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How science
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human experience

The
LABORATORY
of **LIFE**

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Nicholas and student caregiver Victoria Sek enjoy a tea party in the toddler yard's sensory garden at the Center for Child and Family Studies.

JULIA LUCKENBILL/UC DAVIS

Cover story: UC Davis contributes to the quality of our lives through research and programs that engage human development and societal concerns. **Page 4**

COVER PHOTO: At the Center for Child and Family Studies, lab school head teacher Stephanie Nuccitelli and toddler Andy Zhang work together to determine which shells are heavy and which are light. **See page 16 for more.**

Cover photo by Julia Luckenbill, ECL infant/toddler program coordinator and child development demonstration lecturer.

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NEWS AND NOTES

COLLEGE CELEBRATION COMING UP

On Oct. 8, 2010, the College of Agricultural and Environmental Sciences will host its annual College Celebration. See News & Events at caes.ucdavis.edu for details.

CLARIFICATION: In the last issue, "Water Wise" (Fall/Winter 2009, page 19), we profiled a geology department field class (called Ecogeomorphology) taught by professors Jeffrey Mount and Peter Moyle. Funding for the class is provided by the Roy Shlemon Chair in Applied Geosciences. Roy Shlemon is a former professor in soil science at UC Davis and a generous supporter of the campus.

LIVE, LEARN, LEAD

Improving the lives of all through the application of knowledge

OUR COLLEGE IS KNOWN THE WORLD OVER for our work in the agricultural and environmental sciences. We are also engaged in many other areas that affect the lives of Californians, and we feature some of them in this issue of our magazine.

Human and community development professor Zhe Chen conducts research on the problem-solving strategies of children, yielding insights that could help improve science education. We also report on the work of his departmental colleague, Distinguished Professor Rand Conger, who has a long-standing interest in the role of culture and family values in the adaptability of Mexican American families in California.

The well-being of our family pets or “companion animals” is very important to us, their keepers. Animal science professors Anita Oberbauer and Tom Famula lead a project documenting the genetics of certain inherited canine diseases and disorders to assist dog breeders and benefit future dog owners.

In recent years backyard chickens have become increasingly popular as feathered companions that dish up side benefits for the breakfast table. Poultry specialist Francine Bradley helps us understand this trend.

The legacy we are building here at UC Davis is the result of a partnership between those of us who work and study here and those who believe in the mission and goals of the university.

Sustainability is a theme that resonates throughout much of society today—and with good reason. We must adapt to the imperatives of water and energy conservation. One way we can do that is to make smarter landscaping choices. The California Center for Urban Horticulture, housed in our college, is partnering with the statewide Master Gardener Program in a series of educational workshops called “Your Sustainable Backyard.”

ANN FIMMER/UC DAVIS



Dean Neal Van Alfen (left) welcomes input from supporters such as Yolo County supervisor Duane Chamberlain (right), who is also a local farmer and a UC Davis alumnus.

The legacy we are building here at UC Davis is the result of a partnership between those of us who work and study here and those who believe in the mission and goals of the university. We are grateful to the Trincherro winemaking family for a generous donation to create new facilities at Foundation Plant Services, and to Marguerite Winn, who bequeathed a portion of her estate to support parrot research.

Our alumni continue to make us proud in many ways. Craig McNamara is an organic walnut farmer whose Center for Land-Based Learning is educating young people about food and sustainability. Claire Vallotton, an authority on how preverbal infants communicate with symbolic hand gestures, is now a Michigan State University child development professor.

The common thread in all that we do is the application of knowledge to the needs of society. The diversity of our college’s research and programs shows the many ways we view those needs as opportunities to build a better future.

NEAL VAN ALFEN, DEAN

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

What *matters* to you?

If you ask five people,



you'll get five different answers.

But most likely you'll hear a common desire for *health* and *well-being* for *themselves*, their *families*, and their *communities*.



At its essence, that's what drives our *research* and *programs*. Everything we do is intended to *enrich the quality of our lives* and the *sustainability of our world*. In addition to our advances in agricultural and environmental sciences, our researchers are discovering just how people adapt and thrive in society.



We have, for instance, developed a *deeper understanding* of how infants communicate. Research has also documented the essential role of *families* in *social stability*. And we're getting an idea of what *healthy nutrition* will look like in the future.



In the next pages, we'll tell you what our scholars are *learning* in ...

JULIA LUCKENBILI/UC DAVIS



... *the* Laboratory of Life

Story by

JOHN STUMBOS, ROBIN DERIEUX AND ANN FILMER

What young minds are teaching us

PROFESSOR ZHE CHEN

applies the science of learning to the learning of science. Chen's research into the problem-solving strategies of children yields new insights into cognition that can be applied to classroom instruction.

"We're trying to answer some fundamental questions in psychological science, but the ultimate goal is to improve science instruction," said Chen, chair of the Department of Human and Community Development. His work is funded by agencies such as the National Institutes of Health and the James S. McDonnell Foundation.

Central to Chen's research is the study of analogical reasoning in children, the ability to apply a known strategy to an unfamiliar problem. For example, Chen and his research team might ask children to compare how far two springs—one short, one long—will stretch when weights are added. Through exploration and instruction, the children learn they must control multiple variables in the experiment to draw a valid conclusion. Months later, the children are tested to see if they can transfer the scientific reasoning strategy learned in the original experiment to analogous problems. Chen found that with training, elementary school children were able to reason like scientists, and apply the principle of controlling variables to new problems.

Chen also investigates the effect of cultural factors on children's thinking. One study examines how teenagers employ strategies from childhood fairy tales to solve analogous problems posed by researchers. Chinese-American students, for example, are able to solve problems determining the weight of heavy objects by recalling

ROBIN DERIEUX/UC DAVIS



Human development professor Zhe Chen analyzes problem-solving strategies in children. Here, Chen shares images on a monitor with two-year-old Ryan Schiller.



a fable about an emperor's young son who uses stones and a boat to weigh an elephant with a small scale.

In addition to studies on analogical reasoning, Chen is collaborating with Chinese researchers to determine how lead

poisoning due to environmental contamination affects the brain and learning process in children.

