CAL POLY
College of Agriculture, Food & Environmental Sciences
Food Science & Nutrition

NEWSBITE

FOOD SCIENCE AND NUTRITION DEPARTMENT 2015-16

BUILDING ON OUR STRENGTHS

- BREWING AND FOOD/BEVERAGE FERMENTATION
- PRODUCT/PROCESS DEVELOPMENT
- SUSTAINABILITY AND FOOD SAFETY
- CLINICAL NUTRITION
- NUTRITION EDUCATION AND COMMUNITY NUTRITION
- METABOLIC AND SPORTS/EXERCISE NUTRITION

FOOD SCIENCE AND NUTRITION

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MESSAGE FROM THE DEPARTMENT HEAD

It is an honor to serve as interim department head for the Food Science and Nutrition (FSN) Department. College of Agriculture, Food and Environmental Sciences (CAFES) Dean Andy Thulin asked me to step into this role in January for a nine-month period while a nationwide search is conducted for a permanent department head.

My academic background has focused on the production of food, feed and fiber (horticulture, crop and soil science), but my time with the FSN Department has given me an entirely new perspective on food and a new appreciation for how it is packaged, prepared and served. The FSN faculty and staff are eager to share their expertise, and it is a real bonus for me to learn from them. The time I spend with this wonderful group of people will enrich my life.

In this newsletter you are going to be introduced to our new staff and faculty. The FSN Department is fortunate to have these additions. Each one brings unique qualities and skillsets to the mix, and we look forward to the department's growth and evolution. That growth includes the approval of two new tenure-track faculty positions in nutrition plus a full-time nutrition lecturer position to take over the Dietetic Internship Program. The ability to hire three faculty positions in one academic year is a real tribute to the value placed on the department by the college and the university. I hope that by this time next year you will be introduced to these new faculty members and a new department head.

As we welcome three new faculty members, we will be saying goodbye to two nutrition faculty members who have collectively given years of service to the department. Louise Berner will retire at the end of winter quarter. Louise started at Cal Poly as a part-time lecturer in FSN and Dairy Science in 1987, and continued as a FSN lecturer from 1989-91 and 1994-96. In 1996, she began a tenure-track position as an associate professor and twice served as interim department head. She has contributed significantly to the department, and we are forever grateful for her service. Susan Swadener started at Cal Poly as a part-time lecturer in 1996 and became a full time lecturer in 2001. She was instrumental in developing the Dietetic Internship Program, which she has led since 2004. Susan was recently named a "Mustang Mentor" by the women's basketball team in recognition for going "beyond the call of duty." Way to go Susan! We wish Louise and Susan well in their new adventures.

Our students continue to be energetic, bright, inquisitive, driven and dedicated, and that energy continues after graduation. An example of some of our graduates' dedication to service can be seen in Peggy Papathakis' research program in Africa. Papathakis works with malnourished pregnant women in Malawi and has hired more than 20 nutrition alumni to work with her in rural clinics there to assess the nutritional status of these women and facilitate the research. FSN 344 students applied their quantity food planning and production skills in collaboration with International Programs' Taste of the World festival on Feb. 10 in the plaza adjacent to the Agricultural Sciences Building. In their inaugural participation in this event under Arlene Grant-Holcomb's guidance, our students prepared 10 international recipes for approximately 400 attendees and got a chance to practice Learn by Doing in real time! Food science students continue in their product development endeavors, and all of our students' success is the result of the high caliber of the nutrition and food science programs developed by dedicated faculty.

"The FSN faculty and staff are so eager to share their expertise with anyone who asks questions, and it is a real bonus for me to learn from them."

The Food Science and Nutrition Department is strong and getting stronger, and we thank you for your continued support! Please put a visit to Cal Poly on your "must do" list this year, and stop by to see all of the wonderful things our students, faculty and staff are doing.

Best wishes,

Jennifer Ryder Fox, Ph.D.
Interim Department Head

FSN Department Welcomes New Faculty, Staff

The FSN Department welcomed two new faculty members and two new staff members in fall 2015: Samir Amin and Luis Castro joined the FSN faculty and Bree Hugins and Molly Lear joined the staff.

BY CHRISTINA BARTON

Samir Amin *Ph.D.*

Background

After attending culinary school right out of high school, I realized I wanted to know more about the food industry. I earned a bachelor's degree in hospitality administration from the University of Nevada, Reno in 1992 and went to work in a hotel in Las Vegas. For a number of years, I worked in hotels and restaurants in New Orleans, Denver, Boston, and Florida. I earned a master's degree in food service management from Michigan State University in 1999. With a desire to move into product development, I earned a doctorate in food science from Michigan State University in 2008, working on edible packaging from whey protein isolate for my thesis. I found a job in Southern California as a research chef for Two Chefs on a Roll, a private food label manufacturing company. I worked there for six years, eventually moving up to director of research and development for savory products. In 2012, I taught culinology for a year and started a consulting business for product development and commercialization. After a stint as a lecturer in Cal Poly Pomona's Food Science Department, I accepted a faculty position at Cal Poly, San Luis Obispo.

Cal Poly Position

I am an associate professor of food science, currently teaching Fundamentals of Food (FSN 121).

Plans for Cal Poly

My research interests involve legumes and canned beans. I have started looking at using pulses in legumes to enhance nutritional aspects of such food products as bread and baked goods. Legumes are low glycemic and have good protein content. If used in conjunction with other ingredients, legumes could increase the protein content in bread and lower the glycemic index. Foods lower on the glycemic index do not raise blood sugar as quickly as high-glycemic foods. I am also interested in researching novel uses for the brine from canned beans to help reduce the waste stream for the companies that package the cans. Finally, I am interested in edible packaging to improve the shelf life of produce, particularly strawberries.

