator Carol Hillhouse. The Market Garden grows and sells about $100,000 of produce each year to community subscribers, campus dining services, and the student-run Coffee House. The Ecological Garden is filled with fruit trees, flowers, herbs, and small vegetable plots, and also hosts a Kids in the Garden program for area schoolchildren.

"We're trying to teach students about the entire food system by involving them in it directly," said Student Farm director Mark Van Horn. "We help them learn not only 'what,' but also 'how' and 'why.'"

Digging into life on the farm

From its inception as a place for research on alternative and organic agriculture to its development into a market garden and ecological garden, the Student Farm has always been about student innovation.

Nicolia Mehrling, who graduated in June, took full advantage of what the farm has to offer in pursuit of a bachelor's degree in sustainable agriculture and food systems (SAFS). On any given day, you could find her harvesting kale or asparagus, selling freshly picked produce at the UC Davis Farmers Market, or contacting produce basket customers in the Community Supported Agriculture (CSA) program.

"We have to decide what makes a valuable CSA basket," she said. "We often look for interesting options to include for our subscribers, or sacrifice certain vegetables in order to include others. We aim to produce baskets with 12 to 15 different vegetables."

The market garden produces weekly bushel baskets for 72 subscribers from the UC Davis community. For an upfront fee averaging $22 a week, subscribers receive an assortment of produce—Chioggia beets,

Environmental science and management student Alexis Fujii harvests basil in a greenhouse at the Student Farm.

rainbow chard, fennel, mint, flowers, rutabagas, and red lettuce, to name a few.

In addition to her work in the market garden, Mehrling also did an internship with the Kids in the Garden program in the Ecological Garden. "It gave me perspective and access to a different type of education," she said. "We taught kids about plants in the garden, bugs, chickens, and garden cycles. The idea is to get them excited about plants and also to understand that food is more than what comes from the grocery store."

Nearly 40 years ago students helped bring the Student Farm into being. Now, students like Mehrling are shaping its future. To fulfill requirements for a capstone class in the SAFS major, she and fellow students worked with campus planners to create a long-range vision for the Student Farm and adjacent areas such as the Domes and the Experimental College Community Garden—a district they call the Sustainable Living and Learning Communities.

"They're all sort of independent," Mehrling said, "but they all have common goals around establishing relationships between food and people and land—and having student voices be central to their development."

JOHN STUMBOS/UCDAVIS

At the UC Davis Farmers Market, Nicolia Mehrling (left) sells produce from the Student Farm to student Yenenesh Belachew.

JOHN STUMBOS/UCDAVIS

Paul Martinez says he enjoyed working with the Natural Resources Conservation Service in an internship that gave him experience working in both the field and the office.

Tapping into a career in irrigation

Paul Martinez found his calling working with irrigation systems on the Student Farm.

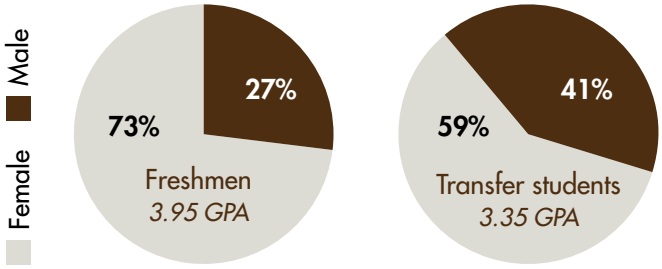
Next June he will graduate with a bachelor's degree in sustainable agriculture and food systems. For many students, this major is a gateway to the Student Farm—typically through "Plant Sciences 15," an introduction to sustainable agriculture that uses the farm as an outdoor classroom.

"We learned the basics about farming, some issues, and positive solutions," Martinez said. "I liked the hands-on experience, and that was one thing I was definitely looking for in my college experience."

Martinez had no agricultural experience growing up in urban Southern California. But his grandfather's stories about farming in Mexico and the hardships that followed when water was scarce made a lasting impression. "Sometimes they would have very little water for the season to plant anything," he said. "Those

Who are incoming CA&ES students?

In 2013, CA&ES had 1,128 new freshmen and 747 new transfer students, both groups largely from California.



GEOGRAPHIC PROFILE

Region	Freshmen	Transfer
Northern California	626	545
Southern California	415	158
Out of state	38	29
International	49	15

years were hard for the family since that was their main source of income."

During a summer internship at the Student Farm Market Garden, Martinez learned how to install, fix, and maintain irrigation systems. "Drip, furrow, or sprinklers—there's always a leak," he said.

Martinez is focused on water quality and irrigation. "I want to go into the management of irrigation systems to help reduce water contamination in agriculture and to enhance soil nutrients," he said. "That's what I'm aiming for once I graduate."

Martinez spent last summer working as a volunteer with water quality and irrigation specialists in the Davis and Dixon offices of the Natural Resources Conservation Service.

"Water is going to continue to be an issue, especially in agriculture," Martinez said. "Managing water in a sustainable manner, especially for irrigation, is going to be crucial."

Advancing knowledge of toxins

Sunjay Sethi planned to study biochemistry when he transferred to UC Davis. Then he discovered environmental toxicology.

"It sounded interesting, so I started looking into it," he said. "I realized it was still biochemistry but involved more real-world applications, chemicals that we use every day."

Environmental toxicology is the study of how chemicals move within the environment and affect biological systems. It relies on environmental chemistry to study exposure routes of toxins, along with the mechanisms of intoxication.

