

Nutritional Sciences

CALS and NSC Raise Funds for UA Wine Library at 'Arizona's Bounty: A Food & Wine Evening'

On Friday, April 12, 2019, the College of Agriculture and Life Sciences (CALs) and the Department of Nutritional Sciences (NSC) joined forces with the Arizona Wine Growers Association (AWGA) to celebrate local food and wine – and to raise money for The University of Arizona Wine Library.



The event was held on the UA campus at Old Main and featured wines from eighteen different Arizona wineries, locally-sourced food prepared by UA Executive Chef Michael Omo, and live music by award-winning guitarist Eduardo Minozzi Costa. It raised more than \$4,500 for the Wine Library and strengthened the UA's partnership with local wine growers and merchants.



'Arizona's Bounty' was a collaborative effort led by Valeree Halsey-Ibarra from the AWGA and Connie Bell and Erin Schauer from the Nutritional Sciences Department, with the support of CALs Dean Dr. Shane Burgess, NSC Department Head Dr. Scott Going, and Interim Director of the Norton School of Family and Consumer Sciences Dr. Dan McDonald.

Event photos courtesy of Jenelle Bonifield



THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES

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Research

Research Highlight: Prolonged Spaceflights could Weaken Astronaut Immune System

Dr. Richard Simpson recently published a new study that examines the effects of long-term spaceflight on astronaut health – specifically, on the immune system’s ability to keep astronauts healthy in space.

NASA hopes to send a human mission to Mars by the 2030’s, and that journey could take as long as three years round-trip - far longer than any human has ever traveled in space. Studies have shown that spending extended periods of time away from Earth comes with some health risks, like muscle and bone loss due to the effects of microgravity. But scientists didn’t know whether the unique conditions encountered by astronauts had an impact on the immune system, until now.

The new study, published in November by the American Physiological Society, sought to determine the effect of long-term spaceflight (six months or more) on “natural killer” (NK) cells – a type of white blood cell that kills cancerous cells in the body and prevents old viruses from reactivating. Researchers compared changes in NK-cell function in eight crewmembers who completed missions to the International Space Station lasting around six months with healthy controls who remained on Earth. Blood samples were taken before launch, at several points during the mission – 10 days in, 90 days in, and just before returning to Earth – and after the mis-

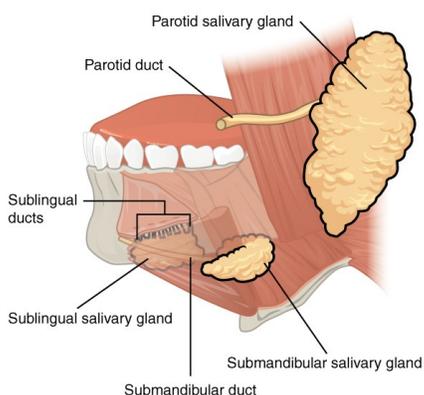
sion completed. The results show that long-term spaceflight does appear to have a detrimental effect on NK-cell function.

“When we look at the function of the astronaut samples during flight compared to their own samples before they flew, it goes down. When we compare them to controls who stayed on Earth, it still goes down,” declared Dr. Simpson. “I don’t think there’s any doubt that NK-cell function is decreasing in the spaceflight environment.”

Dr. Simpson and his fellow researchers at NASA’s Johnson Space Center, along with European and Russian scientists, are already at work on potential countermeasures that could help keep astronauts healthy in space. Potential countermeasures include nutritional intervention, pharmacological intervention, and increased exercise, all of which have been shown to have a positive effect on immune system function.



Research Highlight: Dr. Kirsten Limesand



We have all heard the abundance of potential side effects of medications on advertisements, and this certainly holds true for cancer therapies. For example, it is estimated that >95% of head and neck cancer patients exhibit xerostomia (dry mouth) and salivary gland hypofunction during the radiotherapy treatment regimen and

>73% of these patients continue to suffer for months to years after the completion of therapy. The lack of saliva secretion in these patients leads to increased dental caries, reduced taste and smell, malnutrition, increased risk for oral infections, and an overall decrease in quality of life.

Compounding this issue is a lack of treatment options to prevent radiation-induced xerostomia or recover

function in irradiated salivary glands.

The Limesand lab focuses on understanding why salivary glands are sensitive to radiation damage and potential interventions that could mitigate or resolve this damage. In particular, they are focusing on the wound healing response, which is well understood in skin and oral mucosa, and using this information to coax salivary glands to heal themselves. Additionally, since salivary gland hypofunction can persist for months or years, they are collaborating with experts in metabolomics and bioinformatics to determine if there are biomarkers in saliva that could assist in selecting the precise therapeutic for salivary gland healing for a particular patient.