Luis Castro *Ph.D.*

Background

I earned a Bachelor of Science degree in chemistry from the University of Costa Rica in 2004, a Master of Science degree in food science from Washington State University in 2009, and a doctorate in food science from Washington State University in 2013. After a post-doctoral fellowship in 2014, I accepted a position at Cal Poly.

Cal Poly Position

I am a tenure-track assistant professor teaching Food Chemistry (FSN 364), Food Analysis (FSN 368), and Elements of Food Processing (FSN 230). I am also developing courses in brewing science.

Plans for Cal Poly

My research focus will be on the subject of brewing. I hope to work closely with industry to develop projects that study the relationship between different brewing practices and the resulting chemical and sensory profile of the beverage. I am also interested in how the combination of hop varieties and hopping procedures will influence the perception and acceptance of beer.

Bree Hugins

Background

I obtained a Bachelor of Arts degree in peace studies from Naropa University in Boulder, Colo. in 2010. For more than three years, I worked in international development and recently came from a position in Tucson, Ariz., where I managed programs for high school and college-aged students interested in learning about Arizona/Mexico border relations, environmental sustainability in the borderlands region, social justice activism, and leadership development. After working in a temporary position at Cal Poly last summer, I joined the department in October.

Cal Poly Position

I am the administrative support coordinator II in the FSN office, helping with scheduling the classes for the department among other things.

Molly Lear

Background

I attended Cal Poly as an undergraduate in the FSN Department from 2000-04. After graduation, I moved to Northern California and worked as a quality assurance manager for a small ready-to-eat sausage manufacturing facility from 2005-07. From 2007-15 I managed the department of Food Science and Technology Pilot Plant at UC Davis and was involved with teaching, research and outreach. My family and I enjoy spending time at the beach, and the park, snowmobiling and working on puzzles.

Cal Poly Position

As the FSN operations manager, I work closely with Cal Poly Product student employees. We work toward a common goal of producing yummy, safe products that have been made in a state-licensed facility. The inventory, training, production/research, sanitation, marketing and sales of Cal Poly Products are encompassed in my day-to-day activities.

Plans for Cal Poly

I love coming from the Learn by Doing tradition and feel that my time at Cal Poly prepared me for an industry position. I want to work with the students to grow our Cal Poly Product line and promote our unique capabilities in our pilot plant to an internal and external client base.

This year, five FSN faculty members received promotions. We congratulate these faculty for their hard work and commitment to the FSN Department.

Peggy Papathakis, *Full professor*
Amanda Lathrop, *Associate professor and tenure*
Amy Lammert, *Associate professor and tenure*
Aydin Nazmi, *Tenure*
Arlene Grant-Holcomb, *Lecturer range elevation*

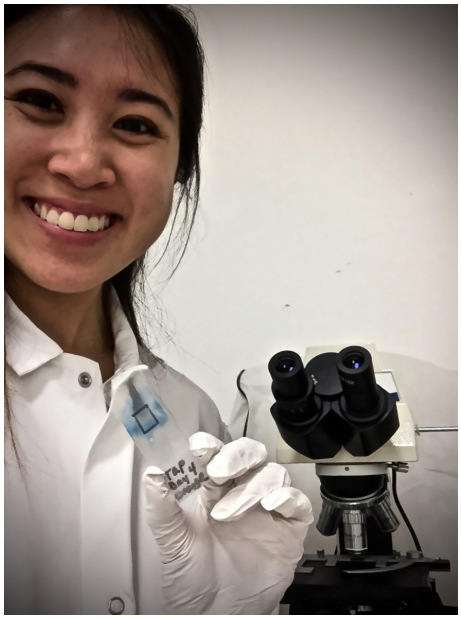
We are happy to announce that the accredited Didactic Program in Dietetics has been awarded full continued accreditation for the maximum term of seven years until June 30, 2023. The Accreditation Council for Education in Nutrition and Dietetics (ACEND) Board decision was based on a peer review of the self-study of the program, a site visit in March 2015, and our written response to the review team recommendations.

Catching Up With Alumni

Interview with Cal Poly alumna

COMPILED BY CHRISTINA BARTON

PHOTOS SUBMITTED BY CELINA TO



Celina To *Food Science, 2015*

Describe your journey through Cal Poly

I started my undergraduate work as a chemistry major in pursuit of becoming a doctor. During my four years at Cal Poly, and through the people I met in passing and in friendship, I have come to realize that you do not need a white coat to save lives — the world will never be in short supply of doctors and nurses. A new door opened when I met Professor Amanda Lathrop. She offered me insight on a different approach to help people, to make a difference. While working alongside Lathrop as her undergraduate research assistant, I saw how research into food microbiology could protect and improve people's lives. My summer internship with Hilmar Cheese Co. confirmed my interests in food safety and my passion for microbiology.

While I was an undergraduate, I was involved with undergraduate research in the Lathrop Lab, Microbiology Undergraduate Research Project in the Yeung Lab, College of Science and Mathematics Undergraduate Research Symposium, and the Institute of Food Technologists Mars and Disney product development competitions. I was also a member of the IFTSA Fun Run Committee, Food Science Club, and was a pilot plant team volunteer.

Three things to remember:

1. Work hard and work smart

2. Be humble

3. Do not limit yourself in what you can do with a food science degree

Tell us about your internship with NASA

I applied specifically for the Summer Apprenticeship Program through the National Space Biomedical Research Institute (NSBRI) website. The internship was at the Johnson Space Center in Houston, Texas, from June to August 2015. I worked in the Human Research Program (HRP), focusing on space food systems.