A native of China, Chen entered the field of cognitive development by chance. After the Cultural Revolution, only the top 3 percent of students taking an entrance exam were admitted to Chinese universities. Chen qualified and was placed in a newly formed psychology department. He participated in research as an undergraduate, which inspired him to continue in the field and to pursue graduate education outside of China, where research in psychology was still in its infancy. Chen joined the UC Davis faculty in 1999.

"Research in human development is important because it addresses both theoretical and practical issues," said Chen. "The topics we investigate are vital to human health and family well-being." — R.D.

How Mexican American kids thrive

CHILDREN OF MEXICAN origin are the fastest growing segment of California's population. Within 20 years, this group will constitute 25 percent of our state's population. Helping Mexican-origin youth successfully transition from childhood to adolescence to adulthood is the focus of a long-term research project by Distinguished Professor Rand Conger and his team in the California Families Project.

Conger is finding that many Mexican American children are resilient and thriving. Even those who live with daily challenges such as poverty or economic disadvantages, neighborhoods with higher crime rates, parents who may not speak English fluently, and discrimination, can flourish. "Discrimination is a real stressor in families, as much as economic

Children with supportive parents, despite extreme societal pressures, do better at school and have fewer problems with substance abuse.

stress," says Conger, who is based in the Department of Human and Community Development.

Starting in 2005, Conger and his bilingual research group recruited 670 fifth-grade children of Mexican origin in the Sacramento and Woodland areas and followed them and their families for several years through the transition from

childhood to adolescence. "What makes the difference between those children who succeed and those who are overwhelmed by stressors?" asked Conger.

His findings in this first-of-a-kind study confirm what many of us might assume—that family support is critical to the success of children.

Children with supportive parents, despite extreme societal pressures, do better at school and have fewer problems with substance abuse.

The personality traits of the child also matter—children who plan ahead and chart their own course tend to do better.

Families that remain cohesive and maintain cross-generational respect tend to work together to raise successful children. Family stability plays a major role in children's success.

Conger's research-based verification will be used to develop tools for schools and youth-serving organizations to help Mexican American children and their families thrive as their population grows. UC Davis Cooperative Extension specialist Lenna Ontai, also in human and community development, will work with Conger to develop educational programs for human services professionals and distribute them through county-based Cooperative Extension programs.

Based on the success of his initial studies, Conger recently received funding to follow the adolescents through the second major transitional period—from adolescence to adulthood. "Success in these children is important for a productive society and for an economically sound future," says Conger. "Helping every family raise successful children benefits all of us." — A.F.



JOHN STUBBOS/UC DAVIS

Human development student Rosa Gonzalez (left) is working with California Families Project staff members Maria Gaby Reyes, Mirian Meux, and Sergio Aguilar Rudametkin in a long-term study of Mexican American families.



JOHN STUMBOS/UC DAVIS

Animal science professors Thomas Famula and Anita Oberbauer with her five-year-old champion Belgian Tervuren, "Buxom."

Furry friends lend a paw to animal science

ANIMAL SCIENCE PROFESSOR

Anita Oberbauer didn't set out to become an expert in companion animal biology.

But her combined interest in showing dogs, knowledge of animal growth and development, and the animal science department's need to connect with increasingly urban undergraduates unexpectedly opened new teaching and research avenues for Oberbauer in the early 1990s.

"The department was looking for ways to broaden its appeal to students who weren't necessarily interested in agricultural species or weren't even familiar with them," she said. "So the department chair asked me to create a new general education course in companion animal biology."

Visit the Canine Genetic Analysis Project at <http://cgap.ucdavis.edu> to learn more about dog diseases and how to participate in this research.

The course (Animal Science 42) covers many topics in companion animal domestication: anatomy, physiology, genetics, nutrition, behavior, management, and the human-animal bond. The course has proven immensely popular, growing from about 90 students in 1993 to about 230 today.

Almost by default, Oberbauer became the department's resident expert on companion animals and dogs. One day in 1994 she received

a phone call from a veterinarian who had collected 5,000 pieces of information related to deafness in her clients' dalmatians.

"It's a big problem in that breed," Oberbauer said. "This veterinarian wanted us to analyze the data to help find a way to reduce the prevalence of deafness in dalmatians."

Oberbauer contacted department colleague Professor Thomas Famula, who conducts genetic population analyses and teaches the department's introductory course "Domestic Animals and People" (Animal Science 1). With the help of undergraduate students, they compared information on the dalmatians' hearing status with other factors such as hair color, spotting patterns, and eye color. They determined that pigment cells associated with ear color are also involved with inner ear function. Dalmatians with white ears or who have fewer color patches are more likely to have hearing problems—very useful information for dog breeders.

From this initial work on dalmatians, Famula and Oberbauer have expanded their investigations into the inheritance of epilepsy in Belgian shepherds, English mastiffs, giant schnauzers, and poodles; and of Addison's disease in bearded collies, European leonbergers, Portuguese water dogs, standard poodles, and West Highland white terriers. Danika Bannasch, a genetics professor in the UC Davis School of Veterinary Medicine, is the other principal faculty partner involved in this research.

"Each of these studies begins as a purely statistical problem," Famula says. "Once we can establish that a disease has been inherited, we combine pedigree and disease information with DNA markers to discover the genes influencing disease expression." — J.S.

Paige Haworth is learning about food while tending to her family's flock.



JOHN STUMBOS/UC DAVIS

Backyard chickens put fresh eggs on the menu

FOUR-YEAR-OLD PAIGE

Haworth is a fairly typical youngster: playful, curious, a little bit shy, and quite proud of her pets—Lemony, Snicket, Petey, Sunshine, April, and Amy, the family's laying hens.

"I like gardening and growing fruits and vegetables, so backyard chickens seemed a logical next step," said Melissa Haworth, Paige's mother and a UC Davis development officer. "I also liked the idea of having a pet that would provide our family with fresh eggs."

City dwellers like the Haworth family, who live in an urbanized Sacramento County neighborhood,

are flocking to backyard chicken farming—as media reports, blogs, and new websites attest.

A U.S. Department of Agriculture survey of "nontraditional poultry industries" such as backyard chicken owners found the most common reason for having birds was for fun or as a hobby—nearly 41 percent of those surveyed in 18 states, including California.