Lastly, they are collaborating with experts in materials engineering to develop biodegradable implants that can precisely protect the area of the salivary gland most susceptible to radiation field of treatment. While this work is focused on the salivary gland, the long-term goal would be to test these applications on other non-tumor tissues that are sensitive to radiation damage.



Career Celebration: Dr. Joy Winzerling



Dr. Joy Winzerling retired this year, after 37 years of service to the Department of Nutritional Sciences (NSC) and the College of Agriculture and Life Sciences (CALs). During that time, Dr. Winzerling has been a respected dietitian, teacher, mentor, friend, professor, researcher, department head and administrator. She has led a highly respected scientific laboratory program, fiercely

supported women in science, and worked tirelessly to advance academic programs in CALs. Though her accomplishments are many and her legacy rich, we attempt here to capture some of the highlights as well as glean insight via a short interview.

Dr. Winzerling began her career as a clinical dietitian at UMC before returning to academics to earn both MS and PhD degrees in NSC. She then began a post doc with Drs. John Law and Jerker Porath receiving advanced training in vector biology and spectroscopy at the metals center in Athens GA, and protein separation chemistry in Sweden. Upon completion, she returned to the UA as an Assistant Professor in NSC. Later, as full professor, she served as NSC Head for four years before becoming the Associate Dean for Career and Academic Services in CALs.

Dr. Winzerling credits an outstanding advisor, Dr. Al Meade, for keeping her in college. She also had five outstanding mentors, George Howe, Douglas Stewart, Don McNamara, Jerker Porath, and John Law. Drs. Law and Porath allowed her to train in both administration and scientific research, foreshadowing a career that encompassed both.



What are your top 3 accomplishments? (1) Renovation of the Forbes lobby with Jim Davis, Dean Burgess, and the folks from UA renovation team because our students now have easy access to the advising and career centers in the lobby area. (2) Introduction and expansion of the role of professors of practice. Introducing this rank in NSC added to job security and satisfaction. When I became Associate Dean, we drafted the document that went to UA Legal and the provost to start an extensive conversation for the rankings of individuals in these positions. (3) Running a cross-disciplinary research laboratory. At one time we were 12 people from 5 countries representing 6 different disciplines working in 7 different organisms that included plants, microbes and animals. In such a diverse environment, in addition to good science, individuals learn

tolerance, appreciation for the abilities and knowledge of those from other scientific areas, and communication skills.

If you could start over again knowing what you know now, is there anything you would do differently?

I finished my doctorate when I turned 40; I then did a post doc for about 6 years. That gave me only 17 years from the time I became a professor until I retired, and 8 of those years included work in administration. Research that provides strides forward takes real time. If I had it to do over, I would fast-track my degree so I would have more time in teaching and research.

Are there other research directions that you might have tried or did you follow your original passion?

My original training was as a biologist. I loved all aspects of clinical science. I pretty much followed the path that had heart for me. As such, I pursued two research directions, human iron metabolism and vector biology.



Do you have a favorite biological pathway? Probably the pathways of human iron metabolism. These pathways are complex and clinically relevant. Much of the work discovering these pathways has been done in the last 25 years. I know many of the people working in this field, so it is wonderful to see their accomplishments and follow their discoveries.

What were your favorite classes to teach? Introduction to Clinical Nutrition and Mineral Metabolism. In Clinical Nutrition, the subjects of biochemistry, physiology and basic nutrition come into play. I loved to watch students have an "AhHa" moment when studying congestive heart failure. Mineral Metabolism is a very fast moving field that employs most of the advanced research techniques from many disciplines. It is a great area for training students in the use of technologies and current techniques as well as terrific science.

Besides the UA, what do you love about Tucson?

I came here about 40 years ago and realized I could breathe easier in this environment. I love the varied cultural influences, the proximity to friends in Mexico, the Spanish style of architecture, the mountains, and the great science that continues. I grew up in Oregon in a region that was 9 months of winter and 3 months of late fall. I love the warm Tucson winters. I could go on and on.

What are your plans now that you are no longer following an academic schedule?

I am enjoying the flexibility of not having to be some place all the time. Currently, I am traveling and exercising more. I also look forward to spending more time with friends and family.