Sethi became intrigued with the research of environmental toxicology professor Michele La Merrill on prenatal exposure to pesticides and metabolic disorders. He joined her lab as an undergraduate researcher during his senior year.

"Sunjay is a team player I can count on to help and train others," La Merrill said. "Importantly, he is fun to be around and gets along with everyone."

Sethi quickly became fluent in an alphabet soup of genetic coding as he gained laboratory experience

Below, Sunjay Sethi's quick grasp of environmental toxicology is helping advance knowledge of chemicals that may be linked to diabetes and obesity.

JOHN STUMBOS/UCDAVIS

conducting molecular analyses of mouse tissues. Under La Merrill's guidance, he learned how to look for genes such as those controlling muscle, fat, and heart function. He also analyzed data for trends.

"We saw an upward trend in the Ryanodine receptor in the heart that's involved with calcium signaling of the cardiac muscle," Sethi said. "This affects heart rhythm—how the heart beats and the strength of it."

Sethi also proved to be a stellar student, earning one of the highest grades ever in La Merrill's "Genes and the Environment" course. He graduated with highest honors in June 2014 with a Bachelor of Science in Environmental Toxicology. Assisted by a Floyd and Mary Schwall Fellowship for medically related research, he is back in the La Merrill lab as a graduate student to pursue a doctorate.

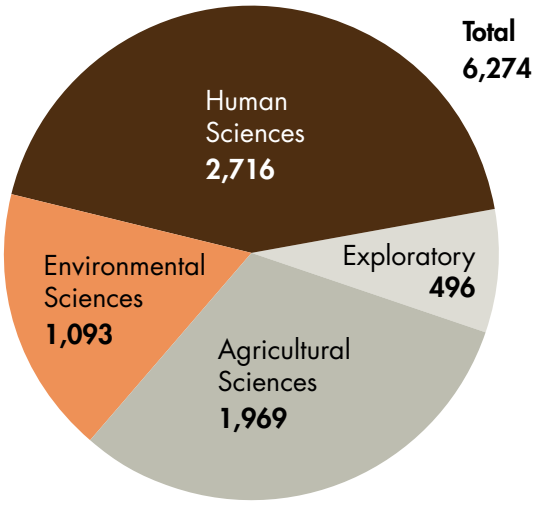
Sethi hopes to advance knowledge of the mechanisms underlying how environmental chemical exposures may contribute to the risk of diabetes and obesity. He is developing screening methods for environmental pollutants with the potential to act as "obesogens" and "diabetogens" in humans.

"We're working on a standard method of tests to identify whether a compound is affecting insulin signaling or the ability to create or break down lipids (fat molecules)," he said.

Sethi notes there are thousands of compounds used in commerce and industry that little is known about. "It's necessary to come up with a standard, quick way to screen these compounds and see if they are going to have a potential effect on the way we metabolize things and the way our metabolism works," he said.

What fields of interest do CA&ES students pursue?

STUDENTS BY DIVISION (FALL 2013)



TOP 10 MAJORS IN 2013	COUNT
Managerial and Pre-Managerial Economics	1,008
Animal Science	961
Human Development	505
Undeclared/Exploratory Program	496
Clinical Nutrition	379
Environmental Science and Management	377
Nutrition Science	364
Animal Biology	340
Food Science	261
Wildlife, Fish and Conservation Biology	241

ROBIN DERIEUX/UC DAVIS

As an undergraduate research assistant, Vicki Fu (left) listened to four-year-old Drew Nishida-Grimm ponder a word problem.

Gaining insights into children

Vicki Fu wants to know, "If a mother bird and a baby bird each eat three lizards, how many did they eat in all?"

As an undergraduate (B.S., '14, human development), Fu participated in research to gain insight into the way children think. She worked with children ages 4 to 6 on word problems. After helping children devise arithmetic strategies to work through word problems, researchers then assessed how well the children could apply those techniques on their own when solving similar questions.

"I had read about these kinds of studies in textbooks, but I wasn't exactly sure how researchers got the results," said Fu, a first-generation college graduate from Sacramento. "When you actually get to work with a child and you see how their imagination goes, you understand that a child's mind is so bountiful. It takes effort to reel them in so you can make discoveries about how they think and get to a research result."

Research insights into child cognition can be applied to classroom instruction. This is relevant to Fu, as she eventually hopes to teach elementary school. She recently began studies for a master's degree in education at UC Davis.

"If you just give children the answer, then they have nothing to be proud of because they didn't accomplish anything. This experience taught me to draw my own boundaries as a teacher. Of course, you want to help children so much, but I learned you can help them more by not doing things for them."

Human development professor Zhe Chen designed the word problem study that Fu and other undergraduate research assistants helped conduct under the guidance of Chen's associate, lecturer Tracy Nishida. Chen typically has six to 10 undergraduates each quarter who help with research.

"We really need undergraduates to help in the lab—it wouldn't function without them," said Nishida, who took on Fu and other interested students after teaching a child development course. "They help us recruit the parents and children, run the studies, code the data, and enter it into spreadsheets."

Undergraduate research gives students laboratory experience and the opportunity to become better acquainted with their professors and with research methods. Fu also gained insights into working with children that will help her in the classroom when she becomes a teacher.

"I learned that if you just give children the answer, then they have nothing to be proud of because they didn't accomplish anything," said Fu. "This experience taught me to draw my own boundaries as a teacher. Of course, you want to help children so much, but I learned you can help them more by not doing things for them."