"Chickens make surprisingly good pets," Haworth says. "They have very distinct personalities."

That sentiment doesn't surprise Francine Bradley, a UC Davis Cooperative Extension poultry specialist

who has advised the poultry industry, game bird operators, poultry fanciers, and backyard enthusiasts for more than 25 years.

"I'd hear the same thing from callers over and over again," she said. "We come home from work, we pour ourselves a glass of wine, turn the girls loose and watch them.' It's very soothing. Chickens are fun to watch. Listening to hens cackle and scratch is very calming."

The surge of interest in sustainable agriculture and local food sourcing has also fueled the trend, Bradley believes. However, challenges can arise. Sacramento County officials told one family in January that their lot was too small for chickens and their four layers had to go. The small flock got a reprieve when local leaders agreed to study the issue.

Some California cities ban or severely restrict raising farm animals of any sort. Others have enacted ordinances that allow backyard chicken coops for hens only.

Bradley thinks backyard chickens have gotten a bad rap. "People assume chickens and nuisance are

"We need ways to encourage our children to be outside and to understand where their food comes from."

synonymous and they are not," she said. "A small dog could be more of a nuisance than 50 well-kept hens.

"We need ways to encourage our children to be outside and to understand where their food comes from," she adds. "There are so many positives to raising chickens."

Young Paige would agree. "I check for eggs every day before and after school," she said. — J.S.

The UC Davis Department of Animal Science hosts a "UC Poultry Page" with a great deal of information on poultry and game bird care at <http://animalscience.ucdavis.edu/Avian/>. UC ANR also has home-chicken publications at <http://anrcatalog.ucdavis.edu/>.

Promoting healthy lifestyle choices

A FEDERAL PROGRAM

managed by UC Davis is combating America's obesity epidemic by helping provide nutrition education to California's low-income families. The University of California Food Stamp Nutrition Education Program (UC-FSNEP) collaborates with various government agencies to deliver the science-based nutrition information that people need to make healthy food and lifestyle choices.

One program that partners with UC-FSNEP and Cooperative Extension is called Kick Off Riverside, which educates middle school students about nutrition, health, and fitness. In Riverside County, nearly one-third of youth ages 10 to 14 are either overweight, obese, or are at risk of being overweight. These students face a high risk of developing obesity-related disorders in early adulthood.

To improve health and well-being, Kick Off Riverside involves both students and their families at four middle schools in the Alford Unified School District. Educators meet with students and families once a month for an evening nutrition talk and family exercise time led by local fitness instructors. During school, physical education teachers deliver the EatFit curriculum, which was developed at UC Davis to provide information on the value of fruits and vegetables, exercise, budget management, and avoidance of fatty foods. EatFit (<http://eatfit.ucdavis.edu>) also encourages students to analyze their own diets and set personal eating and fitness goals.

"EatFit has helped me take care of my body by helping me realize that some of the things I eat are unhealthy," said seventh-grader Amalia Castorena. "It helped me realize that if I want to be healthy

CHUTIMA GANTHAVORN/UC COOPERATIVE EXTENSION



Students at Villegas Middle School in Riverside follow exercises as part of an outreach program that educates families about the value of fitness and healthy eating.

COURTESY



Youth cooking classes are part of the nutrition education provided by programs that partner with UC-FSNEP.

the rest of my life, I have to learn healthy habits now."

At Loma Vista Middle School in Riverside, testing before and after participation in the EatFit program

showed that 85 percent of students increased their knowledge of nutrition and fitness. In addition, more than half the students reported they now make better food choices and are more physically active.

Kick Off Riverside, led by the Riverside Medical Clinic Foundation, is one of many programs that operate in collaboration with UC-FSNEP to improve the health and well-being of people living below the poverty line. UC-FSNEP served 200,000 Californians in 36 counties last year, primarily through county Cooperative Extension offices.

"Our major goal is to work with food stamp eligible populations to empower them to make healthier dietary choices," said David Ginsburg, who became director of UC-FSNEP in 2008. "We provide a vital link between the university, the county extension offices, and California's underserved communities." — R.D.



Bruce German, an expert on the metabolism and chemistry of lipids and the structures of milk, leads the Foods for Health Institute.

The next era of health and nutrition

DIET-RELATED HEALTH

problems plague the 21st century. Worldwide, an increasing number of people suffer from obesity, diabetes, hypertension, osteoporosis, and other diseases that result from subtle but chronic metabolic imbalances caused by individual food choices and inadequate exercise.

“We should be the healthiest humans in history,” said food science professor Bruce German, director of the UC Davis Foods for Health Institute (<http://ffhi.ucdavis.edu>). “And yet, on average, we’re not getting it right at all.”

German foresees a future of personalized health assessments: comprehensive analyses of metabolism, immunology, and

“We should be the healthiest humans in history. And yet ... we’re not getting it right at all.”

physiology to provide individuals with scientific feedback on the consequences of their dietary actions. The technology to make these measurements and interpret their implications is improving rapidly.

Metabolomics, for example, allows us to study the health of

an organism by measuring the concentrations of metabolites (chemicals produced by the body’s metabolic processes) in cells, fluids, or tissues. Measuring metabolism to predict future health has proven successful with cholesterol, a normal metabolite found in blood. Excess cholesterol isn’t a disease in itself, but can contribute to the development of cardiovascular disease. Just as cholesterol measurements are routinely made to assess health today, next-generation technologies are being developed to measure hundreds of metabolites simultaneously. This type of data will inform individuals about imbalances in their metabolism, which don’t necessarily produce

biomarkers of damage until a disease is well-established.

“You can’t manage what you can’t measure,” said German. “The overriding goal of the Foods for Health Institute is to build the scientific knowledge and technologies needed to personalize health.”

Because people respond differently to the same foods, German believes the next era of nutrition science will require a better understanding of how diet interacts with genes, metabolism, physiology, even neurological functions and cognition. Individualized nutrient targets will enable people to manage their own health better and prevent or delay the onset of age-related diseases.

