



# Animal & Comparative Biomedical Sciences

Feature

## ISSUE HIGHLIGHTS

### Research



ACBS faculty and students attended the Reciprocal Meat Conference to present their current research. All seven student attendees also participated in the Iron Chef competition

- Page 8

### Teaching



Drs. Dieter and Netzin Stekliis continue to be fascinated by the overwhelming attraction students have to spending time with animals during their campus "Animal Encounters" event.

- Page 4

### Extension



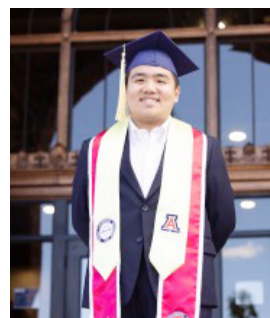
Dr. Betsy Greene traveled the state throughout the spring and summer presenting important horse health and management topics to several of Arizona's Tribal communities.

- Page 10

## ACBS Food Safety Student Awarded Merrill P. Freeman Medal

ACBS alumnus, Nguyen Dang was awarded the Merrill P. Freeman Medal by the University of Arizona for his extraordinary accomplishments both in and out of the classroom.

The award is named in honor of Merrill Freeman, who served the University of Arizona as a regent and chancellor. Nominated by faculty and peers, Dang was selected based on his determination, notable achievements, outstanding character, and his positive contributions to the U of A and the community. Dang was recognized during the Arizona's 160th Commencement ceremony held May 10 at Arizona Stadium.



Dang graduated this spring with a Bachelor of Science in food safety with a minor in microbiology from ACBS CALES. An international student from Vietnam, he is the first and only person in his family to study abroad in the United States. Understanding the difficulties that other international students face, he decided to give back by joining the Global Ambassador program and co-facilitating different activities via the International Student Service to help students feel at home in Tucson.

Dang is a member of Omega Delta Phi Fraternity, where he has been involved in many volunteer opportunities, such as Tucson Meet Yourself and Adopt-a-Street. From fall 2020 to spring 2023, he was involved in the Campus Pantry and Campus Closet, advocating for food and clothing security on campus. Also in spring 2023, he became the chair of the Equity Committee in Students for Sustainability.

At the same time, he served as an undergraduate lab assistant in associate professor Sadhana Ravishankar's lab, where he assisted in a U.S. Department of Agriculture (USDA)-funded project investigating the safety and quality of melons in 2021. He presented his research at the 2023 U of A Food Safety Conference and participated in the USDA National Institute of Food and Agriculture-sponsored internship at the International Fresh Produce Association in the summer of 2023.

He has been a peer mentor, helping guide incoming first-year students and students with academic challenges and a tutor and preceptor for two upper-division courses in his college. He was also named the 2024 ACBS Spring Outstanding Senior in Food Safety, awarded the Global Wildcat Award, the Stanley M. Alcorn Memorial Scholarship and the Harry W. and Elsie M. Porterfield Scholarship and was named to the Dean's List multiple times.

After graduation, Dang will pursue a master's degree in applied biosciences from U of A and will continue his research in food science and food microbiology.

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<https://news.arizona.edu/news/seven-graduating-students-receive-awards-commencement>

# From the Director



As I sit to write this, we are about three weeks into the summer semester. The spring semester wrapped with a wave of exams, activities, and celebrations for our graduating students. It was amazing to watch both undergraduates and graduate students receive their diplomas and celebrate with their loved ones. I never attend a graduation event without reflecting on the outstanding accomplishments that bring a student to that point. Hard work, perseverance, and sacrifice are three words that always come to mind when I think about the steps involved in finishing a degree. Another word that

doesn't always come to mind, but that I have been thinking about more and more across the last few months, is balance.

When I was younger, I seemed to be able to balance the demands of life without necessarily realizing that I was going so. College life was a blur of tasks that had to be accomplished, papers that had to be written, exams that had to be taken, 8:00 am classes that I had to get out of bed in time for, etc. However, none of those demands ever dampened my enthusiasm for extra late-night debates/conversations with my fraternity brothers/friends, midnight burgers at local restaurants, constant fun school activities, or even the odd jobs that I used to fund my midnight burger and beer runs. Of interest, my college was in a 'dry county,' and it was a 60-mile round trip to the closest place where alcohol was sold. Thus, one needed gas money AND beer money! As a related digression, I believe the oddest job that I had while in college was the semester that I spent working as a magician's assistant; please don't ask me to reveal any trade secrets!

At that younger stage of my life, I didn't seem to have to think about balance and how to make sure I finished all the required tasks, while also preserving my mental health and wellbeing. I can't say that the same is true today, and many days the list of tasks for all of us seems so long that I'm not sure it can all be completed. As such, it's easy to get bogged down in the list and forget the many other things that provided 'balance' and used to come so easy those many years ago.

What brings us balance is different for each of us, and it's important to figure out what works for you. Whether it's reading a book, watching a movie, spending time with a spouse, gardening, spending time alone, playing with pets, etc., activities are crucial for helping us reset and find the energy to move forward, even when times are challenging. Many of us have felt and continue to feel the uncertainties associated with the University's centralization and financial changes and wonder how these changes will affect our ability to deliver on our land grant mission during the coming academic year. Despite these uncertainties, I have the utmost confidence in all of you and your abilities to weather any changes that may come our way. However, I also want to encourage each of you to think about what brings you balance and then further encourage you to make time for these things this summer and in the coming academic year. Doing so will only help us maintain individual perspective and help us as part of the larger ACBS Team.

Have a wonderful summer!

- **Scotty**

## D. Scott Merrell

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The University of Arizona

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LEARN MORE AT [ACBS.ARIZONA.EDU](https://ACBS.ARIZONA.EDU)

## ACBS Research

Update - In my Spring 2024 column, I indicated that individuals could find research publications from our faculty by searching the name of any of our faculty at <https://pubmed.ncbi.nlm.nih.gov/>. I was not aware that some of the publications of our Extension and Animal Science faculty do not appear in this database. I regret this oversight and want to make sure that you are able to access all of the latest research being conducted by all of our faculty. Two other suggested options are to search Google Scholar (<https://scholar.google.com/>) with the faculty name and/or <https://extension.arizona.edu/pubs> with any search terms of interest. Combined, these three databases should capture the majority of the work being conducted by our outstanding ACBS faculty.

## Photo Credits

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Page 1 - Freeman Award and Goat - Chris Richards/  
University Communications

Page 3 - Club - Micro Cats

Page 4 - All photos Chris Richards/University  
Communications

Page 5 - ACBS 340 - Kathy Broneck; Alumni - ALVSCE  
Development

Page 6 - Alumni - ALVSCE Development

Page 7 - All photos - Amber Hubbell

Page 8 - All photos - Duane Wulf

Page 9 - Fiona McCarthy - Rosemary Brandt/CALES

Page 10 - All photos - Betsy Greene

Page 11 - All photos - Gerardo Lopez

Page 12 - Photo - Gayatri Vedantam

Page 13 - All photos - Arun K. Dhar

Page 14 - Flamingos - Trilce Estrada Olvera/Arizona  
Republic

# J. Scott Wilbur Named Cardon Academy of Teaching Excellence Fellow



The Cardon Academy of Teaching Excellence (CATE) announced the induction of three new Fellows, including J. Scott Wilbur, ACBS associate professor of practice, among the inductees. This honor serves to recognize exceptional instructors within CALES.

Dr. Wilbur's application was noted as particularly powerful in demonstrating his commitment to developing fundamental concepts for undergraduates in the

biological sciences, collaborative exploration of best practices, support of his colleagues, and commitment to the teaching mission of both CALES and the University at large.

Being invited to become a CATE Fellow is a high honor and signifies recognition of excellence in teaching by one's peers. Membership in CATE is career-long and is not just honorific. Inductees join CATE Fellows in active service, providing programs and workshops throughout the college that promote excellence in teaching and offer guidance and recommendations to the college on critical issues related to instruction.

Congratulations Dr. Wilbur on this outstanding achievement!

## Faculty Achievements

### Promotions

On behalf of everyone in the School of Animal and Comparative Biomedical Sciences, we would like to extend congratulations to the faculty who received promotions and/or tenure or continuing status, effective July 1, 2024, or with the beginning of the next academic year. This is a professional milestone and represents many years of hard work and dedication. Join us in congratulating them on this signal achievement.