Hannah Waterhouse introduces herself to a crowd of women gathered at a model farm to learn how to improve their homestead gardens in the Satkhira district of Bangladesh. Waterhouse (standing center) was there to work with Helen Keller International on a Trellis project, managed by the Horticulture Innovation Lab at UC Davis. Learn more about the Horticulture Innovation Lab Trellis Fund at http://horticulture.ucdavis.edu/main/trellis.html.

THE EXPANDING TENT

Trellis Fund helps students open a door to the developing world

DURING HER FIRST VISIT TO A FARM IN Bangladesh, Hannah Waterhouse turned a corner to find not just one farmer—but 60 women and children waiting to meet her.

"It was overwhelming," she said. "They're dealing with such real and scary issues that you want to be able to provide something. And this was just my third day in the country."

It was the dry season, when most homestead gardens with saline soils and little fresh water produced stunted plants in crusted soil. As a UC Davis soil science graduate student, Waterhouse knew how California farmers would deal with such problems, but her visit to the world's eighth-most populous country clarified why the same solutions weren't realistic in Bangladesh. Instead, she worked with professionals from Helen Keller International to learn other approaches and to share her soil testing expertise.

Waterhouse's work in Bangladesh was made possible by the Trellis Fund, a program that pairs graduate students from select universities in the United States with organizations in developing countries. Each student serves as an agricultural consultant on a development project for six months. The program is offered by the Horticulture Innovation Lab at UC Davis, with funding from the U.S. Agency for International Development. First proposed by a UC Davis student, the Trellis Fund continues to be managed by graduate students at the Horticulture Innovation Lab who are considering careers in international project management.

"I'm behind the scenes, making sure the program

runs smoothly, with planning, logistics, grant evaluation, contracts, and reporting," said Kelsey Barale, an International Agricultural Development graduate student and Trellis Fund coordinator. "Being able to see multiple projects through—from start to finish—is good experience to see what works, what doesn't, and how to improve these types of programs."

Since the program began in 2011, 38 students (mostly from UC Davis) have worked on projects in Africa, Asia, and Latin America. Completed projects trained more than 3,800 farmers, with more than 100 demonstration plots and nearly 200 training meetings.

Working on a Trellis Fund project provides students a chance to apply academic knowledge to real-life situations, gain experience as consultants, build networks, and broaden their international portfolio. For Waterhouse, who had no prior experience with Bangladesh, the opportunity may help shape her career.

"I would like to keep working in Bangladesh," she said. "It is a place at the forefront of the issues we talk about for 2050: population boom, climate change, food security. It was a profound experience, that's for sure."

— Brenda Dawson

LOOKING AHEAD

Activities prepare students for good jobs, bright future

CHOOSING A MAJOR IS THE FIRST CHALLENGE for incoming CA&ES freshmen. The next step is to participate in activities that help connect their studies to a rewarding career.

CA&ES freshmen are invited to enroll in Career Discovery Groups that help them explore potential careers. Open to students with declared and undeclared majors, the program links freshmen with graduate-student mentors, provides special career-discovery seminars, and gets students started in meeting graduation requirements.

Undergraduate and graduate students are given opportunities to connect with industry professionals, and develop important skills like team-building, problem-solving, and leadership. These career-development activities include monthly networking events organized by Seed Central and the annual Managerial Economics Student–Alumni Career Day.

PLANTING THE SEED

In 2010, the Seed Biotechnology Center at UC Davis helped create Seed Central, a network of faculty, students, and leaders in the global seed and food industries. Seed Central hosts monthly gatherings where students mingle with professionals from the many seed and food industries that surround UC Davis.

"The three Seed Central events I attended helped me become more comfortable walking up to a complete stranger and making conversation," said Charlotte Tyler, a newly minted graduate with a master's degree in food science. "I want to be a food microbiologist in the beer or wine industry, and the networking skills I learned will help me succeed."

ROBIN DEREUX/UC DAVIS

"The graduates shared their experiences, and told us what people are looking for in job applicants," said Yiran Song, right, speaking with alumn Ashkun Zaker (B.S., '04, managerial economics) at a recent Career Day event.

Networking also is good for industry, according to Eric Aasen, a research scientist with Monsanto in Woodland and a regular attendee of Seed Central events. "It's great meeting prospective employees in an informal setting," Aasen said. "The attendance of industry, students, faculty, and local government shows me that agriculture is alive and well in this area."

LEARNING FROM ALUMNI

Every spring, UC Davis managerial economics students can get career advice from a very credible source: UC Davis graduates. At the Managerial Economics Student–Alumni Career Day, alumni working in business and industry return to UC Davis to lead workshops in investment, accounting, marketing, management, and entrepreneurial ventures, and to offer job-hunting advice.

— Diane Nelson

JOHN STUMBOS/UCDAVIS

Lecturer Mir Shafii (left center) makes a point to a student in his biological and agricultural course, Field Equipment Operation. Students in the popular class, long a UC Davis tradition, learn how to operate a tractor and techniques such as harrowing, landplaning, rototilling, listing, and bed shaping.

GEARING UP

Bixby fund supports popular courses in practical agriculture

STUDENTS WANTING TO LEARN HOW TO DRIVE a tractor, weld farm equipment, or teach agricultural mechanics can choose from a slate of courses offered through the Department of Biological and Agricultural Engineering (BAE). These popular courses are made possible by the generosity of the late Fred H. Bixby.