According to German, lack of knowledge about science and nutrition is a fundamental contributor to the diet-related health problems of our generation. “Unlike other mammals, humans can’t detect a nutrient deficiency in themselves, and they can’t detect the presence of nutrients in foods,” he said. “Because we cannot distinguish the nutritional value of foods, we can make horrific nutritional mistakes in the overall diet we choose, even with access to an array of healthy foods.”

A century ago, people suffered devastating and widespread diseases caused by nutrient deficiencies: scurvy due to lack of vitamin C, rickets from insufficient vitamin D, goiters from inadequate amounts of iodine. In what German considers one of the greatest breakthroughs of the 20th century, scientists discovered all of the essential nutrients, as well as the minimal requirements for each.

There were two possible ways to use this knowledge to solve the public health problem of nutrient-deficiency diseases. Teaching the information as part of the K-12 curriculum would run the risk of having children develop nutritional



JOHN STUMBOS/UC DAVIS

WHAT IS THE FOODS FOR HEALTH INSTITUTE?

The UC Davis Foods for Health Institute, formed in 2004, brings together researchers from across campus disciplines to tackle health challenges facing society today. More than 100 faculty members from various UC Davis colleges and schools are affiliated with the institute.

Above: Postdoctoral researchers who serve as associate directors of the Foods for Health Institute. Standing (from left) are associate directors Riccardo LoCascio, Jennifer Smilowitz, Daniela Barile, and director Bruce German. Seated (from left) are associate director Angela Zivkovic and staff assistant Wendy Stoltz.



Learn more at www.ffhi.ucdavis.edu

deficiencies before they were old enough to know better. Instead, society chose an industrial model, fortifying and enriching food staples. For example, vitamin D was added to milk, and iodine was added to salt. Scientists virtually eliminated nutrient-deficiency diseases with the improvement of nutrient quality in foods.

The daunting new challenge in nutrition is to devise diets that optimize metabolism as a whole. Establishing targets to make healthy

people healthier will require a fundamental shift in the way we currently define health—as the absence of disease. But German believes science and medicine are building the technologies needed to progress to a new era of nutrition.

“The next era of dietary advances will do to obesity, hypertension, atherosclerosis, and diabetes what science did to the nutrient-deficiency diseases like goiters,” said German. “We will dispel them from the human condition.”— R.D.



JOHN STUMBOS/UC DAVIS

Environmental science and policy professor Susan Handy is investigating the keys to our transportation choices.

Bicycling decline gets the wheels spinning

PEDAL POWER IN THE

“Bicycle Capital of America” seems to have gone a bit flat in recent years.

In 1977, nearly 80 percent of UC Davis students pedaled their way to campus. That figure is closer to 50 percent today. More students ride Unitrans buses to campus, especially undergraduates who ride free. Many newer Davis residents are commuters who drive to work. And public advocacy for cycling infrastructure projects is no longer as powerful as it once was.

Former master’s student Ted Buehler and Susan Handy, a professor in the Department of Environmental Science and Policy, reported those findings in Buehler’s 2007 thesis “Fifty Years of Bicycle Policy in Davis.” Handy is now digging deeper into bicycle use.

She is investigating bicycling

Visit the Sustainable Transportation Center online at <http://stc.ucdavis.edu/>.

behavior in Davis, Woodland, Chico, and Turlock, cities of similar size, climate, and topography in California, and also in two other college towns: Eugene, Oregon and Boulder, Colorado. The multi-year research project is intended to provide guidance for transportation planners about where to focus efforts and invest resources to enhance bicycle use.

“The factor that stands out the most in differentiating people who bicycle and those who don’t,” she says, “is whether people agree with the statement, ‘I like riding a bike.’ While having good infrastructure is important, it’s not enough. The

“It’s not enough to invest in bike lanes and bike paths. We’ve got to think about putting money into programs that get people more comfortable bicycling.”

strength of the role of attitudes was surprising to me.”

Handy, who has also studied how community design affects walking behavior, is director of the UC Davis Sustainable Transportation Center (STC). The program was established in 2005 by the federal transportation bill and is also funded by Caltrans. STC supports a wide variety of research, education, and outreach projects, such as optimal design of biofuels policy, ramp metering effects on efficient freeway travel, freeway impacts on wildlife corridors, and the Davis bicycle studies.

The big transportation issue, according to Handy, is how much we drive, the fuels that our vehicles use, and the environmental consequences and public health issues associated with automobile dependence. Increased bicycle use will help address those concerns, but new approaches are needed.

“It’s not enough to invest in bike lanes and bike paths,” she says. “We’ve got to think about putting money into programs that get people more comfortable bicycling.”

So don’t be surprised if you get contacted by one of Handy’s graduate students some day. She wants to survey UC Davis alumni to see whether their time in Davis influenced their lifestyle choices.

“If we can build communities where it’s possible to drive less and bicycle more, people will be healthier and happier,” she said. — J.S.

Digging in to sustainable gardening

A NEW VISION OF THE home landscape is taking shape throughout California with the help of a growing army of volunteers known as master gardeners.

And they're getting a big boost from the California Center for Urban Horticulture (CCUH), a statewide program begun at UC Davis in 2006. The center has launched a series called "Your Sustainable Backyard" that is helping master gardeners and other gardening enthusiasts learn more earth-friendly gardening techniques. The first two workshops focused on fruit trees and were held in August 2009 and January 2010.

The idea for the workshops grew out of the "Global Climate Change in Your Backyard" conference held at UC Davis in 2008. "The feedback we got indicated a strong desire for hands-on demonstrations of specific gardening tasks," said CCUH program manager Melissa Borel. "So we brainstormed and came up with these cost-effective, high-quality educational workshops for gardeners to learn usable skills they could take home and share with other people."

Master gardeners are public educators trained by university experts in horticulture, pest management, and related home gardening topics. California Master Gardener programs, currently serving 45 counties, are experiencing phenomenal growth. UC's statewide master gardener coordinator Pamela Geisel says they're seeing a 28 to 30 percent annual increase in the number of master gardeners, totaling about 4,700 individuals as of early 2010.

"We're seeing greater attendance at all our workshops," Geisel says. "In the past, you might have had six people show up to learn about vegetable gardening. Now, they're filling up right away, with long waiting lists."