#### Promotion to Dairy Specialist

- Duarte Diaz

#### Promotion to Associate Professor with Tenure

- Kerry Cooper
- Frank Duca

### Awards

#### Zelieann Craig

- Outstanding Graduate Mentor Award, College of Pharmacy
- Above and Beyond Faculty, ACBS

#### Sadhana Ravishankar

- Tech Launch Arizona CALES representative for the Faculty Innovation Ambassadors Program. This inaugural program began in January 2024.

## 4 ACBS Students Launch Micro Cats - Microbe-Host Interactions Colloquium

Micro Cats is a Microbe-Host Interactions Colloquium with an emphasis on professional development and resources for women in STEM. The goal of the colloquium is to create a research cohort where invited speakers from diverse backgrounds contribute to an overall theme of microbe-host interactions.

Micro Cats was initiated by four microbiology graduate students, Allison Sullivan, Beth Howard, Jennifer Bosquez, and Katie Cocchi, who had a desire for more specialized talks and a platform for roundtable discussions with research professionals who could provide current information on the field and industry of microbiology. With this objective in mind, they submitted a proposal for startup funding and received a **Professional Opportunities Development Funding Award** sponsored by the University's Graduate and Professional Student Council. They used the seed money to kick off Micro Cats events in Spring 2024.

The meetings have allowed undergraduate and graduate students to discuss microbiology topics, engage with faculty and industry members, meet current researchers who offer advice and mentorship to young scientists, and provide a space for community and connection.

Events included a journal club/meet the author event with Dr. Kate Rhodes from the Department of Immunology, a micro-lunch where recently retired professor Dr. Maggie So discussed her career and journey as a research professional, and an industry

discussion with Dr. Liliana Rounds, a senior scientist at Roche Tissue Diagnostics, who discussed her experiences as an

industry scientist. Additional colloquium events included a social hour, career development with Shawn Nordell from U of A Grad Career Services, a journal club to discuss a recent paper on microbe-host interactions, and an end-of-year ice cream social.

Overall, the colloquium is designed to be a platform to build on a sense of community within the university, provide networking opportunities and a supportive space for women in STEM to develop as research professionals, and to introduce students to available resources so that they find success post-graduation.

Micro Cats would like to give a huge thank you to Dr. Merrell for writing a generous letter of recommendation and endorsing the group, as well as respective academic mentors for their support and guidance in this process.

The colloquium is planning events into the Fall semester and welcomes students to join and become a Micro Cat! Bring your friends, a thirst for knowledge, and a hunger for food!



# Why Do Animals Fascinate Humans?

We are always pleasantly surprised by the crowds of students (and also faculty and staff) who are attracted to the farm animals we arrange to bring to the campus mall once a semester as an extra credit assignment. The campus “**Animal Encounters**” event held on **April 25, 2024**, was a repeat of many such visits since 2015, when we began teaching the general education course **ACBS 160 Human and Animal Interrelationships**, but the throng of students and others has not diminished, with 150 of our students signing in. A horse, goat, or chicken is hardly exotic. It’s easier to understand why lions, tigers, or bears (and maybe a wildcat or two!) would be a magnet for attention, as evidenced by the persistent popularity of zoos. But why the continued fascination, the urge to make contact with an ordinary farm animal?

A mundane answer is that students want to earn points for their grade in class, so there really is no fascination or desire to interact with a hairy campus visitor. After all, the opportunity to interact with a horse, goat, sheep, rabbit, or chicken is a class activity for extra credit points, and thus students come to interact with the animals solely to improve their grade in the course. However, there are many reasons to think that most visitors find the experience inherently interesting and pleasurable. For one, most long to touch an animal, and they stay longer than required for the extra credit activity - to take a selfie with a domesticate and post an educational comment on social media. Second, many students not enrolled in the class, as well as non-student members of the campus community, come to interact and linger with the animals. Something deeper than just picking up a few points of extra credit is obviously going on here.

Deeper reasons for our fascination with animals - both domestic and wild - are explored in our ACBS 160 Human and Animal Interrelationships class, drawing on ideas previously proposed by scientists studying human-animal interactions. Prominent among the proposed reasons is our long evolutionary connection to other animals. Prehistoric hunter-gatherers hunted a variety of large mammals, and their intimate knowledge of and fascination with ice age mammals is reflected in the beautiful and detailed European cave art as old as 30,000 years before present. Our ancestors formed a lasting cooperative relationship with wolves, “ruffly” around the same time, who evolved into one of our most beloved pets today. In fact, so close is the relationship to dogs today that we both get a “high” by gazing into each other’s eyes: Mutual gazing increases brain levels of the neuro-hormone oxytocin in us and the dog, inducing a pleasurable feeling that

probably is mildly addictive to both. The pleasure we get from watching and touching other furry animals, like horses, sheep, and goats, may well be a second reason for our attraction to animals. Gentle human touch is a powerful bonding mechanism among humans (also involving oxytocin), and it may bond humans to other animals too, though this is less explored. It may be part of the reason why human contact with dogs and horses has well-documented therapeutic, stress-reducing, effects. Despite this shared long history of interactions with animals, there are today individual differences in the desire to be with animals, in comfort level around animals, and, likely, in the therapeutic benefit people get from animals. For example, in watching the students around “Rosie” the horse, those that grew up with horses were eager to approach and had a greater comfort level and often a feeling of nostalgia. Other students, with no horse experience, were still attracted to the horse but ambivalent and unsure of how to interact with her (see the photos showing both responses to Rosie).

Prior to the Industrial Revolution in the mid-19th century, most people in the US lived on farms in rural areas, coming into contact regularly with a variety of domestic animals and nearby wild animals. As a result, rural folks had a high level of comfort and confidence in their interactions with animals. Subsequently, however, people became separated from livestock with a move from farms to cities that offered regular employment in factories. The enduring fascination with and attraction to animals was partly satisfied by the growth of city zoos and travelling circuses. Thus, the “Animal Encounters” on campus rekindle that ancient desire and pleasurable feeling from contact with animals we became separated from. It reminds us of a deep connection that is a vital part of our human nature.

- Dieter Steklis and Netzin Steklis  
ACBS 160 Professors

Photos clockwise from top right:

- Two students visit with a miniature horse.
- Students enjoyed spending time with the goat.
- Some students were confident in their interactions with the horse, Rosie.
- Other students were not as confident with Rosie but still interested in meeting her.



# Bridging Classroom Learning with Real-World Impact: The Power of Self-Initiated Application

Transferring classroom knowledge and skills to real-world applications is a cornerstone of effective education. Educators often strive to bridge this gap, equipping students with the tools to excel beyond academic boundaries. It's a goal that resonates deeply with both educators and employers alike, and its significance cannot be overstated. Yet, what if students could autonomously apply their learning, seamlessly integrating it into their professional endeavors? The intersection of education and practical experience yields profound results, as exemplified by the experiences of students in ACBS 340: Marketing, Media, and Communication.

In ACBS 340, students were tasked with creating social media campaigns centered around animal science topics of personal significance. From advocating for animal welfare, to promoting pet vaccinations, to endorsing sustainable meat production, students delved into the intricacies of digital marketing and communication strategies. Using tools like Adobe Creative Cloud Express and video equipment, they crafted persuasive messages tailored for a variety of social media platforms.

The true testament to their learning journey emerged not just in the classroom, but beyond its confines, as students embraced the opportunity to apply their newfound skills in their professional lives. Without any prompting or incentive, students took it upon themselves to collaborate with their employers in veterinary clinics, animal shelters, beef sales, and even family-owned restaurants and dance studios. They utilized their expertise to enhance their employers' social media presence and launch campaigns aimed at promoting pet adoption and responsible animal care.

One of the students expressed her gratitude for the course, stating that the class truly has relit her creative spark and changed her perspective about social media. She highlighted how her

perception shifted from viewing social media solely as a platform for entertainment to recognizing its potential for spreading awareness and advocating for causes close to her heart. This led her to volunteer to create social media posts for her animal clinic. Her journey epitomizes the shift from passive consumption to proactive engagement, a transformation mirrored by her classmates.

Another student shared her newfound perspective on social media's role in professional endeavors. From a rudimentary understanding, she transitioned to viewing each post as a component of a larger narrative, leveraging strategic communication to amplify her impact. Her vision extends beyond the course, as she is leveraging social media to enhance veterinary care in her employer's veterinary clinic and envisions integrating these skills into her future career to support better vaccination efforts for animals.

These anecdotes highlight the transformative power of experiential learning. By bridging the gap between theory and practice, educators empower students to apply their skills effectively in real-world settings. This proactive approach fosters a sense of ownership over education and encourages students to become proactive agents of change in their chosen fields.