Outreach

The UA Supplemental Nutrition Assistance Program - Education (UA SNAP-Ed) Recognized at Local and National Levels

The UA SNAP-Ed has been recognized for its scholarly work and outstanding staff at both the local and national levels. The UA SNAP-Ed will present two posters at the Society for Nutrition Education and Behavior in Orlando, July 27-30, 2019 and the 10th Biennial Childhood Obesity Conferences in Anaheim, California July 15-18, 2019 (respectively):

- The UA SNAP-Ed Used the Health Food Pantry Assessment Tool to Identify Policy, Systems, and Environmental Changes in Food Pantries
- The Smarter Lunchroom Movement Increased Salad Bar Usage in Middle Schools



The Garden Kitchen Team accepts Outstanding Team Award at the ALVSCE Luncheon

Several SNAP-Ed staff were recognized for internal (from the Division of Agriculture, Life and Veterinary Sciences, and Cooperative Extension) and external awards, fellowships and scholarships:

- Rhegan Derfus from Cochise County - Outstanding Staff in Cooperative Extension
- The Garden Kitchen from Pima County - Outstanding Team Award
- Betty Thompson from Maricopa County – Shirley O'Brien Diversity and Inclusion Award
- Natalia Santos from Pima County - 2019 USDA E. Kika De La Garza Fellowship
- Lindsey Cushman from Pima County – Young Adult/New Professional full scholarship to attend the 10th Biennial Childhood Obesity Conference

The Principal Investigator of the UA SNAP-Ed is Dr. Scottie Misner. Contributed by AZ Health Zone Program Coordinator Lauren McCullough. For inquiries about the AZ Health Zone, please contact Lauren at laurenmccullough@email.arizona.edu

Ashlee Linares-Gaffer Inducted into the HSI Fellows Program



Recently, the UA earned the designation of Hispanic Serving Institution (HSI) from the US Department of Education as a result of the success of the UA to enroll Hispanic students.

The HSI Fellows Program was developed to provide project-based leadership opportunities in order to both enhance diversity at the UA as well as strengthen the UA's organizational identity as a Hispanic Serving Institution. Fellows are expected to serve 8-10 hours weekly in order to complete projects and attend meetings with other Fellows. Projects will be completed in small teams and will focus on varied topics including culturally responsive pedagogies and practices, regional partnerships for transfer student success, and experiential learning with community partners.

Ashlee Linares-Gaffer, MS, RDN, Assistant Professor of Practice in the Department of Nutritional Sciences, was selected as one of 10 Fellows after a rigorous applications process. Ashlee was chosen in part due to her commitment to diversity and her interest in strengthening meaningful student opportunities. Congratulations Ashlee!

Career Celebration: Dr. Linda Houtkooper

Dr. Linda Houtkooper retired this past spring, after serving the Nutritional Sciences and Cooperative Extension departments of The University of Arizona for more than 30 years, as a former department head, an esteemed member of the faculty, and an active participant in interdisciplinary partnerships on- and off-campus. Throughout her career, her enthusiasm for helping people achieve optimum health and fitness through nutrition and physical activity and her dedication to research and mentorship have made her a beloved and valued figure in the department.



Linda Houtkooper began her career teaching classes in nutrition and family living to junior high and high school students in Minnesota. Though she found success and some satisfaction in her early work, the cold Midwestern weather and her keen interest in nutrition brought her to The University of Arizona as a graduate student pursuing an MS in Food, Human Nutrition, and Dietetics. She originally intended to pursue a clinical career as a registered dietitian, but after she completed her internship, she found that her plans and ambitions had changed. "I never had this really clear path of exactly what I wanted to do in life; I've always done what felt right at the time and followed my gut instincts and interests," Dr. Houtkooper said, reflecting on her career. "After spending a year in an internship program in a clinical setting, I knew that I did not want to work with sick people. I was much more interested in doing prevention."



She worked on research grants with one of her graduate mentors for the next five years, and she took advantage of the university's reduced tuition rates for staff to indulge her burgeoning interest in exercise science by taking courses in exercise physiology and biochemistry. "I ultimately developed this really strong interest in combining nutrition and exercise science," she said. "After the five years of the grant were up, I'd taken so much coursework, I had pretty much all my coursework done for a PhD and just needed to do a dissertation."

So that's what she did. Upon graduation with her PhD, she accepted a faculty position in the Department of Nutritional Sciences, where she worked with Drs. Tim Lohman and Scott Going on body composition and the integration of nutrition and exercise for bone health and osteoporosis prevention. During this time, she also became interested in sports nutrition and working with athletes, and she developed a number of Cooperative Extension programs to educate people across the state about bone health, nutrition, and exercise.