"These courses are unique in the University of California system and provide substantial hands-on experience to students interested in agriculture," said BAE professor Raul Piedrahita. "They teach practical skills needed to operate, maintain, and manage farm machinery, fabricate farm equipment, and to run and maintain the wide variety of engine-driven equipment common to farming environments."

Annually, more than 200 students spend countless lecture and laboratory hours in these classes. The most popular course—"Field Equipment Operation"—typically has a waiting list of more than 50 students. Learning to drive a tractor in this class is a tradition on campus that goes back decades.

Bixby was a successful Southern California cattle rancher who, seeing a need for university-level agricultural training, gave an unsolicited gift to the UC Regents in 1949. The purpose of the gift was to fund a course in practical farming in what was then known as the College of Agriculture. The Fred H. Bixby Fund now helps fund seven BAE courses. Funds from the endowment also help support teaching students practical skills at the Student Farm.

"We can say unequivocally that we couldn't offer these courses without the generous support provided by the Bixby Endowment," Piedrahita said. "The courses, especially 'Field Equipment Operation,' are an important part of the image and tradition of the campus and are an increasingly important link to agriculture, given the urban background of most students now entering UC Davis."

— John Stumbos

MIND YOUR MANNRS

UC Davis' many student organizations provide growth opportunities

AN IMPORTANT WAY UC DAVIS STUDENTS gain the skills and experience they need is through involvement in campus clubs and organizations.

"There are a number of reasons why students should join clubs and organizations," said Lili Bynes, co-director of CA&ES Undergraduate Academic Programs. "One is the sense of community that groups provide. Another is professional development opportunities. In personal development, what stands out immediately would be leadership growth and exploring the unknown."

When students come into the CA&ES dean's office for academic counseling, they are often encouraged to think about how they spend their extra time. Student organizations—whether to focus on academics, promote professional development, or bond people of similar religious or cultural interests—help students connect in a way that complements the classroom experience and can make them better students.

"The sense of belonging is really important for students," Bynes said. "Moving from another location to Davis, students need to create a new sense of community. Being around other students with similar interests is something that can be of value to students. It can help them to perform well in their classes if they have some extension of an identity outside the classroom."

One organization that provides opportunities for professional skill development and networking is the National Society for Multiculturalism in Agriculture, Natural Resources, and Related Sciences (MANRRS). Students in this organization have the opportunity to attend a national conference and compete in contests for cash prizes. Gaby Pedroza, an animal science student and president of the UC Davis chapter of MANRRS, won second place in a public speaking competition earlier this year. Her talk addressed the national conference theme: *Embracing today's challenges to embark on tomorrow's opportunities.*

"I focused my speech on my college journey thus far and how I had to work hard to get to college and stay in college," Pedroza said. "And also how, thanks to MANRRS, I grew as a person and now know where I want to be and how I will get there."

— John Stumbos

A meeting of MANNRS

Student clubs abound

More than 600 student organizations are registered with the campus Center for Student Involvement. Some have an academic focus, some are for professional development, and still others are ethnic or cultural in nature. Fraternities, sororities, sports, and religious groups are also available to UC Davis students. Here's a sampling of clubs that may be of interest to CA&ES students:

- Alpha Gamma Rho (fraternity)
- Avian Sciences Club
- Botany and Environmental Horticulture Club
- Collegiate 4-H at UC Davis
- Dairy Club
- Davis Enology and Viticulture Organization
- Draft Horse and Driving Club
- Entomology Club
- Environmental Club at UC Davis
- Food Tech Club
- Global Environmental Brigades
- Sigma Alpha (sorority)
- Society for Conservation Biology
- The Wildlife Society
- Vet Aide Club
- Water Association of Law and Policy
- Wild Campus
- Wildlife and Aquatic Animal Medicine
- Young Cattlemen's Association

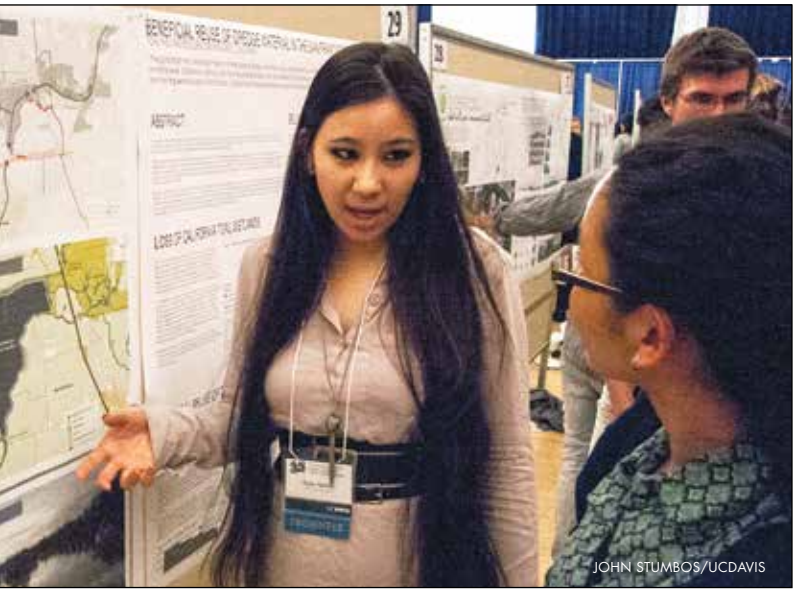
Learn more about student organizations at www.caes.ucdavis.edu/students/current/clubs or visit the Center for Student Involvement at http://csi.ucdavis.edu.