During my internship, I worked on three projects that could overcome psychosocial, quality and safety issues for the International Space Station (ISS) and Exploration missions:

a. Reformulated a recipe and established protocols for processing that is suitable for spaceflight

b. Evaluated the efficacy of wash treatments against microbial spoilage and quality loss on fresh produce to prevent the continued occurrence of spoilage events on the International Space Station

c. Under water constraints for long missions, a market survey was performed to identify commercial cold plasma devices for fresh produce sanitation.

Each project serves to deliver an adequate food system that is safe, nutritious and acceptable while efficiently balancing vehicle resources (volume, mass, power and crew time) to support current and future missions.

How did Cal Poly prepare you for the internship?

I took full advantage of the resources that were available at Cal Poly. I attended career fairs and the Agriculture Showcase, worked on my resume and cover letters with College of Agriculture, Food and Environmental Sciences career counselor Amie Hammond, volunteered at the Southern California Institute of Food Technologists (SCIFTS) supplier's night; and applied for SCIFTS and IFT scholarships.

Tell us about grad school

I am working on my Master of Science degree in food microbiology (Ph.D. track) at Purdue University in West Lafayette, Ind.

***Opposite Page**:* Celina To collaborated with the Environmental Microbiology Laboratory at Johnson Space Center on a fresh produce safety project for the International Space Station.

Right: To in front of the NASA logo at Rocket Park in Houston, Texas, last summer.

Far right: To, left, and other interns on a tour of the Human Exploration Research Analog.

I think the role of food microbiology is often neglected; it has been viewed as an undervalued subject. My ultimate goal is to inspire others to see the importance of the practical side of microbiology, and Purdue's food science doctorate program will help me achieve this goal. The university is widely known for its research and can provide me with advanced laboratory and research skills far beyond what I learned at Cal Poly. My tentative thesis is "Mammalian cell-based biosensor for pathogens and toxins."

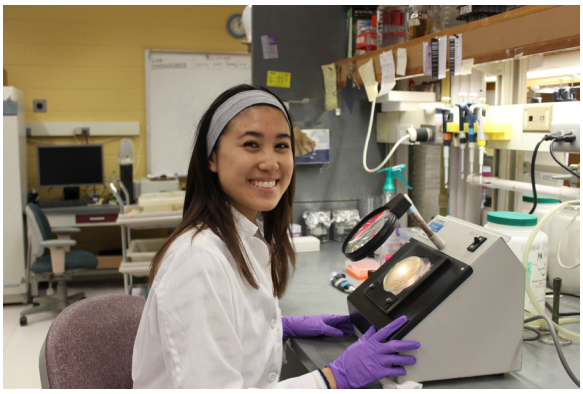
What do you want to do after graduate school?

I would like to work in a space-related field. I would like to be either an astronaut or a NASA microbiologist. Food and nutrition are critical components in surviving a two-year mission to Mars. If I can be a part of the crew as an astronaut, I can help push forward the ideas in enhancing food-science related research to improve human exploration and spaceflight. I want to become an important asset to the Human Research Program at the Johnson Space Center. Working as a microbiologist, I could provide the knowledge and ideas to bridge the gap between the microbiology and space food systems divisions.

What advice do you have for students considering internships or graduate school?

Internships: If you want to impress your employers, you need to know how to express your passion for food science. That passion comes in two forms: first impression and your resume. What do you want your recruiter to know about you? Tie together your story, your struggles, and your passion from your work experiences as outlined in your resume. This proves that you are well-qualified. Hands-on experience, such as internships, competitions, scholarships and research, is a plus. Do whatever it takes to help you steal the spotlight from other potential candidates.

Graduate school: It is extremely difficult to get into a graduate program if funding and lab space is limited, regardless of your Graduate Record Examination scores, grade point average, courses taken, strong recommendation letters and resume, and a powerful personal statement. Graduate advisors will get the funding needed to accept and support you as their student if you can express your interest as a prospective graduate student in pursuing a doctorate degree. Funding opportunities are limited for master's students. Students pursuing master's degrees do not produce as many papers as doctoral students, which is why Ph.D. applicants are highly favored. At Purdue, it takes about five to six years to earn a Ph.D., depending on whether you want to do a "by-pass," skipping the master's program and directly entering the Ph.D. program. Graduate school is tolerable if you enjoy what you do; so be sure to know what you are getting yourself into before applying.



Above: To working in a lab at Purdue.

Any final comments or advice not addressed above.

I would be nowhere near where I am today without the support and mentorship of my past professors. Seek advice from your professors and use them as your inspiration; they are there to help you develop a vision of the kind of scientist you want to be.

Frozen Product Team Wins Competition

Four FSN students win national product development competition in Chicago

BY CHRISTINA BARTON

Last summer, a team of four Cal Poly FSN students won the grand prize in the Disney-Institute of Food Technologists Student Association (IFTSA) Product Development competition in Chicago at the IFT Annual Meeting and Food Expo. Team members May Cheng, Bouchra Nafi, Michelle Reimer and Franca Rossi began working together in Professor Amy Lammert's Food Composition Science and Product Development class in fall 2014. They first surveyed parents of children ages 2 to 10 to determine what product attributes consumers wanted in a children's snack product. They conducted bench-top trials to develop the product, and during winter quarter, they decided to enter the product development competition. Cal Poly student teams have competed in the competition the last few years, making it to the finals.

Above: From left, Michelle Reimer as Elsa, May Cheng as Sven, Franca Rossi as Anna, and Bouchra Nafi as Olaf after winning the grand prize in the Disney-IFTSA Product Development Competition last July.