JOHN STUMBOS/UC DAVIS

An increasing number of UC-trained master gardeners are a key resource for the public to learn about earth-friendly gardening practices.

Workshops for 2010 included one in March on edible landscapes, a second on roses in April, and another one in development on ecological gardening. To learn more, visit program websites at <http://ccuh.ucdavis.edu> and <http://camastergardeners.ucdavis.edu>.

"Gardening practices are going to change because of climate change, water shortages, and other factors."

A survey by the National Gardening Association found that seven million more households planned to grow their own fruits, vegetables, herbs, or berries in 2009 than in 2008—a 19 percent increase. More

people simply want to grow their own produce for improved quality, taste, and cost savings.

Geisel says it's not just about locally produced food. "More people than ever are interested in learning how to reduce the use of fertilizers and pesticides, to conserve and protect water resources, and to eliminate landfill waste through green waste composting," she said.

"Gardening practices are going to change because of climate change, water shortages, and other factors," Borel adds. "Our workshops empower people to do that correctly. We're setting them up for success."
— J.S.

THE REAL WORLD

Experience with children provides career guidance

DEBORAH ROSEN ALWAYS knew she wanted to work with children—she entered UC Davis planning to major in pediatric nursing. One human development class, however, inspired Rosen to change her major and her career goals.

“Communication and Interaction with Young Children” (HDE 140L) has students work at the Early Childhood Laboratory (ECL) in the Center for Child and Family Studies. Students apply their classroom learning in child development and educational theory to a hands-on experience with young children.

Rosen took the class as a junior and was hooked. “This class challenged me and gave me a new perspective on how to work with children,” says Rosen. “I learned to work professionally with a team, and with families, children, and mentors.”

Kelly Twibell, the preschool coordinator at ECL, says, “The program provides a cutting-edge blend of social-emotional and cognitive development, and relationship building to create a holistic understanding of child development.”



Head teacher Deborah Rosen reads to toddlers during storytime at the Early Childhood Laboratory (ECL) in the Center for Child and Family Studies.

Rosen spent three quarters in the lab, then spent her final quarter doing an internship at the Children’s National Medical Center in Washington, D.C. But her heart kept coming back to UC Davis, and she was fortunate to get a teaching position at the ECL after she graduated. Now a head teacher for the preschool program, she is

also working on a master’s degree in child development at Sacramento State, and ultimately plans to advocate for children’s rights or train teachers in early childhood education techniques.

Learn more about the ECL School, directed by Janet Thompson, at <http://ccfs.ucdavis.edu>.

— Ann Filmer

BLENDING THEORY WITH PRACTICE

Katie Ladowicz, a human development major who is graduating in June, has worked at the Early Childhood Laboratory for five quarters. Ladowicz knew it was her calling because she likes combining the practical experience of working with children with the theoretical science that she learns in her lecture classes.

“ECL has given me the professional skills that I will

need,” says Ladowicz. Her career goal is working in occupational therapy for children, but she first plans to join the Peace Corps, working with mothers and children on nutrition education.

When asked for words of advice for high school students, she enthusiastically replies, “If you’re coming to UC Davis, find a program like this. Get as much practical experience as possible before you graduate.”

TOWN AND GOWN

Honor society encourages student community service projects

UC DAVIS STUDENTS KATE Brown (senior) and Rebecca Koch (junior) belong to Gamma Sigma Delta, a national honor society committed to the advancement of agriculture. Brown is double majoring in psychology and biological sciences, with an emphasis in neurology, physiology, and biology. Koch is majoring in evolution, ecology, and biodiversity, with a minor in avian science. Both women are in the top 2 percent of their class.

“UC Davis was my first choice for my education,” Brown said. “The professors are really supportive and challenging. Gamma Sigma Delta provides a great opportunity to get to know those professors better.”

Koch agrees. “It’s been a key to connecting with professors and other top students working in a variety of different areas.”

Gamma Sigma Delta began as an offshoot of an agricultural fraternity. Since 1917, membership has been strictly honorary and faculty governed. There are currently 50 chapters in the United States, Puerto Rico, the Philippines, and in Honduras. The UC Davis chapter, established in 2000, is one of the younger chapters. Gamma Sigma Delta’s purpose is to further the advancement and improvement of all branches of agricultural sciences and the agriculture industry.

Student membership in the organization is based on academic excellence: only the top 2 percent can be inducted. Membership offers students a great opportunity to network with faculty and community members. The students are encouraged to participate in community service, which also qualifies them to compete for a Gamma Sigma Delta scholarship.

COURTESY



Gamma Sigma Delta student members (from left) Kate Brown, Rebecca Koch, and Christopher Garris volunteer at a Putah Creek Council work day event.

GET INVOLVED

Visit Gamma Sigma Delta online at <http://gammasygmadelta.ucdavis.edu>.

Brown, Koch, and several other students have found volunteer opportunities in Davis. Working with Tree Davis, a local nonprofit organization that teaches community members how to plant and care for trees, they mulched and pruned trees in public spaces. With Putah Creek Council, a group that advocates for stewardship and management of Putah Creek, they cleaned out and winterized greenhouses and repotted grass seedlings for planting along the creek’s banks to help reduce erosion.

The Putah Creek Council project was Brown’s favorite so far. “I felt like I accomplished something use-

ful and beneficial to my community and the environment. And it was fun to meet new people,” she says.

The students are looking forward to more projects in the near future, including helping out R4, UC Davis’ recycling program.

“I wanted to do these kinds of projects before I got involved in Gamma Sigma Delta,” Koch said. “This has been a great opportunity to make a difference.”

“It’s all about balance,” Brown adds. “I study hard, but I also like to do things for other people as well. Community service is productive and a great break from studying.”

— Elisabeth Kauffman



JOHN STUMBOS/UC DAVIS

Craig McNamara is saving \$7,000 a year using a 110-panel solar array to generate all the electricity he needs for the family's house, shop, well, and walnut hulling facility.

SUNNY SIDE UP

A Californian's journey to sustainable farming

IN FEBRUARY 1971, CRAIG McNamara left California on a two-year journey of self-discovery to Latin America. The experience set him on a path to become a successful organic farmer, a leading conservationist, and an impassioned advocate for reconnecting young Americans to nature.