- Kathy Broneck  
ACBS 340 Professor



Example of student created social media campaign.

## Two ACBS Alums Receive CALES Honors

A celebration dinner was held Saturday, May 4, at the University of Arizona Student Union, to recognize the impactful contributions of the 2024 CALES Annual Award winners.

### Arizona Alumni Young Professional Achievement Award

**Tiffany Selchow** is a proud Wildcat with a commitment to the livestock industry and agricultural education. She graduated with a bachelor's degree in animal sciences and has since exhibited unparalleled dedication and excellence in her professional endeavors. Currently, she is the Director of Social Media, Consumer Outreach, Consumer Education, and Producer Communications at the Arizona Beef Council.

Her gift for understanding a challenge from multiple angles makes her a talented consensus builder. She has risen in leadership in organizations like the CALES Alumni Council and Project CENTRL's Alumni Council, and she currently serves as the President of the Board for the Arizona National Livestock Show.

Tiffany is respected throughout the Arizona agriculture community for her invaluable knowledge of the state's beef

community, social media marketing and storytelling, and for her passionate dedication to promoting agricultural education. She is currently committed to fostering knowledge and understanding for nutritional sciences students by coordinating tours that highlight various facets of Arizona agriculture.

Tiffany Selchow has proven herself as an outstanding professional, community leader, and alumni ambassador.

### Outstanding Achiever Award

**R. Dean Fish** has achieved a remarkable career in the livestock industry. With a bachelor's degree and PhD in animal sciences from the University of Arizona, he started as a County Extension Agent in Santa Cruz County and is currently the ranch manager for the Santa Fe Ranch and owner of Anchor F. Cattle Company, where he is a leader in sustainable agriculture.

(Alumni continued on 6)



Dean has a passion for livestock and a tireless dedication to education that he uses to produce quality cattle and to educate producers across the nation. He also teaches local youth and other individuals and groups from the Santa Fe Ranch.

He has served on the Arizona Beef Council, the Arizona Cattle Growers' Association, and was a founding member of the Champions for Youth Foundation. Dean is a past president of the Southern Arizona Cattlemen's Protective Association and a member of the National Cattlemen's Beef Association Stockmanship and Stewardship Team. He manages

the Santa Fe Ranch Foundation and is a member of the Los Charros Foundation Board, which has awarded over \$700,000 to students in Southern Arizona. As an auctioneer, Dean has helped raise millions of dollars for worthwhile charities in Arizona.

The College of Agriculture, Life and Environmental Sciences is proud to present R. Dean Fish with this award in recognition of his contributions to Arizona agriculture through his exceptional career and outstanding accomplishments.



**Originally published by ALVSCE Development**

<https://invest.cales.arizona.edu/2024-awards-night>

## Congratulations 2024 Spring ACBS Grads!

### **Animal Sciences**

#### **Science and Pre-Professional**

Audrey Lydia Bishop, BS  
Diana Marie Carr, BS  
Hector Anthony Castillo Jr, BS  
Kayla Simone Class, BS  
Peyton Dayle Coleman, BS  
Aaike Emme Dergance, BS  
Celina Margaret Dunn, BS  
Morgan Danielle Finelt, BS  
Samantha Loving, BS  
Hannah Martinez, BS  
Crystal M Murray, BS  
Taylor L Owens, BS  
Holland Chivonne Ryberg, BS  
Nathalie Yolanda Sotelo, BS  
Olivea Spencer, BS  
Lisset D Valera, BS

#### **Animal Industry**

Kenyan Siavash Kerman, BS  
Meranda Angel Martinez, BS  
Vanessa Perez, BS  
Kendall Fait Peterson, BS  
Bryson Christopher Prather, BS  
Emily Rose Yu, BS

#### **Equine**

Rylin Jade Medcoff, BS  
Samantha Valdez, BS

#### **Race Track Industry**

Ben Theodore Atkinson, BS

#### **Food Safety**

Hoang Nguyen Dang, BS

#### **Microbiology**

Anusha Harishankar, PhD  
Rebeca Altamirano, BS

Alessandro Enriquez Bolus, BS  
Amanda Lynn Dahir, BS  
Joshua Robert Duran, BS  
Jessica Tiara Escarcega-Medina, BS  
Dustin Allen Loso, BS  
Elizabeth Maria Martinez, BS  
Connor Bryan Mckinney, BS  
Allienna Christine Nezelek, BS  
Allyson A Placko, BS  
Taylor A Rathbun, BS  
Curtis M Redos, BS  
Chloe Scott, BS  
Miely Alisha Suarez, BS  
Julie Anne Timmermann, BS

### **Veterinary Science**

#### **General**

Maria Teresa Acosta-Perez, BS  
Arelly Evelyn Alcaraz, BS  
Jasmine Araujo, BS  
Celina Olga Arredondo, BS  
Isabela Renee Barraza, BS  
Deanna Joy Beishuizen, BS  
Sophia Michelle Bends, BS  
Hailey Marie Blake, BS  
Gennavive E Bordeaux, BS  
Evelyn Mae Rain Brown, BS  
Meghan Lilianna Charbonneau, BS  
Savanna Rae Cooper, BS  
Emily Elyse Aijie Davis, BS  
Clarissa I Dolezal, BS  
Joshua Eisenberg, BS  
Kylee Danielle Engelke, BS  
Katelyn Marie Ezzo, BS  
Abril Molina Fimbres, BS  
Jolynn Noelle Fleming, BS  
Shai Nicole Forman, BS

Ela Pilar Arminda Fuentesvilla, BS  
Makena N Hadley, BS  
Peyton E Hathaway, BS  
Sophie Yong Yi Hejl, BS  
Nicholas James Hudson, BS  
Grace Marie Hufford, BS  
Sana Ivanovich, BS  
Arryanna Emily-Janice Jackson, BS  
Audrey Brown Johnston, BS  
Dongjun Kim, BS  
Dakota Marie Kirk, BS  
Elizabeth Christine Little, BS  
Olivia Marie Marsh, BS  
Mila Tra Nguyen, BS  
Hailie Lois Paul, BS  
Chloe Ann Reeves, BS  
Alani Rhodes, BS  
Kiley Rischpater, BS  
Kailyn Rodriguez, BS  
Angelica Monique Romero, BS  
Alexandra Paige Russo, BS  
Yvette De Santiago Sandoval, BS  
Alexa Grace Sell, BS  
Aleah M Silva, BS  
Jelena Spegar, BS  
Brittany Elizabeth Swennes, BS  
Danya Marithza Valle, BS  
Anna Catherine Votava, BS  
Kane Michael Wotell, BS  
Cassidy Lynn Zimmerman, BS

#### **Applied Animal Behavior**

Sarah Elizabeth Fiddler, BS  
Mallory M Hutchinson, BS  
Kieri C Palacios, BS  
Isabel J Tejada, BS  
Ashley Nicole West, BS  
Lisa Zhang, BS

# Newborns Bring New Experiences

Spring is always an exciting and busy time at the Campus Agricultural Center (CAC). The 160-acre research, teaching, and extension facility is located three miles north of the university's main campus at the intersection of Campbell Avenue and Roger Road in Tucson. The CAC is central to the university's research and teaching mission and provides a home to a multitude of programs, including the U of A teaching cattle herd and sheep flock.

The spring semester offers many opportunities for students to get hands-on animal handling experience, from taking the ACBS Calving Management course, to pursuing independent study, to volunteering. Farm Manager and Instructor Amber Hubbell says, "It was such a pleasure to have so many students engage with the animals this Spring. I enjoy teaching students about cattle production and helping them gain more knowledge and experience, which I hope they will carry into the field".

Whether in a course, volunteering, or working for independent study credits, students are able to witness live births and handle newborn calves. This includes applying ear tags to the calf for identification, spraying the navel with iodine, weighing the calf using a foot measurement tape, giving an oral dose of selenium and Vitamin E, and then - of course - taking pictures of the new mom and baby, all while not stressing the cow. This gives the students the time to observe normal behavior between a cow and her calf, which is important when identifying when something is not normal indicating that interventions might be needed for the welfare of the animals.

In addition to monitoring cows calving and providing neonatal care to calves, students participate in palpation of pregnant cows to determine gestational age. The spring would not be complete without the addition of new lambs. Students experience lambing, low-stress handling of newborn lambs, and shearing of the adult sheep before the hot summer.