In March 2015, the team was chosen as finalists for the competition, to be held in Chicago in July of that year. During spring quarter, they further improved formulations, developed a package, wrote a final proposal, completed sensory tests, and prepared for the final presentations. Their product, Build a Snowman Kit, was based on the character Olaf from the Disney movie "Frozen." The kit included Olaf-shaped, whole-grain crackers with a fruit/vegetable spread and dried fruit toppings. For the presentations, the team dressed up as characters from "Frozen:" Ana, Elsa, Olaf and Sven. After the sensory presentation, at which judges tasted the product, and the product presentation, where the team discussed the marketing plan, food safety and regulations, food processing, and food composition, the team was chosen for the grand prize.

The team received faculty advice and support from Lammert, and professors Amanda Lathrop and Robert Kravets. The competition allowed the students to work with students they might not have worked with before and to interact with industry professionals at the IFT convention.

"We received support from faculty, and our food science peers and alumni supported our endeavors," Reimer said.

According to Reimer, the competition was one of the best experiences she had while at Cal Poly.

"It was an amazing experience to illustrate Cal Poly's Learn by Doing motto at a national competition and make our department proud by taking home the grand prize," Reimer said.

Another FSN team received honorable mention in the IFTSA & Mars Product Development Competition in Chicago.

Build a Snowman Kit

A "Frozen" inspired snack: Olaf shaped whole grain crackers with fruit/vegetable spread and dried fruit toppings

Building on our Strengths

FSN Department faculty use strengths in research across campus, community, world

BY CHRISTINA BARTON

The Food Science and Nutrition Department takes Cal Poly's Learn by Doing motto to heart. The variety of labs provide faculty and students the space to work and conduct research. The labs include a food safety lab, sensory evaluation lab, quality control lab, culinary science/product development lab, chemistry lab, and nutrition and health assessment lab. The pilot plant provides additional work space and equipment to give the faculty and students production capabilities. The research that arises from the two majors — food science and nutrition — spans across campus and throughout the world. The following pages highlight the research projects FSN faculty are working on and the research they hope to do in the future. Their research focuses on six areas: sustainability and food safety, product/process development from concept to commercialization, brewing and food/beverage fermentation, nutrition education and community nutrition, clinical nutrition, and metabolic and sports/exercise nutrition.

Above: FSN faculty and staff at the Fall Conference at Sycamore Mineral Springs in Avila Beach before the 2015-16 school year began. Pictured (from left) Aydin Nazmi, Arlene Grant-Holcomb, Scott Reaves, Doris Derelian, Peggy Papathakis, Robert Kravets, Amanda Lathrop, Susan Swadener, Luis Castro, Stephanie Jung, Amy Lammert, Kari Pilolla, Samir Amin, Pamela Montalban, and Gour Choudhury.

1. Sustainability and Food Safety

Development and implementation of sustainable food processing technologies. Assess food safety risks and develop management strategies to ensure consumer safety.

Amanda Lathrop *Food Safety*

Current Research: With the department's biosafety level 2 lab, Amanda Lathrop and her student researchers have the ability to study pathogens, including E.coli, salmonella, listeria, staph, and others. Working in collaboration with the Dairy Science Department, her team studied bacterial growth and pathogen growth on lower sodium mozzarella cheese. They also studied low-moisture products, such as peanut butter cookies, and the risk potential with a salmonella-contaminated ingredient, like peanut butter that goes through a baking process. Partnering with Cal Poly's Center for Applications in Biotechnology, Lathrop and a research team have also been testing intervention strategies for controlling bacterial growth on fresh produce. They have tested spinach, lettuce, sprouts and sliced apples and are working with a company to potentially commercialize a strategy.

Future research: Lathrop hopes to collaborate more with other department faculty, including Stephanie Jung and Gour Choudhury, on high-pressure and validation and sanitation studies. Lathrop has also begun research with hard cider. *(See page 12 for more details.)*

Above: Lathrop, third from left, and her undergraduate and graduate research assistants during the cheese safety testing study in 2012. *Photo submitted by FSN department*

Stephanie Jung *Sustainability*

Current Research: Stephanie Jung's research is focused on providing the food industry with solutions to add value to their by-products and helping companies be more sustainable. Jung is collaborating with undergraduate and graduate researchers, Cal Poly faculty, other California academic institutions, and industry. Her research has widespread implications. Jung and her collaborators are researching olive pomace, a leftover by-product from extracting olive oil that could be further processed for food, feed and fuel applications. She is also working with Sure Fresh Produce to add value to the by-products collected during the processing of red bell peppers and celery. Jung's research has established an international connection. French undergraduate, master's, and doctoral-level students have helped with her research. Jung will host visiting scientist Feng Yang, Ph.D., for a year to help with her value-added projects.

Future research: One of Jung's long-term goals is bringing high-pressure processing (HPP) technology to build a relationship with California industry. In October, Mary Wagner, vice president of research for Starbucks Coffee Co., will visit the department to learn about Jung's vision for HPP at Cal Poly. Jung previously collaborated with Evolution Fresh, a company Starbucks now owns, which uses HPP pasteurization.

Above: Stephanie Jung in the FSN lab she uses to complete her olive pomace research with her research assistants. *Photo by Christina Barton*

What is high-pressure processing?

According to Starbucks website, high-pressure processing inactivates pathogens while ensuring safety of the food and retaining flavors and nutrients.

2. Product/Process Development from Concept to Commercialization

Product/process ideation; lab and pilot-scale development; safety, quality (including sensory), packaging, and leveling issues; scale-up and commercialization

Robert Kravets *Improving Processes*

Current Research: Before Robert Kravets joined the FSN Department in spring 2014, he had worked at the National Food Lab for 13 years. There he worked on a study to determine the right type of agitation, speed of agitation, and process time to find the best mixing practice for a good quality Mexican macaroni and cheese. At Cal Poly he hopes to continue agitation studies. Through some agitation and heat simulation tests, Kravets wants to find the minimum parameters needed to most efficiently and fully mix a product while maintaining its quality. Starting with starch and water, he will test agitation methods and speeds and plans to inject a small portion of food-colored starch into the solution to see how the coloring mixes into the starch. He hopes to use this data as a baseline to move into other foods, such as soups. This data could also aid companies looking for ways to improve efficiency and cost in producing their product.