MAKING CONNECTIONS

Popular undergraduate research conference hones student skills

ABOUT 5,000 UC DAVIS UNDERGRADUATES conduct research each year, and approximately 500 of them showcase their work at a conference that has grown tremendously over the years—a reflection of the campus' growing stature among the nation's public research universities.

At the 25th annual Undergraduate Research, Scholarship and Creative Activities Conference held in Freeborn Hall last April, food science student Jason Wang presented a study of grower practices and their relation to postharvest chilling injury in tomatoes. Environmental toxicology student Fian Louie's poster was on vitamin B-12 and the gut microbiome. And landscape architecture student Katie Herman presented a poster on her senior project, Illuminating the Delta, which analyzed recreational opportunities in the McCormack–Williamson Tract in the Sacramento–San Joaquin Delta.



At the Undergraduate Research Conference, landscape architecture student Katie Herman presented a poster on her senior project, Illuminating the Delta, which analyzed recreational opportunities in the McCormack–Williamson Tract in the Sacramento–San Joaquin Delta.

"I was drawn by the competing goals for recreation, habitat restoration, and flood control," Herman said. "The tract is of particular importance because it's one of the few restoration efforts currently in progress and will become a 'building block' for a Delta characterized by more resilient ecological processes."

"It's important to be able to explain a project to people without a landscape architecture background. I realized I needed to include more background information on the project in order to more clearly introduce the importance of my design interventions."

One of Herman's faculty mentors is landscape architecture professor Brett Milligan. "Katie has been looking at opportunities for boating recreation within the tract, and in the process proposing new landforms, docking areas, campsites, and interactive way-finding systems for boaters," he said. "The Delta Conservancy, the Nature Conservancy, and the Department of Water Resources have been highly involved in this research and are very interested in what Katie and the other students come up with."

The first undergraduate research conference took place in 1990 with only 19 students, according to founder Tammy Hoyer, assistant director of the Undergraduate Research Center. "The conference offers students concrete experience to explore research options," she said. "Students grow in their communication and cognitive skills, self-confidence, and develop personal and professional values. Another important element is that research prepares them for graduate and professional school."

Herman found the conference experience rewarding. "It's important to be able to explain a project to people without a landscape architecture background," she said. "I realized I needed to include more background information on the project in order to more clearly introduce the importance of my design interventions."

After graduation, Herman hopes to work for a Bay Area landscape architecture firm. "I enjoy projects that involve large-scale analysis and planning and hope to continue doing these types of designs," she said. "Eventually, I want to become a licensed landscape architect."

— John Stumbos

Biological and agricultural engineering professor Tina Jeoh (right) pours liquid nitrogen into a mixture of cream, sugar, and vanilla to make ice cream, an activity designed to stimulate interest in science. The two girls next to Jeoh are stirring the mixture to create a smooth and delicious ice cream.

CLOSING THE GAP

Program seeks to ignite interest in STEM for elementary school girls

THE U.S. DEPARTMENT OF COMMERCE REPORTS that only 27 percent of all computer science and math jobs were held by women in 2009. For engineering jobs, the figure is even less: 14 percent. Statistics like these are the reason why efforts to stimulate interest in science, technology, engineering, and math (STEM) in younger girls are so important.

"STEM for Girls" is a one-day event for 50 to 60 elementary school girls from Sacramento and Woodland held each spring at UC Davis. The program was developed by Tina Jeoh, a professor in the Department of Biological and Agricultural Engineering; Mari Knuth-Bouracee, assistant director of outreach for the Women's Resources and Research Center; and Parto Aram, owner of a Davis nonprofit education program that runs technology courses for girls.

"Women have historically been underrepresented in the STEM workforce, and that trend still holds true today," Jeoh said. "One of the challenges to drawing more women into STEM fields is the lack of role models for the younger generations. A big part of what we are trying to accomplish by bringing these girls onto campus is for them to interact with 'ordinary women' who are passionate about STEM."

The April 2014 workshop included fun activities such as DNA extraction from strawberries, a chemistry primer on polymers and rockets, and a food science foray in butter making. The girls also visited campus facilities like the Bohart Museum of Entomology and the horse and dairy barns. In addition, six women from industry talked about their experiences with STEM.

About 50 volunteers—undergraduates, graduate students, staff, and faculty—make the event a success. According to Jeoh, they are passionate about STEM and want to share that enthusiasm with the next generation. The program is supported by Jeoh's "CAREER" grant from the National Science Foundation.

"We hope to ignite a passion for STEM in the girls, and we also hope that they can see themselves in us," she said.

— John Stumbos

"UC Davis definitely helped me get to where I am today," says Erica Harris, owner of Happy Baby Vending products.

HEALTHY, HAPPY BABIES

Enterprising alumna dispenses convenience to growing families

WHEN ERICA HARRIS GRADUATED FROM UC Davis in 2008, she had a degree in clinical nutrition, an interest in business, and a passion for caring for people and the environment.

She wasn't sure how to put it all together until one day in 2010 when she attended an acquaintance's cheerleading competition in Pasadena. She was in the restroom when a commotion occurred.