Undergraduate student Geena Kollman has worked at the CAC for the past two years in several different capacities. About her experience, she says, "The Campus Ag Center was my first introduction to large animals, and I truly could not have asked for a better experience. By being an independent study student,



Students gather around a newborn calf as they gain hands-on experience in neonatal care hours after birth.

preceptor, and volunteer, I have learned so much about caring for large animals from not only Amber Hubbell but also from my classmates".

She goes on to say, "Through participating in these hands-on experiences, I have developed an intense passion and interest in large animals, and I hope to continue this interest into my studies to obtain my DVM and become a veterinarian."

This semester was a great semester! Students were able to gain friendships, gather knowledge, and help provide the best care to the ACBS teaching animals. A special thanks to all the students that came to volunteer this semester - Abby Burmaster (Junior, Vet Sci), Aracely Castillon Rocha (Sophomore, Vet Sci), Hayley Hannaman (Junior, Vet Sci), Colttton Kirkpatrick (Sophomore, Vet Sci), Geena Kollman (Junior, Vet Sci), Emily Martinez (Sophomore, Ag Tech Mang and Educ), Kelsey Mikesell (Sophomore, Animal Sci), Jannett Reyes (Junior, Animal Sci), Conner Rigo (Junior, Animal Sci), Holland Ryberg (UA 2024 Graduate Vet Sci and Class of 2028 University of Tennessee Veterinary Medicine), Izzy Taft (Junior, Animal Sci), Anthony Vazquez (Junior, Ag Tech Mgmt and Educ), Domonique Waldron (Sophomore, Animal Sci).

## Related News

UArizona Campus Agricultural Center district listed on National Register of Historic Places

<https://news.arizona.edu/news/uarizona-campus-agricultural-center-district-listed-national-register-historic-places>



# 2024 Reciprocal Meat Conference

A University of Arizona delegation of ten attended the 77th Reciprocal Meat Conference (RMC), the annual meeting of the American Meat Science Association, in Oklahoma City, OK, June 15-19, 2024. U of A attendees included faculty members Drs. Samuel Garcia and Duane Wulf, FPSL manager Javier Valenzuela, graduate students Emmanuel Fatola, Lucila Garcia, and Megan Sorenson, and undergraduate students Alex Badorek, Bryson Prather, Sco Scofield, and Lindsay Stoltz. The 2024 conference was the largest RMC ever with 1,050 attendees and 110 speakers.

Emmanuel competed in the MS Poster Competition presenting his research on “Effect of Novel-Environment Stress on Meat Quality, Steak Tenderness and Retail Case-Life of Beef Derived from Beef x Dairy Heifers.” Lucila presented the research poster entitled “Fatty Acid Composition of ‘Grass-Fed’ and ‘Grain-Fed’ Beef Raised in Southeast Arizona.”



The U of A undergraduate quiz bowl team (Alex, Bryson, Sco, and Lindsay) was coached by Megan, assisted by Lucila, and finished with a record of 2-2, reaching the final 16 of 37 teams in the double elimination tournament.

All seven students also participated in the Iron Chef competition, where Lucila's

team won the People's Choice Award with 'Berry Cobbler Chicken & Waffles', Alex's team won Champion in the Pork Division with 'Cinnamon Bacon Strudel Muffins and Apple-of-our-Eye Pork Chops with Maple Apple Glaze', and Sco's team won Champion in the Poultry Division with 'Chicken and Crepe Enchiladas'.

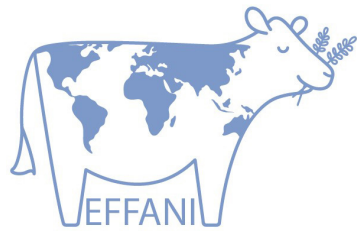
The T-shirt designed by the U of A Meat Science group, which

highlighted the importance of meat in brain development with the phrase 'Be Smart – Eat Meat', sold at the benefit auction for \$1,700! Megan won an AMSA Scholastic Achievement Award, and all seven students participated in the Processed Meats Judging Contest.

Photos clockwise from top right: The University of Arizona delegation at RMC; U of A T-shirt sells at benefit auction; Lindsay competes in the Iron Chef.



# ACBS Developed Technology Behind a Start-up Focused on Improving Feed Efficiency in Animal Agriculture



Feed is the largest single expenditure in production animal agriculture. It commonly constitutes 70-80% of production costs in the dairy and beef industry. Since feed is sold on a commodity market, there is little an animal agriculturalist can do to control this cost, other than

decreasing the number of animals on feed, which then leads to a decrease in production.

Feed efficiency is a measure of how many pounds of feed it takes to produce one pound of product (weight gain, milk, or eggs). Improvements in feed efficiency can simultaneously decrease feed costs while increasing or maintaining production. Given its outsized role in production costs, cutting feed costs while maintaining production is of utmost importance to profitability in production animal agriculture.

In addition to improving profitability, improvements in feed efficiency lower greenhouse gas emissions from the animal and, on a per-unit of product (meat, milk, or eggs) basis, decrease the water use and greenhouse gas emissions associated with feed production.

Breeding to improve feed efficiency has been limited by a lack of tools to identify feed-efficient animals. To identify a feed-efficient animal, one must measure individual animal feed intake and growth, milk, or egg production. Although it is possible to measure individual feed intake in cattle and pigs in confinement, this requires specialized equipment and significant labor costs.

The Renquist lab, while working on tilapia and mice, developed a test to measure skeletal muscle metabolic rate and showed that animals with a low skeletal muscle metabolic rate were more feed-efficient. Dr. Renquist then worked with TechLaunch Arizona to patent this test and started Effani Agriculture Inc. with the goal to bring this test to market and help animal agriculturalists better select for feed-efficient animals.

Since starting Effani Agriculture, Dr. Renquist has collaborated with Dr. Geoff Dahl at the University of Florida to apply this technology in dairy cattle. The results of that test, presented at the American Dairy Science Association Meetings held June 16-19 in West Palm Beach, showed that feed-efficient cows (top 50% for efficiency) produced 3500 lbs. more mL per lactation than feed-inefficient cows (bottom 50% for efficiency). Effani has automated this test to ensure that producers can apply it and get accurate results on-farm. Effani hired James Loughhead, a University of Arizona animal science alum and member of the Ag100, to lead their sales efforts.

Dr. Renquist, who grew up on a farm and feedlot in northeastern Colorado, is excited to see technology developed in his U of A lab get out to the industry and improve profitability in animal agriculture. “I’m proud that our lab created a tool that increases both the sustainability of animal agriculture and profitability for producers. I look forward to applying this test on beef and dairy operations in Arizona, throughout the US, and worldwide.”

Dr. Renquist previously founded GenetiRate, a start-up focused on selecting faster growing fish, that was purchased by IMV technologies (L’Aigle, France) in 2021. That technology is expected to be available in the aquaculture market in 2024.



# Biocuration Efforts Help Biologists Speak the Same Language



Imagine you're a biologist looking for all the scientific information published about one specific gene. Chances are, you'd do a series of database searches using the gene's name. But what if the gene you're interested in isn't the only one with that name? What if the gene you're interested in has multiple names? How can you be sure that you're getting complete, accurate information?

Enter the biocurators.

"We're the library scientists of the biology world," explained Fiona McCarthy, a professor in the School of Animal and Comparative Biomedical Sciences (ACBS). "We are the people who are organizing biological data in the databases so that biologists can come in and get the information they need."

Like librarians and museum curators, biocurators manage collections, ensuring that they're comprehensive, organized and easy to use. Their collections deal with biological data like gene or protein sequences, some of which may be newly discovered, some of which may have been given several different names, and some of which may share a name with a completely different gene. The job of the biocurator involves standardizing and annotating these data so that other biologists can understand them.

"It's really important that biologists are able to speak the same language," McCarthy said. "Now that we can sequence genes relatively easily, we're discovering so much biological data that needs to be sifted through and organized. That's what we do - I like to think of it as changing data into information."

## Chickens and eggs – expanding genetic databases to include bird genes

Most international biocuration efforts have focused on genes found in humans and other mammals, but lately there's been a push for standardizing gene names for all vertebrate species, including birds and reptiles.

ACBS researchers are on the front lines of these efforts. They've been tasked with standardizing names for chicken genes as part of a multistate program funded by the US Department of Agriculture (USDA).

According to McCarthy, the challenge ACBS biocurators face is that while many of the genes that have been identified in the human genome have functions that translate easily to other mammals, they don't translate easily to birds. Since gene names are generally based on what scientists believe a gene does, this presents a real problem.