Above: Robert Kravets showing how the agitation machine worked during his research at the National Food Lab, published with an article in Packaging Digest Magazine in 2012.

Future research: Kravets hopes to work on a cleaning and sanitation processing study that would reduce the amount of water needed in those processes by half. Using PulseLight, a process that is currently only used to sanitize food, Kravets hopes to use high-intensity UV light to sanitize equipment surfaces. Initial plans for the project include using fiber optics, inside a tube that could be moved inside equipment to clean and sanitize without water or chemicals. He hopes to work with an engineer, possibly a Cal Poly engineer familiar with fiber optics, to build the best system for sterilization. In addition to cutting down on water usage, the UV light could help kill biofilm, bacteria that grows in a thin, jelly like-film inside equipment that bleach and chemicals do not completely kill.

Amy Lammert *Food and Emotions*

Current Research: Since 2007, Amy Lammert has been researching emotions connected to eating. Focusing on alternative nutrition — food that is more nutritious than the original — Lammert is trying to discover ways to get people to change their diets through simple food changes. How does someone feel before and after they eat a product? If there is a positive change, does that mean they will want to buy more of that product? Through her research, Lammert has tested a variety of cheeses, including those made by Lammert and her undergraduate and graduate assistants and those commercially made. Lammert and her team look at how to maintain the texture of regular cheese in lower-fat, lower-salt cheeses. Last year, she also began testing oatmeal and will continue to develop tests involving oatmeal.

Above: Amy Lammert checks in volunteers for a sensory test study. *Photo submitted by Maria Handley*

Future research: Lammert hopes to look into food neophobia — extreme fear of trying new foods — and food technology neophobia and how those phobias impact people's likes and dislikes for foods.

3. Brewing and Food/Beverage Fermentation

Brewing, production of fermented foods/beverages, and utilization of agricultural by-products

Amanda Lathrop *Hard Cider*

Current Research: Amanda Lathrop is in the beginning stages of a hard cider study. To meet the demand of the rapid increase in hard cider consumption in the U.S., apples not traditionally used for hard cider will need to be utilized. Collaborating with Cal Poly's Swanton Pacific Ranch, her team is evaluating 14 apple varietal juice samples for critical hard cider production parameters. Since these apples are typically dessert and culinary apples, the addition of sugar or acid to provide optimal juice characteristics will likely be needed. Her team will also be evaluating three yeast strains on the quality — including the aroma — of the cider.

Future Research: After the cider study, Lathrop hopes to start a cider class in which the students would visit Swanton Pacific Ranch to learn about apple cultivation and go through the entire production process, including aging the cider.

U.S. Cider Market Increase

$35 million ***2009*** → ***$366 million*** ***2014***

Left: Amanda Lathrop controls the water pressure on the press to help the apples release all their juice.

Below: Lathrop, right, fills the apple press with a few of her undergraduate research assistants to test how well the apple varietals juice.

Two Nutrition Faculty Retiring

Louise Berner retired from the FSN Department in March and Susan Swadener will be retiring at the end of the spring quarter in June. Berner joined the FSN Department in 1987 as a part-time lecturer in FSN and Dairy Science. She continued in FSN as a lecturer from 1989-91 and 1994-96. She began as an associate professor in 1996 and served as interim department head twice. During her time at Cal Poly, she enjoyed working closely with students through academic advising, senior project supervision and research projects. She said her favorite memories include working with so many intelligent, inspiring, funny, and hard-working colleagues and hearing from graduates about their experiences, successes and plans.

Louise Berner

Susan Swadener

Swadener first joined the department as a guest lecturer in 1996 and joined as a full-time lecturer in 2001. She created the Dietetic Internship Program in 2004. She has served as the director of the program since its beginning and has helped more than 100 interns in their career pursuits in the nutrition field. She continued in her role as a lecturer throughout her time at Cal Poly.

The department will greatly miss both Berner and Swadener and thanks them for their dedication to the program and students.

4. Nutrition Education and Community Nutrition

Education and training to better nourish individuals, families and communities in each phase of life, and in every setting through community engagement.

Doris Derelian *Why Nutrition?*

Doris Derelian is doing a study on nutrition students and what moved them to choose nutrition as a major. She checks in with the students twice while they are at Cal Poly: during their first year, when they take FSN 250 - Food and Nutrition: Customs and Cultures, and their fourth year, when they take FSN 415 - Nutrition Education and Communications. She is also studying to see how their reasoning changes as they go through the Cal Poly program. When she finishes the study later this year, she will have a sample of 800 students, spanning the years 2007 to 2016. She will publish her results in the Journal of the Academy of Nutrition and Dietetics. In 2010, Derelian presented a similar study about food science students.

Above: Doris Derelian, center, receives a medal from the Academy of Nutrition and Dietetics in October 2014. Derelian has presented her research to the academy.

Aydin Nazmi *STRIDE*

Aydin Nazmi is director of STRIDE, the center for Solutions Through Research in Diet and Exercise. The center is an interdisciplinary research team of students, faculty and community partners working to improve communities through the promotion of healthy eating and active living. Nazmi supports research programs and projects, helping to get community involvement and financial support. Working with STRIDE has provided him with many unique opportunities. Last October, Cal Poly STRIDE joined with the UC-Berkeley School of Public Health to host a Joint Obesity Symposium. The event brought together almost 50 people to foster further collaboration in obesity research and community-based efforts. Nazmi worked with friends of Cal Poly and UC-Berkeley, Jennifer Maxwell and Scott Sowry, to put together the symposium and begin a productive partnership. STRIDE partnered with the Orfalea Fund School Food Initiative to fund the Pink and Dude Chefs programs in northern Santa Barbara County, a program previously started in San Luis Obispo County. Nazmi and the STRIDE team also worked with the Real Food Cooperative to stage a Food Day on campus last October. The day featured speakers and booths from local organizations to discuss food-related issues.