"There was a baby with a funky diaper, and her frantic mother had no more diapers in the bag," Harris recalls. "She ended up having to rig one out of paper towels. I said to myself, 'There needs to be a vending machine for this.' I went back to my seat and wrote my idea on a napkin."

A few years and a lot of hard work later, Harris is now CEO and founder of Happy Baby Vending Inc., an eco-friendly company headquartered in Altadena, California, that sells diapers, nutritious snacks, and other baby supplies through vending machines and online at happybabyvending.com.

"UC Davis definitely helped me get to where I am today," Harris says. "The courses, the connections, my interest in good nutrition and sustainability—it all happened at UC Davis."

At UC Davis, Harris met Happy Baby Vending's chief creative officer Dennis Robinson, who graduated in 2008 with a degree in graphic design.

Harris was born and raised in Compton, Calif. As an incoming freshman, she considered studying engineering. But during her sophomore year, Harris took "Nutrition 10," a popular nutrition course taught by Liz Applegate, a lecturer in the Department of Nutrition.

"That class did it for me," Harris says. "I knew I wanted to study nutrition."

Harris has an entrepreneurial spirit. Leslie Butler, a Cooperative Extension specialist in the Department of Agricultural and Resource Economics, encouraged her to join the Sacramento Entrepreneurship Academy.

"The academy gave me a great foundation, and the skills I needed to design a business plan," says Harris, who went on to found and lead the Junior Investors and Entrepreneurs group at UC Davis.

In 2012, Harris entered Happy Baby Vending into the UC Davis Graduate School of Management's "Big Bang!" business competition. She took second place and received $4,500 in seed money.

"That gave me confidence to know I was on the right track."

Harris has installed Happy Baby vending machines in shopping malls and a children's museum in Los Angeles. She's now focusing on online sales for Happy Baby products, giving more parents a convenient way to raise healthy, happy kids.

— Diane Nelson

IN THE WINNER'S CIRCLE

Veterinarian is a champion for the health and welfare of animals

VETERINARIAN JEANNE BOWERS-LEPORE (B.S., '82, animal science; DVM, '88) tends to each one of her 600 thoroughbred racehorses as though it might one day win the Kentucky Derby.

As chief veterinarian at Harris Farms Horse Division in Coalinga, California, Bowers once cared for a mare that was severely injured giving birth to a foal named California Chrome. The mother required a lengthy treatment to recover, and the chestnut foal with flashy white markings got lots of attention at mom's side. Three years later, California Chrome became a household name after 2014 victories in the Kentucky Derby and the Preakness, along with a chase for the Triple Crown that came up just a few lengths short at the Belmont Stakes.

While not every horse bred and trained at Harris Farms turns out to be an international celebrity, the horse division has produced plenty of winners.

The health and welfare of the herd is Bowers' primary concern. "One thing about this farm that I absolutely love is that our whole team is trying to prevent problems," she said. "I want to do things that make for the healthiest animals possible."

Bowers first fell in love with horses at age five after a pony ride. Eventually she got a horse of her own and rode competitively throughout high school.

At UC Davis, Bowers majored in animal science and immersed herself in work with animals at the dairy, the Raptor Center, the Primate Center, and the SPCA. She also did a research internship on horse reproduction at what eventually became the Center for Equine Health.

Bowers decided on a career in equine reproduction, and her mentors persuaded her to apply to vet school. After graduation and a stint in private practice, Bowers returned to the UC Davis School of Veterinary Medicine as the first female resident in the Department of Equine Reproduction.