"For instance, let's say you have a mammal gene named for its role in placentas," she said. "But then you find that birds also

have a copy of this gene. Birds don't have placentas, so maybe that gene doesn't really do what we thought it did. We've got to go back and reorganize our cataloging system to make it much more inclusive."

The USDA has chosen to use chicken genes as a model for other bird species because of the close relationship between chickens and humans.

"Chickens and other poultry are an important protein source in the human diet," McCarthy said. "Understanding their genetics will help us improve poultry health and productivity. Chickens are also used as a biomedical model to study immunology and developmental biology."



## Supported by students

According to McCarthy, much of the chicken biocuration work at the University of Arizona is supported by ACBS undergraduate students.

"It makes for a great undergraduate research project because it allows the students to bring in all these pieces from different classes and see how it all comes together," she said. "They're getting to apply some genetics, some evolutionary history, some immunology, and combine them to answer the questions we're dealing with."

Armed with laptops, an internet connection and access to biological databases, students dive into data sets to investigate whether a given gene has ever appeared in published papers, and if so, under what name. Things really get exciting when McCarthy and her team encounter unfamiliar gene sequences – or find familiar genes in unexpected places.

"Computers are really good at predicting things we already knew about," she explained. "So when we have a sequence that looks similar to something we've seen before in mammals, computers are great at identifying it and predicting what it does. But when we find a gene sequence we either haven't seen before, or one that seems to be doing something different from what we thought it did, that's where we need humans to go in and figure out what's going on."

Participating in McCarthy's lab offers students the chance to contribute to publications that help scientists all over the world unambiguously report their findings.

"I've got two papers sitting on my computer right now that students have worked on," she said. "Every year in January, we have a big meeting for everyone working on this USDA project, and I always like to highlight the students whose work is supporting this research."

- Erin Schauer

CALES Marketing and Communication

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<https://cales.arizona.edu/news/gene-any-other-name-biocuration-efforts-help-biologists-speak-same-language>

# 4-H Horse and Livestock Judging Event

The 4-H Horse and Livestock Judging Events took place at the University of Arizona Al-Marrah Equine Center (AMEC) on June 22. The contests were an opportunity for junior and senior 4-H youth members to practice and learn competitive judging of horses and livestock. The horse judging event also served as a qualifier for the 4-H senior members to compete at the National Western Contest in January. The top four scoring senior horse competitors and the fifth place (alternate) will be given the opportunity to train with the Arizona Horse Judging Coach and compete in Colorado in January 2025.

“Both contests were very successful, and it was a great opportunity to utilize AMEC facilities and expose Arizona youth to the U of A for potential recruitment down the road,” said Betsy Greene.

This was a team effort, with AMEC site support, Haley Collins and her students from ACBS, Cooperative Extension 4H specialists, agents, and volunteers.



# ALIRT Joint AZ/NM First Responder Training

Arizona Livestock Incident Response Team (ALIRT) members, including Dr. Betsy Greene and Debbie Reed, traveled to Socorro, New Mexico, to participate in a joint New Mexico/Arizona ALIRT training workshop and exercise. The training included a day of preparation and review of the Incident Command System (ICS) which was then used by participants to complete a full-scale response exercise the following day.



The respective State Veterinarians for New Mexico and Arizona each set-up their command centers with the ALIRT veterinarians and responders conducting scene evaluation, necropsies, and sample collection.



## ALVSCE Spring 2024 Outstanding Team Award

The Arizona Livestock Incident Response Team (ALIRT) was awarded the ALVSCE Spring 2024 Outstanding Team Award for their work in responding to unexplained livestock deaths around the state and informing livestock producers of potential threats to their animals.

U of A Team members included: Betsy Greene, Debbie Reed, Ashley Wright, Nate Brawley, Ashley Hall, Anita Thompson, Juan Arias, Trent Teegerstrom, Andrew Brischke, and Kim McReynolds.

## Western Regional 4-H Summit - Feb 2024 - Fairbanks, Alaska



In addition to presenting workshops at the Alaska 4-H Summit, Dr. Greene chose to skip sleep one night to see the northern lights in -12-degree temps.

## International Society for Equitation Science

Dr. Betsy Greene and Debbie Reed, program coordinator, had the opportunity to attend and present their research at the International Society of Equitation Science (ISES) annual conference held March 14-16 in New Zealand. The conference provided an opportunity to meet with equine researchers, veterinarians, and practitioners, from around the world involved in various equine disciplines. The conference featured two days of keynote speakers and scientific presentations as well as a field day where attendees had the chance to visit various equine farms and businesses near Cambridge, the ‘equine capital’ of New Zealand.



## Ag Daze - April 2024

For the second year, Dr. Greene joined her extension colleagues at Ag Daze in Tonto Basin, Arizona, to teach Gila County 4th graders about biosecurity and disease prevention.



## Song of the Horse - June 2024

Navajo youth and their families got hands-on experience learning about how to manage many aspects of their horses' health at the annual Song of the Horse Camp held in Tuba City, Arizona.



# STEM Extension Program: *Inspiring the Next Generation of STEM Professionals*



## STEM and Ag Ambassador Project

The AZ 4-H STEM YUniversity Program was excited to offer the STEM and Ag Ambassador Project for the fourth year, with four Arizona counties and two Federally Recognized Tribal Extension (FRTEP) Programs participating, including Pinal, Santa Cruz, Maricopa, and Cochise Counties, and the San Carlos Apache and Hopi Tribes.

STEM and Ag Ambassadors assisted 4-H staff on outreach, teaching, promoting, and/or representing 4-H STEM and Ag Projects at tabling events, fairs, community events, and in some cases designing personal action plans in their communities. County Ambassadors attended monthly Zoom meetings, special workshops on leadership, resume building, writing cover letters and personal statements, improving communication skills, and more.

This year, the Ambassador Project had the opportunity to partner with the Chief Science Officer (CSO) Program from SciTech Institute (<https://scitechinstitute.org/programs/chief-science-officers/>). The CSO program is comprised of students grades 6-12 who are elected by their peers to serve as STEM leaders and ambassadors in their schools and communities. The two programs aligned perfectly and helped combine resources to build future STEM and Ag leaders for Arizona communities.

Fourteen STEM and Ag Ambassadors, six adult chaperones, and the U of A STEM Team participated in the National 4-H Ignite Conference in Washington, DC, March 12-17, 2024. Along with attending the conference and a tour of the US Capitol, STEM and Ag Ambassadors were invited to meet with the offices of Arizona Senators Mark Kelly and Kyrsten Sinema, as well as with Representatives Eli Crane and Juan Ciscomani. Participation in this event was made possible by Tech Changemakers (TCM) grant funding and generous support from the Arizona 4-H Youth Foundation.

## Underwater Robotics Project Teacher Training

Teachers and students worked together and engaged in hands-on problem-based learning (PBL) experiences through a series of modules that helped them build a remotely operated vehicle (ROV). Teachers and students learned the engineering design process, how to use tools (frame design, basic electronics, and how to solder), how the ROV power, control, tether, and propulsion systems worked, and troubleshooting various challenges from electrical issues, buoyancy, and ballast.

The Underwater Robotics Project teacher training was held as part of a continuing

community partnership with Champion Schools Superintendent, Carolyn Sawyer, and principals at the district's three Pre-K thru 8th schools - South Mountain and Chandler in Maricopa County, and San Tan Valley in Pinal County. The 8-session workshop series was offered on Fridays from February 2 - April 19, resulting in 32 hours of professional development for participating teachers from the three schools. Twenty 5th and 6th grade students from Chandler, where the training was conducted, also participated.



## 2024 4-H STEM Competition

The impact of this year's 4-H STEM Competition, held May 4, at the University of Arizona Recreation Center, was huge! Sixteen teams, encompassing 70 youth, participated, with over 100 attendees coming out to support the teams as they competed in their various events.

Teams included Rim Country Middle School, Payson (3 teams), Mansfield Magnet Middle School, Tucson (2 teams), Sonoran Science Academy, Tucson (2 teams), Glendale High School, Glendale, Innovation Tech/Pima JTED, Tucson, Skyline Gila River, Chandler, Champion Schools South Mountain, Phoenix, Gila County 4-H Program, Pinal County 4-H Program, and Maricopa County 4-H Program.

A huge thank you to the coaches, 4-H staff, volunteers, and parents for supporting their youth in engaging in these STEM projects and encouraging them to pursue STEM related careers!