Her career trajectory took another unexpected turn when she was offered – and accepted - the post of department head, the first woman to be head of a science unit in the College of Agriculture & Life Sciences. She served as the Nutrition department head for five years, during which time she improved the department's financial standing, expanded the faculty roster, and reinvigorated the department's sense of camaraderie and teamwork.



Following her time as Department Head, Dr. Houtkooper became the Associate Director for the Cooperative Extension System, where she worked for eight years. "It was really great to be in a different kind of role providing leadership for promoting our health programs around the state," she said. "We also did a lot of work trying to increase visibility for all the outreach that goes on around campus." After a long and laudable career, Dr. Houtkooper can look back on her time at the UA with satisfaction: "I really feel like I've made an impact on people's health from a nutrition and physical activity perspective. And I was a mentor for a lot of graduate students, many of whom are faculty in the department now, which was really rewarding."



Undergraduates

Congratulations to Carolina Crisantes: Spring 2019 NSC Outstanding Senior



I had the pleasure of graduating with a BS in Nutritional Sciences, with a Business and Industry track. During my last 3 years of college I had the opportunity to volunteer my time with the College of Agriculture and Life Sciences (CALs) Ambassadors. In this leadership program, I helped recruit prospective students to CALs, serving as the face of the college. I travelled across the state and the country, growing personally and professionally. These professional skills, along with the scientific knowledge I acquired through the Nutritional Sciences program, enabled me to attend a summer internship at Shamrock Foods in the AZ Dairy Division. As the Quality Assurance Intern, I had the opportunity to learn about the food industry, applying standardized testing to ensure the quality and safety of Shamrock's dairy products. This experience drove me to become interested in product development.

Alongside Dr. Patricia Sparks, an Assistant Professor of Practice in the Department of Nutritional Sciences, I carried out an independent study project in the food science lab. In the lab, I created a ready-to-eat vegetable dip from organic eggplants. This project was geared towards increasing the amount of sustainable products in the market and help with food waste reduction.

As for my next steps, I plan to join the food industry as an advocate for sustainable products, as well as increasing the amount of healthier options to consumers.

Contributed by NSC graduate Carolina Crisantes Suarez: carocrisantes@email.arizona.edu

Sarah Turner Partners with the Tucson Police Department

My name is Sarah Turner, and this fall I will be entering my junior year of studying Nutritional Sciences. For the past few months, I have had the pleasure of working alongside the Tucson Police Department (TPD) to help educate and promote health and wellness throughout the department. Each month, we release a health and wellness newsletter that has a variety of information based upon suggestions from the department. The process of writing these newsletters has been a tremendous learning experience. In the beginning, I realized how much I was writing about nutrition and how complicated my articles appeared. After receiving feedback, I was able to adjust my writing to be more engaging and useful to the TPD. Throughout this experience, I have been able to write about macronutrients, eating out healthy late on the job, healthier drink options, and more. My main goal with these articles is to help encourage positive changes within the diet through substitutions or adding rather than completely excluding an item from the diet.

Recently, I have also had the opportunity to host a small lunch seminar. At this seminar, I was able to give nutrition information in a more personal environment where officers had the chance to ask questions. As I continue working with the TPD, I hope to have more opportunities such as that, so I may be better able to communicate and aid the officers. Writing articles for the TPD has been such a rewarding challenge for me. It has allowed me to understand how I must break down and communicate nutrition information to the public in a shorter, more engaging manner. It also has helped me realize my own limitations when it comes to nutrition knowledge and the importance of turning to research and other peers for help when needed. I hope to continue this positive work with the Tucson Police Department so that I may give back and help empower those who watch over the Tucson community.

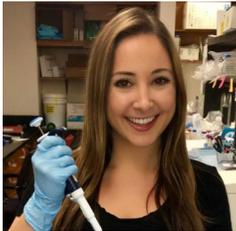


Contributed by NSC major Sarah Turner:
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Graduate Program

Spring and Summer 2019 Graduates



Danielle Felber defended her thesis entitled, "Regulation of Metal Transporters, ZIP14 and ZnT10, by Manganese Intake in Mice" and graduated with her MS degree this May. Danielle was mentored by Dr. Ningning Zhao. After graduation, Danielle plans to work as a clinical dietitian in Tucson.