Above: Aydin Nazmi, right, poses for a picture with Cal Poly President Jeffrey D. Armstrong, left, and Scott Sowry at the Joint Obesity Symposium last October.

Left: From left, City and regional planning Professor Kelly Main, Aydin Nazmi, Jennifer Sowry, Scott Sowry, and Kinesiology Department Head Kevin Taylor, all STRIDE faculty team members and friends, pose for a photo at the Joint Obesity Symposium.

To learn more about STRIDE and its current programs, visit stride.calpoly.edu

5. Clinical Nutrition

Comprehensive human nutrition assessment; diet for disease prevention and health promotion; medical nutrition therapy for treatment of chronic and infectious diseases.

Kari Pilolla *Feeding Behaviors*

Current Research: In January, Kari Pilolla began a small research study on the feeding behaviors of parents with preschool-aged children in Santa Maria. Pilolla is looking at Latino families, starting with the mothers. In collaboration with the Kinesiology Department, nutrition and kinesiology undergraduate students are working on the two-part study, which involves about 100 families. First, the families filled out questionnaires about their feeding practices and their nutrition beliefs, focusing on nutrition myths that might need to be addressed. Once the questionnaires were reviewed, Pilolla and her team put together questions and areas to address. The second part of the study involved a focus group, giving the participants a chance to discuss the gaps in nutrition they thought existed and how best to fill those gaps and what information they wanted to know and where to get that information. Pilolla plans to expand the study to the fathers and other caregivers of the young children to see the cultural and generational differences.

Above: Kari Pilolla is studying the feeding behaviors of Latino mothers and their preschool-aged children in Santa Maria, looking at how to fill nutrition gaps and improve early nutrition. *Photo from University of California, California Agriculture*

Future Research: Pilolla is working on grants for future studies with women's health, particularly around critical health-changing times, such as pregnancy and menopause. She wants to study ways to intervene with nutrition and physical activity to help women through the hormone changes. She also wants to continue looking at adolescent children and physical activity and later return to sports nutrition studies. Interested in ultra-endurance athletes, Pilolla hopes to continue studies on electrolyte and fluid balance in regard to cardio-metabolic risk.

Peggy Papathakis *Malawi Mothers*

Current research: Peggy Papathakis returned to Malawi, Africa, in winter 2016 for her last visit to complete the data gathering for her research study about malnourished pregnant women. At the beginning of this year, 1,900 Malawian women had been enrolled in the study. Papathakis must gather the remaining data, check that the data is entered correctly, and comb the data to make sure no mistakes were made. During her visit, she went to clinics to make sure the data collection was going smoothly and began analyzing some of the sub studies. One sub study she is analyzing is a cognition study of 100 women, using a set of five tests to see how quickly women can process various cognitive tests. Before the nutrition treatment, the women took up to 35 minutes to go through the test. Post treatment, the women only took 15 minutes, indicating the nutrition treatment had a positive effect. Once her data has been analyzed and the research compiled, Papathakis hopes to present and publish her research. Throughout her study, eight Cal Poly undergraduate students and more than 20 graduate students have helped her in the research in Malawi and on campus in San Luis Obispo. These students were exposed to research and nutrition in a different setting and experience in international nutrition.

Above: Peggy Papathakis, center, helps measure a baby's head at one of the clinics in Malawi as part of her study.

Future research: Papathakis hopes to continue working with her project collaborator in further studies in Sierra Leone and Ghana, where the nutritional supplements are undergoing formulation. She also hopes to be involved with other projects in Nepal. She is in the planning stage of a research study on breast feeding and recovering from malnutrition.

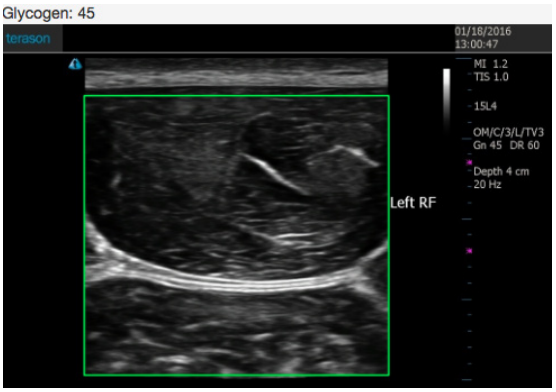
6. Metabolic and Sports/Exercise Nutrition

Optimal diet composition and nutrient timing to enhance health, fitness, body composition, metabolism, and sport performance outcomes in active individuals including university athletes.

Scott Reaves *Cal Poly Athletics Nutrition*

Current Research: Two years ago, Scott Reaves teamed up with the Cal Poly Men's Basketball program on a sports nutrition study. Reaves is still working with the basketball team on that study, plus additional components of the original study parameters and tests. Reaves is continuing the body composition analysis using the dual energy X-ray absorptiometry (DXA), anthropometrics, like height and weight, and personalized nutrition plans for each player. In addition, the athletes are also having their glycogen, an energy source, storage and calorie expenditures measured. Reaves is using a new technology, a special ultrasound system, that measures the glycogen storage in the players muscles, a measurement previously only available through a muscle biopsy. Reaves also teamed up with Fitbit and is using Fitbit Surges™ to estimate the calorie expenditure over a few days and during workouts. Reaves is looking at what the fuel source is for the muscles during the workout by studying the players' heart rates as measured by the Fitbits.