### AZ 4-H MATE Scout Regional Underwater Robotics Competition Winners

1. "Iberico", Glendale High School (Returning Champions) Coach Jae Chang, Math and Science Teacher
2. "The Sub Crew", Pinal County 4-H Program Coaches Kyle Treadway and Luis Alvarado, AmeriCorp members and Esther Turner Associate Agent 4-H Youth Development, Pinal County
3. "Aqua Dogs", Mansfield Magnet Middle School Coach Miles Chandler, Cradle to Career Partnership, United Way of Tucson and Southern Arizona

### AZ 4-H Lego Robotics Competition Winners

1. "TACOV", Maricopa County 4-H Program Coach Valerie Gabrielson, 4-H Program Coordinator
2. "Jedi Masters", Pinal County 4-H Program Coaches Kyle Treadway, Luis Alvarado, and Esther Turner

# Ravishankar Outreach Activities

## SINE 2024

Dr. Ravishankar and her team participated in the BIO5/BIOSA Student Industry Networking Event (SINE 2024) on February 13, 2024. They discussed the Applied Biosciences Professional Science Master's program as well as current research projects and areas of plus potential collaborations with the attendees.

## FFA State Food Science Product Development

Dr. Ravishankar and her graduate student Richard Park served as judges for this state-wide competition, held February 23, 2024. Her team members Kirat Bains and Luis Rodríguez served as volunteers.

## World Food Safety Day

In recognition of World Food Safety Day (June 7), Dr. Ravishankar, Matt Cook (retired Arizona Health Inspector), and the members of the Youth Professional Development Subcommittee of the Food Safety Consortium created food safety videos for the Arizona Lactalis branch (Dairy manufacturer in Casa Grande, Arizona) to highlight the importance of food safety to their employees. This included information on preventing cross-contamination and proper handwashing.

View the videos at:

<https://safefood.arizona.edu/news/2024/06/food-safety-videos>

## Industry Outreach

March 7 - Drs. Ravishankar, Law, and Witten, along with Richard Park, visited a produce processing plant in Yuma, Arizona to collect samples and discuss research with the growers.

## Lab Tours

Dr. Ravishankar and her team gave tours of her labs in ACBS and discussed various ongoing food safety projects as well as potential future collaborations with several individuals including:

- March 1 - Flinn Scholar and parents.
- March 21 - Barbie Karr of Nestle/Starbucks.
- April 18 - Chester Ho of Shamrock Farms.
- April 24 - Sarah Al Gahfri, Head of Product Development for Nakheel Oman, a large vertically integrated grower and processor in Oman.
- April 25 - Vicki Scott from Scott Resources, Yuma, AZ.

## BASIC HACCP TRAINING

September 17-19, 2024

(8am - 5pm September 17-18, 8am-1pm September 19)

Location: The Refinery, UA Tech Park @ The Bridges, Tucson

Cost: \$450 (includes lunches and all course materials)

Lead Instructor:

Dr. Margie Sánchez-Vega

Assistant Professor of Practice

University of Arizona



Learn more and register at

[CE.Arizona.EDU/HACCP](https://CE.Arizona.EDU/HACCP)

# US House Veterans Affairs Committee Visit



The Vedantam and Viswanathan Labs were excited to host an in-person meeting and site visit with 6 Staff/Policy leaders representing the US House of Representatives Veterans Affairs Committee (VAC) on March 15, 2024. The day included breakfast and almost two hours touring the ACBS labs. Specifically, the committee members were extremely interested in the CATS-led anti-infective efforts and the multiple inventions and technologies that have resulted from them, which - not coincidentally - are all relevant to veterans. The labs look forward to more engagements with the VAC and a potential visit with the Secretary of the House VAC this summer.

## Salvador Lab Updates

### New Lab Members

#### Assel Akhmetova

Assel is from Kazakhstan and started as a postdoctoral researcher associate in the Salvador lab last fall. Assel has a background in biotechnology, epidemiology, and data science, and she is applying wet lab and quantitative methods to investigate the spatial spread of *Mycobacterium bovis*, the main causing agent of tuberculosis in animals.

#### Sarita Bugalia

Sarita is from India and started as a postdoctoral researcher associate in the Salvador lab on Jan 29th. Sarita is an applied mathematician and is developing multi-host mathematical epidemiology models with the aim of understanding disease dynamics under the One Health approach.

### Awards

**Dr. Sarita Bugalia** was awarded a scholarship to attend the 2024 Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID) held July 15-24 at Emory University.

**Dr. Assel Akhmetova** received a Postdoctoral Research Development Grant (PRDG) for her proposal titled "New Skills Training: Strategies and Techniques for Analyzing Microbial Population Structures (STAMPS)" at a funding level of \$1500. Recipients of the PRDG are given the title of University of Arizona Sursum Fellows. Sursum is Latin for "upwards" and is featured at the center of the University of Arizona seal.



# Aquaculture Pathology Lab Updates

## Invited Speaking Engagements

**Dr. Arun K. Dhar** was invited to chair a session during the Aquaculture America, World Aquaculture Society Meeting in San Antonio, Texas, February 18-21, 2024. Researchers from the Aquaculture Pathology Laboratory presented six papers at the conference.

## Visiting Scholar

**Nutthaphon Sangklai**, from Johns Hopkins University, Baltimore, Maryland, visited the Aquaculture Pathology Laboratory in May 2024. Nutthaphon is a PhD student working under the mentorship of Drs. Anchalee Tassanakajon and Pattana Jaroenlak in the Department of Biochemistry, Chulalongkorn University, Bangkok, Thailand. His work focuses on understanding the molecular and cellular basis of pathogenesis of a microsporidium causing a disease in shrimp.



Visiting scholar, Nutthaphon Sangklai (back), working alongside Maia Koliopoulos (front).

## Conference Presentations

**Dr. Hung N. Mai**, research scientist II, was invited to give a presentation on “Research Advances in Mitigating Major Shrimp Diseases” at the AQUA India 2024 Conference held February 16-18, in Chennai, India. This is a biennial international conference organized by the Society of Aquaculture Professionals, Chennai, India, and attended by academia and industry professionals from around the world.



Photos from top right:

- APL lab members at the Aquaculture America, World Aquaculture Society Meeting in San Antonio, Texas, February 18-21, 2024.
- Dr. Hung N. Mai at the AQUA India 2024 Conference held February 16-18, in Chennai, India.

## New Lab Members



**Dr. Nguyen Dinh-Hung** has joined the lab as a postdoctoral research associate. Dr. Dinh-Hung holds a DVM, an MSc, and a PhD in Veterinary Science and Technology. Dr. Dinh-Hung is interested in Aquatic Animal Disease and Pathology, Aquaculture, and Fisheries Management. His research focuses on discovering and characterizing new pathogens, as well as developing innovative diagnostic and treatment methods for aquatic animal diseases. He completed his PhD at Chulalongkorn University, Thailand. He was a visiting scholar at Tokyo University of Marine Science and Technology, Japan, before joining the Aquaculture Pathology Laboratory.



**Jarvin Nipales** studied Biochemistry at the University of Santo Tomas, Philippines. After graduation, he gained extensive experience in DNA sequencing & bioinformatics and worked on the surveillance of COVID-19 in the Philippines. In the Aquaculture Pathology Laboratory, he will work on diagnosing shrimp diseases as a research technician. When not in the lab, he finds relaxation in hiking and video games.

## Undergraduate Student Workers

The APL is fortunate to have five new undergraduate students joining the lab to assist with ongoing diagnostic and research work.



**Paige Dorries**  
Senior, Medicine

**Lester Berrios Cortes**  
Senior, Molecular and Cellular Biology



**Raven Compton**  
Junior, Chemical Engineering

**Lauren Toppenberg**  
Junior, Applied Biotechnology



**Anvar Sanaev**  
Junior, Ag Econ and Management

# ACBS Student Research News

## Awards

- **Amanda Adams** (undergraduate, Craig Lab) - won 3 scholarships from the College of Science and the Udall Foundation.
- **Kirat Bains** (graduate student, Ravishankar lab) - received the 2024 R. Keith Walden Graduate Student Support Scholarship Award from the College of Agriculture, Life, and Environmental Sciences.
- **Vanshika Chauhan**, (graduate student, Ravishankar lab) - awarded the Spring 2024 Applied Biosciences Meritorious Scholarship.
- **Kara Miller** (Ph.D Student, Craig Lab) - received the Outstanding Graduate Research Award from the College of Pharmacy.