"I worked on small farms and peasant operations all the way through South America," he said. "It was a humbling experience to see how deeply connected those farmers were to the land and to producing food for their families and for their communities. Through that experience I understood that agriculture and food production were something I wanted to engage in."

McNamara enrolled at UC Davis and crafted his own major, "integrated crop production science," a course of study that was,

"When you're farming sustainably, you're providing the farm with a sound return on investment, protecting the environment, and treating the people who work on the farm in a socially just manner."

in retrospect, ahead of its time. He also met his future wife, Julie Reardon McNamara, a graduate student in entomology.

After graduating with a bachelor's degree in 1976, McNamara apprenticed for three years with Ton Lum, a Dixon farmer and fellow UC Davis alumnus. He learned how to grow tomatoes, bell peppers, and sunflowers. He mowed sugar beets, moved sprinkler systems, and "hardfaced" agricultural equipment.

Craig and Julie purchased a walnut orchard near Winters in 1980. Initially, they farmed their Sierra Orchards conventionally but transitioned to organic and sustainable farming practices a decade ago. Now they use drainage ponds and sediment traps, pheromone control of codling moth, and composting and cover cropping. Their farming philosophy is "people, profits, and planet."

"When you're farming sustainably, you're providing the farm with a sound return on investment, protecting the environment, and treating the people who work on the farm in a socially just manner," McNamara said.

In 1995, McNamara started the Center for Land-Based Learning near Putah Creek. The nonprofit gives high school students hands-on experiences such as planting hedgerows of California native plants, building owl boxes for rodent control, and installing drip irrigation systems.

"What I've been passionate about is trying to reconnect younger people to nature and to this food system that supports us," he says.

McNamara serves on the California State Board of Food and Agriculture and is a member of the CA&ES Dean's Advisory Council. He has received numerous accolades, including the Leopold Conservation Award and "outstanding alumnus" from the Cal Aggie Alumni Association.

"UC Davis creates a forum for win-win situations," he says. "That's why we as alumni need to reconnect to our university. We need to reinvest in the university."

— John Stumbos

BABY TALK

Infant signs open a window into the world of preverbal children

CLAIRE VALLOTTON (PH.D., 2004, human development) believes children too young to speak still have plenty to say. Vallotton is internationally recognized for her innovative research on what babies can communicate through the use of symbolic gestures, also known as infant signs.

Developed at UC Davis in the 1980s, symbolic gestures are simple signs paired with everyday words that are used to communicate with children who are too young to express themselves using verbal language. Since speech acquisition typically lags behind both cognition and hand-eye coordination, infants and toddlers can learn signs to express common words such as “hungry,” “play,” or “dog.”

“Infants are capable of much more than what we assume,” said Vallotton. “Giving infants the tools to communicate with signs puts the power in their hands to reveal their thoughts and feelings. I’m interested in what infant signing says about the social and cognitive skills of preverbal children.” Vallotton has been an assistant professor of early child development and education at Michigan State University since 2009. She was awarded a postdoctoral fellowship at Harvard University from 2005 to 2008 after completing her degree at UC Davis.

Vallotton was a graduate student when she first witnessed signing between hearing children and their caregivers at the UC Davis Center for Child and Family Studies (CCFS). CCFS pioneered the use of symbolic gestures in childcare during the 1990s, based on the research of UC Davis psychology professor emeritus Linda Acredolo and Susan Goodwyn, now a professor at California State University,

ERIN HORGAN/UC DAVIS



At Michigan State University's Child Development Laboratory, Professor Claire Vallotton, a UC Davis alumna, films short interactions between preverbal children and caregivers to study the use of infant signs.

“Infants are capable of much more than what we assume. Giving infants the tools to communicate with signs puts the power in their hands to reveal their thoughts and feelings.”

Stanislaus. Signing remains an integral part of the curriculum at the center.

“I was blown away by the level of communication between preverbal children and their caregivers,” said Vallotton. She began an eight-month

study at the center, filming 400 interactions between staff and infants in five-minute segments. Mining this rich data set, Vallotton discovered that babies as young as 10 months can use symbolic gestures to communicate emotions (“scared”) and feelings (“sleepy”). She also explored how infants can use signs to regulate their own behavior, in much the same way we might talk to ourselves to inhibit impulses. In addition, Vallotton has examined the effects of infant signing on the responsiveness of caregivers.

“The child’s influence on caregivers is an area that’s really understudied, but it was part of the approach to human development studies at UC Davis,” said Vallotton. “I take that perspective with me and really use it in my studies.”

— Robin DeRieux

Siblings (from left) Bob Trinchero, Vera Trinchero Torres, and Roger Trinchero.



TRINCHERO FAMILY ESTATES

A GENEROUS GENERATION

Trinchero family gift helps grapevine program

A \$1 MILLION GIFT FROM Trinchero Family Estates, a family-owned wine company in the Napa Valley, will help UC Davis build new facilities for Foundation Plant Services, a program that provides disease-free rootstock to California nurseries and is of critical importance to the grape and wine industries.

“We are delighted with the Trinchero family’s decision to help us expand our facilities,” said CA&ES dean Neal Van Alfen. “This generous gift will help California grape growers maintain access to healthy planting stock, which is essential for a competitive and economically viable industry.”

“UC Davis has educated many top industry leaders in the wine community and we have benefited from the winemakers, viticulturists, and scientists who have studied in UC Davis halls,” said Bob Trinchero, board chairman of Trinchero Family

Estates, in announcing the gift in November 2009. “Foundation Plant Services has helped shape our industry by providing state-of-the-art technologies and services for growing the finest grapes. Our decision to make this contribution to UC Davis and its Foundation Plant Services was based on our exceptional experiences with the university and its profound effect on the wine business.”

This lead gift will support construction of a new \$3.8 million, 5,600-square-foot building with a variety of sustainable design features. The facility, to be named for the Trinchero family, will include a large meeting room for hosting classes and stakeholder gatherings.

In 1994, Foundation Plant Services moved into the university’s National Grapevine Importation and Clean Stock Facility. Since then, its programs have more than tripled,

DEEP NAPA ROOTS

Trinchero Family Estates is owned and operated by the Trinchero family, who came to the Napa Valley in 1947. Immigrants from northern Italy in the 1920s, the Trincheros purchased an abandoned 19th-century winery named Sutter Home in St. Helena. For the next quarter century, the family ran Sutter Home as a small mom-and-pop winery.