Below: An ultrasound image of muscle glycogen in the left femur of one of the Cal Poly men's basketball players.



This past year, Reaves also partnered with the baseball team, completing body composition and analysis testing four times over the course of the year and creating individualized nutrition plans for each player. The team of 35 is double the size of the basketball team, and the players are very young. Reaves hopes that by starting these nutrition studies and programs early in their baseball careers at Cal Poly, the athletes will continue to improve their overall baseball careers. The baseball team took a nutrition class with Reaves and some nutrition students, and the team members were also given grocery lists for Costco and other grocery stores. Nutrition students also cooked food for the team and helped with their nutrition schedules to make good nutrition a priority. In addition to these outside practice nutrition support programs, Reaves and his team created a hydration program for the baseball team during their workouts.

Partnering with Campus Dining, Reaves and some nutrition students formulated recovery smoothies that are now sold at Lucy's Juice on campus. Both the baseball team and basketball team get the Power Fruit Smoothies from Lucy's after practices multiple times a week. The baseball nutrition study is funded by a former Cal Poly and Major League Baseball player and the Major League Baseball organization. The basketball study is funded by a private donor.

Future Research: Reaves hopes to continue his studies with the basketball and baseball teams. If additional scenarios for collaborating with other sports teams arise, Reaves would consider expanding his studies. He also adds new players to the programs when they join the teams each year. Because the job opportunities in sports dietetics have finally begun to catch up with the interest in that field, Reaves hopes to use these studies to help give nutrition students that experience before going into sports dietetics post-graduation.

Above: Scott Reaves gives a nutrition presentation to the Cal Poly baseball team.

Left: Baseball players talk with Reaves about the food they cooked during the baseball team cooking class.

Didactic Program of Dietetics and Dietetic Internship

BY CHRISTINA BARTON

Arlene Grant-Holcomb *Didactic Program of Dietetics Director*

Cal Poly's Didactic Program of Dietetics (DPD) started as a concentration in the Home Economics Department in 1962. When the university reorganized in 1995, the program moved to the FSN Department and has continued to grow. Arlene Grant-Holcomb has served as director since 2011. The program prepares undergraduate applied concentration nutrition students for dietetic internships, leading to employment as registered dietitians. The DPD Program is one of more than 260 accredited dietetics programs in the country and one of the largest. Applied nutrition students who finish their undergraduate education with a GPA of 2.75 or higher receive verification statements that allow them to apply for dietetic internships. According to Grant-Holcomb, the GPA requirement gives students something to aim for as they go through the program and helps make them academically competitive when applying for dietetic internships.

As director, Grant-Holcomb is in charge of keeping records and writing the reports for the Accreditation Council for Education in Nutrition and Dietetics (ACEND). She works with the nutrition faculty to plan and carry out assessments of the learning outcomes of the ACEND program to evaluate the successfulness of the program. She also puts together an annual report and self-study every five to seven years. The self-study is an in depth report that addresses every program standard and looks at how the DPD Program is meeting those standards.

Approximately 50 to 60 applied nutrition graduates receive verification statements every year and about half will go on to become registered dietitians. Grant-Holcomb helps introduce the program to students in FSN 101, the first FSN class first-year students take, and spends hundreds of hours each year advising, preparing and helping students with applications.

One area Grant-Holcomb measures is the match rate of students to dietetic internship programs. The FSN program has a 60 percent match rate among graduates one year after they graduate and an 89 percent match rate within five years. Some students decide to attend graduate school or get experience as a dietetic technician, registered (DTR) or registered dietitian nutritionist before applying for registered dietitian credentials. Of the students who go on to take the registration exam, 95.8 percent pass their first time; 98.33 percent pass within a year.

To review how the students do at Cal Poly and post-graduation, Grant-Holcomb conducts a few surveys every year. She conducts a senior survey, a dietetic internship (DI) director survey for students who went through a dietetic internship, and an employment graduate school readiness survey for those students who do not go on to a dietetic internship. The results show that DI students have good reputations with their directors, perform above expectations with positive attitudes, have a readiness to work and solid background preparation.

Building trusting relationships with students, learning about their goals, and helping them find their path in nutrition is a main focus of Grant-Holcomb. The nutrition faculty educate the students about all their options with a nutrition degree, not just being a registered dietitian. Helping students find the right path and keeping in touch with students through LinkedIn and Facebook further strengthen the nutrition program.

Above: Arlene Grant-Holcomb, right, helps two students serve food they prepared for CAFEs Open House lunch last April.

Left: Grant-Holcomb, back, center, with nutrition alumna Danielle Sinclair Kemp, center, touring the UC Santa Barbara Dining Commons with FSN 343 Institutional Food Management students in November 2015. *Photo by Alex Ramos*

Susan Swadener *Dietetic Internship Director*

In 2002, Susan Swadener began work on a self-study of the Cal Poly Food Science and Nutrition Department in hopes of starting a dietetic internship program. Two years later, she had the first set of interns, and as of June this year, she will have directed 104 interns. To become a registered dietitian, students must go through a Didactic Program for Dietetics and complete a dietetic internship. Cal Poly's dietetic internship is the only program on the Central Coast of California, and interns work in both San Luis Obispo and Santa Barbara counties. According to the program mission statement, the dietetic internship is aimed at training "dietetic interns who will be competent, well-rounded, culturally sensitive individuals and contributing members in the field of dietetics."

The 10-month program, with a wellness concentration, is divided into different sections. Interns are trained in nutrition therapy, foodservice management, community nutrition, and professional staff experience. They work at various hospitals, school districts, public health agencies, and renal centers in San Luis Obispo and Santa Barbara counties. Like the Didactic Program of Dietetics, the dietetic internship also has a list of core competencies that the program must meet. Swadener evaluates the competencies, making sure the interns are prepared to meet the requirements for dietetic registration.