- **Likitha Mudigonda** and **Luis Rodriguez** (graduate students, Ravishankar Lab), were the recipients of the Spring 2024 Bilson Award.
- AZ/NV Regional American Society for Microbiology Meeting, April 13, 2024 Las Vegas, Nevada
  - **Katie Cocchi**, (graduate student, Viswanathan and Vedantam labs) - Best Oral Presentation
  - **Ariel Heinrich**, (undergraduate student, Baltrus Lab) - Best Oral Presentation
  - **Ranon Plett**, (graduate student, Duca lab) - Best Oral Presentation
  - **Audrey Sweten**, (undergraduate student, Baltrus Lab) - Best Undergraduate Poster
  - **Savanna Weninger**, (graduate student, Duca lab) - Best Oral Presentation

## Grants

**Title:** Developing A Highly Specific and Robust TaqMan Real-Time PCR Assay for A Simultaneous Detection of *Enterocytozoon hepatopenaei* (EHP) and Acute Hepatopancreatic Necrosis Disease (AHPND) in Shrimp  
**Funding Agency:** USDA- APHIS Veterinary Services, National Animal Disease Preparedness and Response Program (NADPRP)

**PI:** Arun K. Dhar

**Funding Amount:** \$389,782

**Title:** Expanding Tribal Capacity to Improve Animal/Human Health and Enhance Economic Sustainability

**Funding Agency:** Native American Agriculture Fund

**PI:** Betsy Greene

**Funding Amount:** \$199,960

**Title:** Influenza and Zoonosis Education among Youth in Agriculture

**Funding Agency:** Council of State and Territorial Epidemiologists/Centers for Disease Control with the Arizona Department of Health Services

**PI:** Betsy Greene

**Funding Amount:** \$67,000

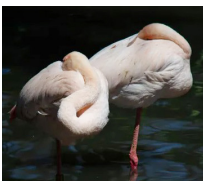
## Patents

“PCR assays for specific detection of *Enterocytozoon hepatopenaei*”, Inventors: Siddhartha Kanrar and **Arun K. Dhar**, US Patent # 11434529, 2024.

## Local, Regional and National News

### Do Flamingos Nap During a Solar Eclipse?

<https://www.azcentral.com/story/news/local/arizona-environment/2024/04/10/animal-behavior-during-eclipse-insights-from-a-day-at-the-zoo/73266929007/>



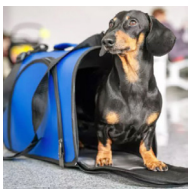
Trilce Estrada Olvera - Arizona Republic  
Apr 10, 2024

Drs. Dieter and Netzin Steklis discuss how the animals at Tucson's Reid Park Zoo reacted during the partial solar eclipse.

### How to Fly with a Pet

<https://www.marketwatch.com/guides/pet-insurance/fly-with-a-pet/>

Alora Bopray - MarketWatch - Jun 28, 2024



Emma K. Grigg, assistant professor of practice in ACBS, discusses the best ways to fly with a pet, including airline policies, required documentation and tips for keeping an animal safe and comfortable during a flight.

## Publications

Lubis AR, Sumon MA, **Dinh-Hung N**, **Dhar AK**, Delamare-Deboutteville J, Do-Hyung K, Shin AP, Kanjanasopa D, Permpoonpattana P, Doan HV, Linh VN and Brown CL. 2024. Review of Quorum Quenching Probiotics: A Promising Non-Antibiotic Based Strategy for Sustainable Aquaculture. *Journal of Fish Disease*. DOI:10.1111/jfd.13941.

**Miller KL**, Liu X, McSwain MG, Jauregui EJ, Langlais PR, **Craig ZR**. Quantitative Label-Free Proteomic Analysis of Mouse Ovarian Antral Follicles Following Oral Exposure to a Human Relevant Mixture of Three Phthalates. *Toxicol Sci*. 2024 Jul 12:kfae089. doi: 10.1093/toxsci/kfae089. Epub ahead of print. PMID: 38995844.

Orr E and **Greene E**. 2024. Increasing Legislative Support and Funding of Cooperative Extension Through Active Agent Leadership. *Journal of the NACAA*. V17;1. June, 2024.

Siewiora H, **Cruz-Flores R**, Kanrar S, Le Groumellec M, and **Dhar AK**. 2024. Identification and characterization of a novel strain of *Decapod hepanhamaparvovirus* in black tiger shrimp (*Penaeus monodon*) from Madagascar that does not cause histological lesions. *Aquaculture*, 2024, p. 740904. <https://doi.org/10.1016/j.aquaculture.2024.740904>.

Yarlett N, Morada M, **Schaefer DA**, Ackman K, Carranza E, de Paula Baptista R, **Riggs MW** and Kissinger JC. 2024. Genomic and virulence analysis of in vitro cultured *Cryptosporidium parvum*. *PLoS Pathogens*. 20: e1011992. Feb 28, 2024. <https://doi.org/10.1371/journal.ppat.1011992>.

## Presentations and Invited Lectures

Ampofo I, **Mai HN**, **Dhar AK**, Grevers D, Wright H and Fragomeni BO. “Genomic evaluation and genetic parameters for acute hepatopancreatic necrosis disease (AHPND) resistance in *Penaeus vannamei* (Pacific white shrimp): insights from controlled challenge experiments and population genomics”. *Aquaculture America 2024 Conference, World Aquaculture Society*. February 18-23, 2024. San Antonio, Texas.

**Dhar AK**, **Mai HN**, **Schofield PJ** and **Sealey WM**. “Overcoming challenges in disease free certification of aquafeed and feed ingredients by Polymerase Chain Reaction (PCR)-based diagnostic assay”. *Aquaculture America 2024 Conference, World Aquaculture Society*. February 18-23, 2024. San Antonio, Texas.

**Cruz-Flores R** and **Dhar AK**. “Tracking down and characterizing divergent strains of viral shrimp pathogens through molecular histology: the case of a new genotype of *Decapod Heparhamaparvovirus*”. *Aquaculture America 2024 Conference, World Aquaculture Society*. February 18-23, 2024. San Antonio, Texas.

**Greene EA**. “Knowing What’s Normal in Your Horse”. Workshop at 2024 Alaska 4-H Summit. March 1, 2024. Fairbanks, Alaska.

**Greene EA**. “Biosecurity Equine Health and Vaccination Simulator Kits Activity” BQA Livestock/Equine Resource Workshop. February 2, 2024. San Carlos, AZ.

**Greene EA**. “Equine Care – Colic, Prevention, and Laminitis”. San Carlos Apache Cattlemen’s Association Conference. April 27, 2024. San Carlos, AZ.

**Greene EA**. “Onboarding Webinar: Fast Track and Scholarly Work” Presented via Zoom to new faculty members. May 22, 2024.

**Greene EA** and Carstens R. “Introducing Biosecurity Concepts with Hands-on Activities in the Counties and Clubs”. Workshop at 2024 Alaska 4-H Summit. March 1, 2024. Fairbanks, Alaska.

**Greene EA**, Farrell G and Alden E. “Disease Transfer Between Horses Biosecurity Activity” Workshop at Song of the Horse Camp. June 6-8, 2024. Tuba City, AZ.

Koliopoulos M, Howard S, **Alenton RRR** and **Dhar AK**. “Development of fluorescence *in-situ* hybridization for detection of *Enterocytozoon hepatopenaei* in formalin-fixed/ paraffin embedded *Penaeus vannamei* tissue”. *Aquaculture America 2024 Conference, World Aquaculture Society*. February 18-23, 2024. San Antonio, Texas.

(Pubs continued on 15)

**Law, B.** “Food Testing Services – University of Arizona”. Food Forward Pre-Accelerator Program at StartUp Tucson. April 30, 2024. Tucson, Arizona.

**Mai HN, Schofield PJ, Sealey WM and Dhar AK.** 2024. “Development of a PCR-based diagnostic assay for white spot syndrome virus (WSSV) in formulated aquafeed”. Aquaculture America 2024 Conference, World Aquaculture Society. February 18-23, 2024. San Antonio, Texas.

Orr E and **Greene EA.** “Strategies and Tips for Developing Year-Round Advocacy Skills for Extension Professionals”. Workshop presented at Joint Council of Extension Professionals 2024 Public Issues Leadership Development Conference. April 25-27, 2024. Washington, DC.

**Pantoja C, Mai HN, Cruz-Flores R and Dhar AK.** “*Hepatopancreas microsporidiosis* in the Americas”. Aquaculture America 2024 Conference, World Aquaculture Society. February 18-23, 2024. San Antonio, Texas.