Second generation winemaker Bob Trinchero, son of founder Mario Trinchero, was the creator in 1973 of the tremendously successful Sutter Home White Zinfandel. Today the winery is run by Bob and his siblings Roger Trinchero and Vera Trinchero Torres. The Trinchero Family Estates portfolio includes 23 different wine labels, such as Sutter Home, Trinchero Napa Valley, Napa Cellars, Terra d’Oro, Montevina, Trinity Oaks, Folie à Deux, and Ménéage à Trois.



TRINCHERO FAMILY ESTATES

necessitating expansion for new staff and information technology needs.

“I’m extremely grateful for this gift and humbled by the Trinchero family’s generosity,” said Foundation Plant Services director Deborah Golino. “This new building will help us build greater capacity to better serve the California grape and wine industries.”

For more information, visit <http://fpms.ucdavis.edu/>

— John Stumbos

PROTECTING THE PARROT

Marguerite Winn gift aids an oft-neglected companion animal

MARGUERITE WINN LEFT a portion of her estate to support psittacine (parrot) research at UC Davis. With her gift, the Department of Animal Science established the Marguerite Winn Psittacine Research Fund in 2005 for research aimed at improving the quality of life for captive parrots.

While many companion parrots enjoy great care and can make excellent, engaging pets, the social, emotional, and cognitive needs of some parrots are not being met. Birds in the latter category may develop behavioral problems, like feather plucking or repetitive motor patterns. These unhappy birds can be challenging to keep and are frequently given up to new



Professor James Millam and doctoral student Victoria Cussen are conducting research to improve the welfare of captive parrots like “Seahawk,” one of the animal science department’s colony of orange-winged Amazon parrots. Learn more at <http://animalscience.ucdavis.edu/research/parrot/>.

owners, sanctuaries, or shelters. Such transitions are difficult for these intelligent birds. Sadly, parrot neglect and abuse is not an uncommon problem. Most parrots end up having multiple homes.

The Marguerite Winn Psittacine Research Fund is helping researchers design tools for looking at the world from the parrot’s point of view. Computer-monitored cages record how the birds spend their time, in order to learn more about the stimulation healthy parrots require. We are learning, for example, which

toys parrots prefer in terms of color, size, shape, and destructibility.

Other parrot studies, the first to examine eating behavior, found that the form of food, as distinct from nutrient content, may be vitally important in promoting naturalistic foraging behavior. Research is also investigating the social needs of parrots, even virtual access to other parrots. An estimated two-thirds of captive parrots live in single-bird homes and probably desire social interaction with other birds.

— Christine Schmidt

PLANNING YOUR ESTATE

If you would like to include the College of Agricultural and Environmental Sciences in your estate plans, please let us know. We can keep you informed about the programs you care about and provide you opportunities to interact with faculty and students. We can also clarify your gift instructions to ensure that your gift is invested the way you want it to be. To include the college in your estate plans, contact assistant dean Christine Schmidt at (530) 752-6414 or cmschmidt@ucdavis.edu. More information is available online at plannedgiving.ucdavis.edu.

MANY WAYS TO GIVE

A gift through your will or living trust costs you nothing during your lifetime, and you maintain control of your assets until you no longer need them.



A DEEPER MEANING

Endowed chairs add breadth to faculty research and outreach

AN ENDOWED PROFESSORSHIP

or chair is a permanently funded faculty position that adds significant strength to the university's capacity to address a wide range of issues.

Faculty members are selected to "hold" these prestigious positions based on their expertise in areas that match donor interest. The interest earned on the investment of endowed gifts provides an ongoing source of funding for the holder's professional activities, including support for research, equipment, and specialized materials, student support, and academic travel.

The interest earned on the investment of endowed gifts provides an ongoing source of funding for the holder's professional activities.

The first endowed chair at UC Davis—and in our college—was created in 1977 by the descendants of two California pioneers, Benjamin Porter and William Sesnon, who donated a ranch in Nevada that provided the funding for the Sesnon Endowed Chair in Animal Science.

Since then, a growing list of individual donors, businesses, foundations, and others have stepped up to help UC Davis faculty conduct crucial work in many areas. Following are the current endowed chairs and professorships in our college and their status.

— Christine Schmidt

CURRENT ENDOWMENTS IN CA&ES

Melvin D. Androus Professorship for Rice Weed Control

Albert Fischer, professor, Department of Plant Sciences

Anheuser-Busch Professorship in Malting and Brewing Science

Charles Bamforth, professor, Department of Food Science and Technology

James G. Boswell Endowed Chair in Soil Science

William Horwath, professor, Department of Land, Air and Water Resources

Frank H. Buck, Jr. Chair in Agricultural Business

Daniel Sumner, professor, Department of Agricultural and Resource Economics

Donald G. Crosby Endowed Chair in Environmental Chemistry

(newly established)

L.D. Davis Professorship in Pomology

Thomas Gradziel, professor, Department of Plant Sciences

Daniel B. DeLoach Chair in Agricultural Economics

Jeffrey Williams, professor, Department of Agricultural and Resource Economics

Robert M. and Natalie Reid Dorn Endowed Chair on Infancy

(in recruitment)

John and Joan Fiddymt Endowed Chair in Agriculture

Mary Delany, professor, Department of Animal Science

Ernest Gallo Endowed Chair in Viticulture and Enology

(in recruitment)

Robert M. Hagan Endowed Chair in Water Management and Policy

Thomas Harter, Cooperative Extension specialist, Department of Land, Air and Water Resources

W.K. Kellogg Endowed Chair in Sustainable Food Systems

Thomas Tomich, professor, Department of Human and Community Development, Department of Environmental Science and Policy, and director of the Agricultural Sustainability Institute

John E. Kinsella Chair in Food, Nutrition, and Health

(in recruitment)