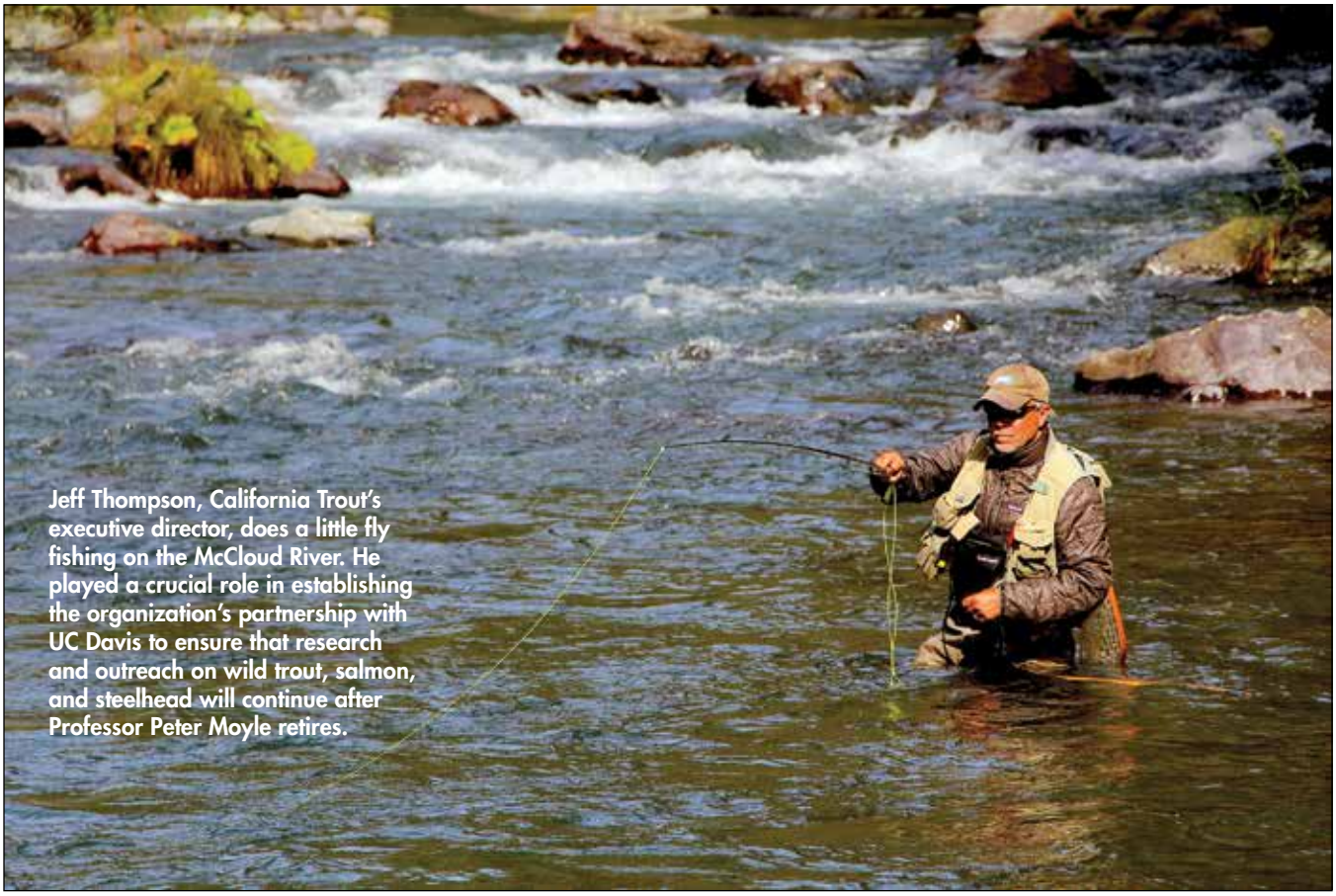
ROBIN DERIEUX/UC DAVIS

As chief veterinarian at Harris Farms Horse Division, Jeanne Bowers received ample attention from the media after the success of racehorse California Chrome. Bowers did her undergraduate studies in the Department of Animal Science and also studied veterinary medicine at UC Davis.

In 1997, she joined Harris Farms Horse Division. One of her proudest moments on the farm was developing a hormonal protocol that got a retired racehorse to accept an orphan foal as her own. Although thoroughbreds tend to be skittish by nature, Bowers and her colleagues discovered a way to stimulate both lactation and maternal behavior in the foster mare.

"As veterinarians, we are only as good as the people around us," said Bowers. "On a big farm like this, we can teach people what to look for, but they have to let us know when there is a problem."

— Robin DeRieux



MICHAEL VEIR/CALTROUT

Jeff Thompson, California Trout's executive director, does a little fly fishing on the McCloud River. He played a crucial role in establishing the organization's partnership with UC Davis to ensure that research and outreach on wild trout, salmon, and steelhead will continue after Professor Peter Moyle retires.

MAKING A SPLASH

CalTrout makes historic commitment for endowed chair at UC Davis

CALIFORNIA'S WILD TROUT, STEELHEAD, and salmon gained a valuable resource with the formal creation in May of the Peter B. Moyle and California Trout Endowed Chair in Cold Water Fishes at UC Davis.

For more than 40 years, the conservation organization California Trout (CalTrout) has supported numerous efforts to protect and restore wild trout, steelhead, salmon and their waters throughout the state. Moyle, a professor in the Department of Wildlife, Fish and Conservation Biology, is the foremost authority on California's native freshwater and anadromous (sea-run) fishes and has been a leader in research and conservation efforts.

"Peter has been an invaluable resource and instrumental in establishing such a strong scientific foundation in our work," said CalTrout's executive director Jeff Thompson. "We're thankful that this endowment helps ensure that another wild-fish champion can follow in his footsteps."

The endowment provides crucial support for the chair holder's scholarly activities, teaching, and public service involving cold water fish and aquatic ecosystems. He or she will teach department courses, mentor graduate students, conduct research and outreach, and provide leadership in the conservation of cold water fishes and their ecosystems. A memorandum of understanding between CalTrout and the university recognizes that salmon, trout, and steelhead are the major drivers of many conservation efforts and will have the highest priority in the chair's program.

Moyle has played a critical role in virtually every planning initiative dealing with California rivers, the Sacramento–San Joaquin Delta, and the San Francisco Bay. His research has provided the core science essential to statewide conservation planning for freshwater and estuarine native fishes, especially salmon and trout. Graduate students who studied with Moyle now occupy many of the top-level fish ecologist and management positions in state and federal

agencies, as well as at key nonprofits.

Most of the contributors to the endowment are CalTrout board members. Board member Nick Graves and his wife, Mary Graves, explored many trails and trout waters in the Sierra Nevada during 30 years of pack trips, and also have enjoyed the larger rivers flowing from the Trinity Alps, Mt. Shasta, and the Siskiyou Mountains. "The opportunity to create a scientific chair whose research targets California waters, in perpetuity, is a comforting thought," he said.

"I have worked with the organization since its earliest days and have always admired the dedication of its members to aquatic conservation," Moyle said. "I am biased, of course, but I think CalTrout has made a very smart investment in the future by creating an endowed chair."

— John Stumbos

CARSON JEFFRES/UC DAVIS

Jacob Katz (left), director of California Trout's salmon and steelhead initiatives, and Professor Peter Moyle on the Yolo Bypass, where their research is evaluating the importance of the area for rearing of juvenile salmon.