Above: A dietetic intern gives a presentation to the other interns during a Monday class. *Photo by Julia List*

During the internship, Swadener teaches a once-a-week class that includes lectures, discussions and guest speakers. The interns also make presentations during the seminar portion of the class, and the interns go on various field trips. Tuesday to Friday, the interns go to their assigned locations for the week. At the end of the internship, interns will have amassed 1,216 hours of supervised practice and can then take the exam to become a registered dietitian.

As director, Swadener attends various symposiums and events to recruit future interns and interviews candidates. She finds new sites for the interns to work in, makes manuals for the all the interns and preceptors, and helps both groups during the internship. While the internship requires a lot of work for the director, especially in the summer before the internship begins, Swadener really enjoyed her time working with the interns. Swadener will retire at the end of spring quarter 2016.

Below: Susan Swadener, center, sits with the dietetic intern class of 2016. *Photo by Christina Barton*

Food Security through Peace Corps

Nutrition graduate Garrett Morris works in Nepal to improve food security

BY CHRISTINA BARTON

Alumnus Garrett Morris (Nutrition, 2014) focuses on how he can help others who lack necessary resources to live healthy lives. In the summer of 2013, he biked 3,500 miles across the U.S. to raise awareness about the world's cocoa trade and raise money for Project Hope and Fairness, a nonprofit founded by Professor Emeritus Tom Neuhaus. After graduating, Morris joined the Peace Corps, and in September 2014, he moved to Nepal to begin his service as a food security volunteer. After three months of language, culture, and food security-related training, including agriculture, health and sanitation training, he moved to Far Western Nepal, to a middle hills area with about 6,000 people.

Food Security

Like many Americans, countless Nepalese people lack enough fruits and vegetables in their diets. Unlike in the U.S. though, where nutrition and health lessons are often focused on losing weight, in Nepal, lessons are focused on building strong bodies. Morris is trying to help them move away from a mostly grain-based diet. Morris has focused his efforts on promoting the production of nutritious foods like fruits, vegetables and protein sources.

Morris spent much of his first year getting to know the community he would be living in and serving.

"From day one, I have been trying to understand my community, its needs, and how I can be most effective in improving food security," he said. "In becoming a member of this community, it is no longer me as an outsider trying to help a group to which I have no connection, but rather me wanting to do anything I can to help my group of people, my community, my family and friends."

Although his background is in nutrition, Morris realized the best way to help improve food security was increasing access and availability to nutritious foods in his community. Improving access would in turn lead to naturally healthier diets. Morris teaches local farmers grafting techniques with the hope that they can start their own lucrative tree orchards and can sell what they grow. Part of his Peace Corps training included a short lesson on tree grafting, but much of his knowledge comes from research he has done on his own.

Farmers choose one kind of tree they want to grow in their orchard, and Morris provides seedlings for trees not found locally or improved varieties of locally available fruits. Once the seedlings are large enough, the farmers graft scion (branches) from well-producing trees onto the seedlings to create a tree that will produce well and will produce sooner. Once they mature, trees take less effort than vegetable or livestock production, and grafting can greatly improve the quality and quantity of their production. Nuts and spices can also be sold at markets farther away where prices are higher than local markets.

Woman's Health

Morris also works with the woman's health program Suahara ("good nutrition"). Together with a local Suahara employee, they host nutrition and health trainings for "1000 day mothers" – meaning 1,000 days from conception to when the child reaches the age of two years old. Morris also attends the monthly meetings of 12 different mothers' health groups. A health topic is discussed, and the women participate in a self-run savings program to help each other financially when needed.

While Morris is doing all he can, he finds that local cultural and traditional practices make behavior change a challenge. In regard to women's health, Morris believes they are still in the pre-contemplative/contemplative stages of behavior change of the importance of health issues. Changing their diets has also been difficult since many base their nutrition on what their ancestors ate and do not see a problem with that diet.

Opposite Page: Garret Morris, right, and his Nepali brother on his last day with his host family during pre-service training.

Left: Morris with Female Health Community health volunteers from the area he is working in.

Below top: Morris making porridge for babies at a training event. The porridge was a combination of rice, lentils, egg, vegetables and ghee.

Below bottom: Morris making roti, a traditional flatbread, with his host sister in his host home.

Photos submitted by Garrett Morris

FSN Preparation

Although he is a food security volunteer in Nepal, Morris' nutrition background has helped him the most in regards to behavior change. In FSN 416: Nutrition Counseling and FSN 417: Community Nutrition, Morris learned about the behavior change model and how to apply it in real life. Nutrition Counseling taught him the importance of finding where your patient is on the scale of behavior change in order to suggest changes that will have the greatest success in improving their nutrition. Community Nutrition taught him how important knowing where a community is on the scale of behavior change to grant donors and in implementing a successful project. His FSN experiences allowed him to assess the different groups in his community and better understand where they were on the road to behavior change. That knowledge helped him plan programs that could appropriately address root issues.

Morris has noticed behavior change issues in many different areas of life in Nepal. It is especially difficult since it is often a battle between tradition and change. At a meeting at the District Health Office with around 30 health officials, there was no soap in the bathroom or dining hall. The health officials were not following one of the most basic sanitation messages taught in local health programs, indicating the difficulty in actually implementing change.

In the end though, Morris says what really matters in his work is making people happier.

"I am often thanked for giving my time to serve in Nepal, but I honestly feel that I should be the one who is giving thanks," Morris said. "I have learned so much about the importance of family, generosity and simple living."

Read more about Garrett's journey in his blog: mypeaceofnepal.wordpress.com

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