**Ravishankar, S.** “Oral presentation for the Senior Capstone students in the Applied Biotechnology, Plant Sciences and Sustainable Plant Systems majors”. Applied Biosciences (ABS) Graduate Interdisciplinary Program (GIDP) Professional Science Master’s. March 1, 2024. Tucson, Arizona.

**Salvador L.** “From computational biology to disease control: animal tuberculosis case study”. UArizona Graduate Interdisciplinary Program in Data Science & Statistics. Feb 2024. Tucson, Arizona.

**Salvador L.** “Advances in genomic approaches to reveal zoonotic pathogen detection and evolution”. UArizona Graduate Interdisciplinary Program in Genetics. Apr 2024. Tucson, Arizona.

**Schofield P, Padilla T, Foscue J and Dhar AK.** “Lessons learned in designing experimental bioassay involving *Enterocytozoon hepatopenaei* in shrimp: implications in developing function feed and EHP resistant line of shrimp”. Aquaculture America 2024 Conference, World Aquaculture Society. February 18-23, 2024. San Antonio, Texas.

## Poster Presentations

**Bains KK.** (Faculty member S Ravishankar). Attachment Strength of *Salmonella enterica* serovar Newport and *Listeria monocytogenes* on Melon Hybrids from Five Growing Regions in the United States. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Bains KK, Zhu L, and Ravishankar S.** Comparative Evaluation of the Efficacy of Organic Sanitizers Against *Listeria monocytogenes*, *Salmonella enterica*, *Escherichia coli* O157:H7 and Leafy Green Native Microbiota on Different Food Contact Surfaces. Southwest Ag Summit. February 20-22, 2024. Yuma, Arizona.

**Cheung N.** (Faculty member G Vedantam). Surgical Fragmentation of Kidney Stones Releases LPS, LTA, and Live Bacteria: A Possible Mechanism for Systemic Inflammatory Response Syndrome (SIRS)? ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Cocchi K.** (Faculty member VK Viswanathan). The Enteropathogenic *E. coli* virulence factor EspZ curtails host mitochondrial damage and limits host cell death. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Cruz J.** (Faculty member G Lopez). Surveying the prevalence of *Cyclospora cayentanensis* in Irrigation Waters in the Southeastern Coast of the United States 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Dang N, Paradeza D, Bains K and Ravishankar S.** Soy Good!

Edamame Multi-snack Dip: Evaluation of Microbial and Quality Attributes. ACBS Undergraduate Poster Session. March 25, 2024. Tucson, Arizona.

**Dalson K, Zhu L and Ravishankar, S.** Efficacy of Plant-based Antimicrobials against *Streptococcus* species *in vitro*. ACBS Undergraduate Poster Session. March 25, 2024. Tucson, Arizona.

**Davis E.** (Faculty member AK Dhar). 3D Cell Culturing. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Greene EA, Reed DLH, Arias J.** Sharing Horse Care Knowledge in Culturally Applicable Methods to Engage Native American Tribal Communities to Proactively Contribute to Their Horses’ Best Lives. International Society for Equitation Science Conference. Mar 13-16, 2024. Cambridge, New Zealand. And 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Holyoak-Aguirre A.** (Faculty member G Vedantam). Discrepancy in *Clostridioides difficile* infection Diagnostic Test Results is Predominant in Healthcare Setting. ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Howard E.** (Faculty member F Duca). Impact of Water Chlorination On Metabolic Homeostasis via the Gut Microbiota. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Howard S.** (Faculty member AK Dhar). Development of Fluorescence in-situ Hybridization for Detection of *Enterocytozoon hepatopenaei* in Formalin-Fixed/Paraffin-Embedded *Pennaeus vannamei* Tissue. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Kedia S.** (Faculty member VK Viswanathan). Intestine-specific opa1 deletion exacerbates severity of dextran sodium sulfate-induced colitis in mice. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Law B, Park R, Zhu L, Witten M and Ravishankar S.** Development of a real-time biosensor to detect foodborne pathogens in leafy greens production environments. Southwest Ag Summit. February 20-22, 2024. Yuma, Arizona.

**Martinez H.** (Faculty member G Lopez). Comparison of two gene targets for the prevalence of *Cyclospora cayentanensis* in Irrigation Waters from US West Coast Fresh Produce Growing Regions. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Metzler V.** (Faculty member Z Craig). Effects of Phthalate Mixture Exposure on Genes Involved in Lipid Metabolism. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Meyer R.** (Faculty member F Duca). Oligofructose supplementation alters enterohepatic bile acids and glycodeoxycholic acid prevents diet-induced obesity and glucose intolerance. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Miller K.** (Faculty member Z Craig). Exposure to a Phthalate Mixture Alters Proteins Involved in Fatty Acid Metabolic Processing in Mouse Ovarian Antral Follicles. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Mudigonda L, Chauhan V, Rodriguez L and Ravishankar S.** Comparative Analysis of Inoculation and Recovery Techniques for Better Recovery of *Listeria monocytogenes* on Ready-to-eat Meats. ACBS Undergraduate Poster Session. March 25, 2024. Tucson, Arizona.

**Mydosh J.** (Faculty member K Cooper). Unlocking the Role of RacRS in *C. jejuni* Pathogenesis. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Park R.** (Faculty member S Ravishankar). Understanding the Cross-Contamination of Melons via

Environmental Matrices Under Field Conditions and Prevalence of Foodborne Pathogens. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Park R, Rowland D, Zhu L, Porchas M, Brierley P, Crosby K, Patil B, Friedman M, Turini T and Ravishankar S.** Understanding the Cross-contamination of Melons via Environmental Matrices Under Field Conditions and Prevalence of Foodborne Pathogens. ACBS Undergraduate Poster Session. March 25, 2024. Tucson, Arizona.

**Patel U.** (Faculty member K Cooper). Metagenomic Analysis of Antibiotic Resistance Genes in the Santa Cruz River. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Reed DLH,** Carstens R, Avery D, Hiney K, **Greene EA.** A Good Life for Horses: Teaching Horse Owner About Disease Transfer and Prevention. International Society for Equitation Science Conference. Mar 13-16, 2024. Cambridge, New Zealand. And 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Rowlands D, Raygoza K, Bains K, Porchas M, Brierley P, Crosby K, Patil B and Ravishankar S.** Attachment Strength of *Salmonella enterica* serovar Newport and *Listeria monocytogenes* on Melon Hybrids from Five Growing Regions in the United States. ACBS Undergraduate Poster Session. March 25, 2024. Tucson, Arizona.

**Rubinstein SE.** (Faculty member VK Viswanathan). Characterization of conditional intestine-specific drp1 knockout mice. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Sargent E, Mehrabi-Yazdi A and Ravishankar S.** A Comparison of the Total Native Microbiota and Lactic Acid Bacteria in Field-Grown vs Controlled Environmental Agriculture-Grown Leafy Greens. Southwest Ag Summit. February 20-22, 2024. Yuma, Arizona.

**Scranton C.** (Faculty member K Cooper). Proteomic Comparison of Capillary and Venous Blood Under Different Time and Temperature Parameters. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Suarez M.** (Faculty member G Lopez). Analyzing the presence of *Cyclospora cayetanensis* in wastewater environmental samples against ITS-2, 18S rRNA, and Mit1C assays. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

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**Sullivan A.** (Faculty member G Vedantam). A Bile Acid-Responsive Protein Modulates *Clostridioides difficile* Colonization. ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Thompson N, Zhu L and Ravishankar S.** The Efficacy of Plant-based Antimicrobials Against Food-borne Pathogens *Salmonella enterica* and *Listeria monocytogenes*. ACBS Undergraduate Poster Session. March 25, 2024. Tucson, Arizona.

**Truong K.** (Faculty member G Lopez). Investigating *Cyclospora cayetanensis* in Irrigation Waters: Prevalence and Molecular Typing. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Wachsmuth H.** (Faculty member F Duca). Colonic butyrate lowers hepatic glucose production via FFAR2-dependant vagal neuronal signaling. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Weninger S.** (Faculty member F Duca). Oligofructose alters the small intestinal microbiota to improve intestinal lipid-sensing mechanisms that control food intake and glucose production. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

**Yang A.** (Faculty member C Zhou). The Roles of MicroRNA in Preeclampsia Induced Fetal Sex-Specific Endothelial Dysfunction. 2024 ALVSCE Research Poster Showcase. Apr 2, 2024. Tucson, Arizona.

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