Andrew Kunihiro will defend his dissertation entitled, "Bone-Specific Metabolism and Mechanism of Action of Turmeric-Derived Curcuminoids in Blocking Osteolysis in Breast Cancer and Other Resorptive Bone Diseases" and plans to graduate with his PhD degree this August. Andrew was mentored by Dr. Janet Funk. After graduation, Andrew hopes to secure a postdoc position in the field of nutrition and cancer.



Rachel Meyer defended her thesis entitled, "AMP-activated protein kinase activation impacts acinar cell proliferation and salivary flow rates following radiation therapy" and graduated with her MS degree this May. Rachel was mentored by Dr. Kirsten Limesand. Rachel will begin the PhD program in Nutritional Sciences at the UA this fall.

Martina Rahim-Sepulveda defended her thesis entitled "Attendance Barriers and Facilitators to the University of Arizona Cooperative Extension-led National Diabetes Prevention Program" and graduated with her MS degree this May. Martina was mentored by Dr. Vanessa DaSilva. After graduation, Martina will first work as a Nutrition Consultant for the Community Food Bank of Southern Arizona and then begin a dietetic internship at the Minneapolis VA Healthcare System in August.



Alumni Spotlight

Mary Jo Cantoria graduated from The University of Arizona in 2014 with a PhD in Nutritional Sciences and a minor in Molecular and Cellular Biology. Under the mentorship of Dr. Emmanuelle J. Meuillet, she studied how the glucose-lowering drug metformin inhibits fatty acid synthesis when cholesterol is present in pancreatic tumor cells.



Her interest in lipid metabolism led her to a postdoctoral fellowship at UT Southwestern Medical Center from 2014-2017. She was mentored by Nobel Laureates Drs. Michael S. Brown and Joseph L. Goldstein and by Dr. Luke J. Engelking. At UT Southwestern, she studied the molecular biology and biochemistry of lipid regulation by the liver and small the intestine, which exposed her to the novel technique of growing liver cells and small intestinal cells in three dimensional cultures called organoids.

In 2017, she started a postdoctoral fellowship with Dr. Curtis Thorne at The University of Arizona in the Department of Cellular and Molecular Medicine. At the UA, her work focuses on understanding how colon cells respond to environmental cues. She combines chemical biology, high throughput microscopy, and data analysis in collaboration with data scientists.

Mary Jo loves to play racquetball during her spare time and is part of the LA Fitness racquetball league. She is also interested in exploring the gastronomic culture that we have in Tucson.

Congratulations!



Current NSC PhD student and University Fellow **Lauren Meeks** took 3rd place in the 2019 Grad Slam competition. Grad Slam is a campus-wide competition hosted by the Graduate Center within the UA Grad College and the Graduate and Professional Student Council. The competition allows students in diverse majors to deliver a 3 minute talk to highlight their area of study. This is a great opportunity for students to

enhance communication while showcasing the innovative research and creative work happening within graduate education at the UA.

Academic Programs

New Degree Options in Food and Food Systems

At the beginning of the 2018/2019 academic year, The University of Arizona launched two new opportunities for undergraduate students to major or minor in the broad study of food. Students can seek a bachelor of art in Food Studies within in the College of Social and Behavioral Sciences, or a bachelor of science in Nutrition and Food Systems in the College of Agriculture and Life Sciences within the Department of Nutritional Sciences. Students in both degree programs share the same core curriculum to gain depth of historical influences that shaped our current food system and the global and local challenges we face today and tomorrow.



The Nutrition and Food Systems degree program offers context to the complexity of our global and local food systems. Students gain insight, skill, and experience to be effective change-makers for a more sustainable, just, and equitable future.



Students examine the grand challenges and opportunities within our food system. This includes sustainable agriculture, food policy and economy, and food literacy and community resilience. Sustainable agriculture refers to the methods in which industrial and small-scale farms grow food and affect soil as well as the ecological and environmental impacts of climate change on food production. Food policy and economy encourages students to take a critical look at how policies, politics, power and money shape agriculture, food, diets, and public health. Food literacy and community resilience provides an evaluation of grassroots movements and first-hand experiences within food movements.

For more information, contact Assistant Professor of Practice Rani Olson: ranio@email.arizona.edu

Invest in Nutritional Sciences

Supporting the Department of Nutritional Sciences has never been easier! All contributions are made to the UA Foundation, a 501(c)3 organization. Through this foundation donors may choose how their gift is applied. All gifts are tax deductible. Visit <http://nutrition.cals.arizona.edu/invest> for direct links to the UA Foundation for secure, online giving.

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