Will W. Lester Chair in Pomology

Eduardo Blumwald, professor, Department of Plant Sciences

Mars, Inc. Endowed Chair in Developmental Nutrition

Carl Keen, professor, Department of Nutrition

Louis P. Martini Endowed Chair in Viticulture

M. Andrew Walker, professor, Department of Viticulture and Enology

John B. Orr Endowed Chair in Environmental Plant Sciences

Louise Jackson, professor, Department of Land, Air and Water Resources

Dennis G. Raveling Endowed Waterfowl Professorship

John Eadie, professor, Department of Wildlife, Fish and Conservation Biology

Russell L. Rustici Endowed Specialist in Cooperative Extension in Rangeland Watershed Science

Kenneth Tate, Cooperative Extension specialist, Department of Plant Sciences

Russell L. Rustici Endowed Chair in Rangeland Watershed Science

Randy Dahlgren, professor and chair, Department of Land, Air and Water Resources

Marvin Sands Endowed Chair in Viticulture and Enology

Andrew Waterhouse, professor and chair, Department of Viticulture and Enology

Evert and Marion Schlinger Chair in Insect Systematics

Peter Cranston, professor, Department of Entomology

Stephen Sinclair Scott Chair in Enology

Roger Boulton, professor, Department of Viticulture and Enology

Sesnon Endowed Chair in Animal Science

Ermias Kebreab, professor, Department of Animal Science

Peter J. Shields Chair in Dairy Food Science

John Krochta, professor, Department of Food Science and Technology

Alexander and Elizabeth Swantz Endowed Specialist in Cooperative Extension

Edwin Grosholz, professor and Cooperative Extension specialist, Department of Environmental Science and Policy

BREWING UP PLATINUM

Top green rating for new RMI facility

THE NEW UC DAVIS WINERY, BREWERY, AND FOOD science facility at the Robert Mondavi Institute for Wine and Food Science is slated for completion in August.

The one-story, 34,000 square-foot building, adjacent to Interstate 80, includes the August A. Busch III Brewing and Food Science Laboratory and the Teaching and Research Winery. The facility will be the first LEED Platinum building on campus—platinum being the highest certification granted by the U.S. Green Building Council.

Donors committed to a green future have helped the university build facilities that will demonstrate technologies and methods to save water and energy, make use of recycled materials, and minimize negative impacts on the environment.

UC Davis can lay claim to the world's first LEED Platinum winery, first LEED Platinum brewery, and first LEED Platinum food-processing pilot plant and milk-processing laboratory. Visit the facility's interactive website at greenrmi.ucdavis.edu; and take an online tour through the building.

— John Stumbos



Learn more at
www.greenrmi.ucdavis.edu

A FITTING TRIBUTE

Nancy Rupp Tibbitts receives posthumous Common Threads award

KAREN FROYLAND



Nancy Tibbitts was a UC Davis alumna and staff member in the campus Internship and Career Center.

DURING HER 26 YEARS AS an adviser at the Internship and Career Center on campus, Nancy Rupp Tibbitts touched the lives of thousands of UC Davis students and colleagues. She was honored posthumously with a 2010 Common Threads award at a campus ceremony in March.

The Common Threads award is given annually by the College of Agricultural and Environmental Sciences and the California Agricultural Leadership Foundation (CALF) to a handful of women who have made significant contributions in service and philanthropy to agriculture and to their communities.

Tibbitts earned a bachelor's degree in agricultural education in 1980, followed by a master's degree in education, both from UC Davis.

She worked tirelessly to establish career opportunities for students in the agricultural and environmental sciences, and she taught classes and workshops.

She and her husband, George Tibbitts, also a UC Davis alumnus, founded Tibbitts Farming Company near Arbuckle. She was a CALF graduate, and was actively involved in UC Davis programs, the National Agri-Marketing Association, and Capitol Agri-Women. Nancy Tibbitts died in October 2009.

Common Threads nominator Jeanne Shelby praised Nancy Tibbitts' "exemplary vision and limitless energy" working to create opportunities for students in the industry she loved.

— John Stumbos

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LEADERS OF THE FUTURE

Aggie Ambassadors

A gift to the CA&ES Dean's Circle has the power to help create future leaders through the Aggie Ambassadors program. Aggie Ambassadors are undergraduate volunteers who promote the college. They travel more than 15,000 miles each year to speak to elementary, middle school, high school, and community college students about UC Davis.

Dean's Circle support also made it possible for UC Davis to host the National Agricultural Ambassadors Conference in January 2010. About 350 Aggie Ambassadors from 39 campuses nationwide came to UC Davis for training and development.

Phoebe Copp, a sophomore studying clinical nutrition, first learned about Aggie Ambassadors on a visit to the UC Davis Decision Day as a high school senior. "I saw these people in blue polo shirts and started asking them questions about UC Davis," she



Aggie Ambassadors Phoebe Copp, Chase DeCoite, and Sarah Warren, all sophomores, talked to more than 500 people about UC Davis at the World Ag Expo in Tulare in February 2010.

said. "They told me the Aggie Ambassadors were a great way to get to know people and to get familiar with campus."

She chose UC Davis and has since become a leading Aggie Ambassador herself. This spring Copp coordinated the awards ceremony and banquet at the annual Agricultural and Environmental Sciences Field Day, which draws hundreds of FFA and 4-H students. "I really like talking to people," she says. "I especially like talking to prospective students. I like helping them see everything that UC Davis has to offer."

— Allison Chilcott

JOIN THE CA&ES DEAN'S CIRCLE

As a CA&ES Dean's Circle donor, your financial support enhances the academic environment for the next generation of Aggies and creates opportunities for our faculty to achieve higher levels of excellence in teaching, research, and public service.

ABOUT CONTRIBUTING

The CA&ES Dean's Circle is open to donors who wish to make unrestricted annual gifts of \$1,000 or more to the College of Agricultural and Environmental Sciences.

Your gift is renewable annually, and your employer's matching gifts count toward the total.

Donors to the CA&ES Dean's Circle are invited to campus events, including an annual briefing with the dean.

HOW TO CONTRIBUTE

A response envelope is included in this issue of CA&ES Outlook so that you can join our growing circle of donors.

If you have questions or need more information, please contact the CA&ES Development Office at (530) 754-8961.

Visit our Giving website:
www.caes.ucdavis.edu/giving