ROOTS OF SUCCESS

'Dr. Pistachio' legacy supports fruit- and nut-tree graduate students

THE NEXT TIME YOU GRAB A BAG OF pistachios, think about Professor Julian Crane.

"Dr. Pistachio" was a plant scientist at UC Davis from 1946 until he retired in 1985. He was the first to conduct foundational research on a nut crop that was grown on only 25,000 acres 35 years ago but now encompasses more than 275,000 acres in California.

Professor Julian Crane

Today, California is the number one global producer of pistachios—about 40 percent of of the world's total supply. In 2012, California pistachios were worth $1.1 billion, a figure that can fluctuate because of the alternate bearing nature of the tree—heavy crop one year, a light one the next. Professor Crane and his many graduate students worked on alternate bearing and other aspects of pistachio tree crop growth and development.

"He did all the early work to characterize pistachios and their suitability for California's central San Joaquin Valley," said Louise Ferguson, a Cooperative Extension specialist who works with the pistachio industry. "Dr. Crane basically defined the climate the tree needed, how it produced, what were the best pollinators, and set the stage for the commercialization that you see now. He truly prepared the way for me and the industry."

Professor Crane died in 1999. After his wife, Betty Crane, passed on in 2012, the Crane estate established a $2.4 million endowment for graduate research assistantships in plant sciences. Plant sciences professor Ted DeJong said endowment support is essential to help defray the high cost of graduate assistantships.

DeJong worked with Crane in the early 1980s and eventually took over his class on fruit and nut tree growth and management. "He was a well-respected member of the faculty," DeJong said. "He was a classic old-style professor. When you were talking to Dr. Crane, you knew you were talking to Dr. Crane. He was very effective."

Crane and his associates devoted more than 15 years to pistachio research. He was regarded as a leader in research aimed at solving industry problems. Prior to working with pistachio, his research centered largely on characterizing fig fruit growth and ripening. He also conducted similar studies on almond, apricot, cherry, plum, and peach.

With a reputation as an excellent mentor, Professor Crane attracted graduate students from around the world. "I'm very pleased about the gift," Ferguson said. "I like the fact that it will support students because graduate fellowships are getting harder and harder to get. That was really wonderful of them to do that."

— John Stumbos

Barbara O. Schneeman Aggie Ambassador Prize

When Barbara Schneeman stepped down as CA&ES dean in 1999, members of the CA&ES Dean's Advisory Council and other supporters surprised her by establishing an endowment in her honor. The Barbara O. Schneeman Aggie Ambassador Prize is awarded annually to an Aggie Ambassador exhibiting leadership and good citizenship.

Schneeman, now a professor emerita of nutrition, led the college as dean for six years. The Aggie Ambassadors program began in 1998 and has since become a highly successful group of CA&ES student volunteers who travel to high schools, fairs, and trade shows to recruit students and share information about UC Davis.

"I was honored that supporters of the college chose to recognize my term as dean by an award that would nurture and encourage leadership among the Aggie Ambassadors," said Schneeman. "Their outreach on behalf of the college is so valuable."

Contributions to the Schneeman Aggie Ambassador endowment are still being accepted to bring the fund above $25,000, which would support a $1,000 annual award. Gifts can be made online at giving.ucdavis.edu/caes/Schneeman, or call CA&ES Advancement at 530-752-1639.

COURTNEY RHODES/UC DAVIS

The Barbara O. Schneeman Aggie Ambassador Prize was recently awarded for the first time to Maria Montoya, a senior majoring in animal science who is president of the Aggie Ambassadors.

KAYLA SAMPLE/UC DAVIS

The Nancy Rupp Tibbitts Scholarship was recently awarded for the first time to Kathleen Furtado, an animal science major with a passion for livestock and the agriculture industry.

Nancy Rupp Tibbitts Scholarship

Contributions in memory of Nancy Tibbitts, an alumna and much-valued member of the UC Davis community, have been used to establish an endowed scholarship in her honor. The Nancy Rupp Tibbitts Scholarship is for support of CA&ES undergraduates interested in production agriculture, particularly students who have served in agricultural leadership roles.

Tibbitts (B.S., '80, agricultural education; M.Ed., '92) was an internship coordinator and career adviser at the UC Davis Internship and Career Center. During her 26 years at the center, she guided countless students to internship experiences and productive careers in agriculture and the environment. Together Nancy and her husband, George Tibbitts, a rice farmer, had connections to the agricultural industry that helped her to develop many new opportunities for UC Davis students to get on-the-job experience.

"She had an amazing energy level and a can-do attitude," said Linda Hughes, who worked with Tibbitts at the Internship and Career Center. "Nancy was also fabulous with students. Many of them would come back to visit her year after year."

Donations to the Nancy Rupp Tibbitts Scholarship are still being accepted for the endowment. Gifts can be made online at giving.ucdavis.edu/caes/tibbitts. Or contact Melissa Haworth in the CA&ES Dean's Office at mdhaworth@ucdavis.edu or 530-979-1440.

College Celebration

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

Learn more about the award recipients and see event photos at www.collegecelebration.ucdavis.edu

October 10, 2014
UC Davis Pavilion

Award of Distinction Recipients

Christine M. Bruhn
François Korn
Steve Leveroni
Corwyn E. Lovin
Frank Muller
T.J. Rodgers
Chris Zanobini

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