

# School of Animal & Comparative Biomedical Sciences

Feature

## ISSUE HIGHLIGHTS

### Research



Dr. Frank Duca receives \$1.8 million grant from the National Institute of Allergy Environmental Health Sciences to investigate “The Ability of Glyphosate to Impair Metabolic Homeostasis Via the Gut Microbiome and Metabolites”.

- Page 11

### Teaching



Students in the Calving Management class were able to witness live births, help apply ear tags for identifying calves, give vaccinations and weigh calves for record keeping.

- Page 5

### Extension



Twelve Arizona middle and high school students traveled to Florida’s Kennedy Space Center to participate in the first 4-H in Space Project.

- Page 6

## Renovating the Food Products and Safety Laboratory

*A better future for livestock and people*

You may wonder what is happening with the UArizona’s Food Products and Safety Laboratory (FPLS), having heard—perhaps through the proverbial grapevine—that its livestock processing has been paused since the first of the year. Well, here is the scoop:

Following the approval by the state legislature of the UArizona’s request for \$10.9 million to renovate and update our FPLS, many of us within ACBS have many working with others in the university in gathering input on what improvements should be made. The FPLS is one of a few animal processing facilities in the state that is USDA approved, and hence it has played a vital role in serving the state’s livestock growers. Equally important, as a university-operated facility, the FPLS serves the teaching, research, and extension needs of ACBS and the wider university community and its stakeholders. The renovations planned over the coming months, therefore, will enhance the FPLS’s animal processing, teaching, and research capacities. We are confident that the state’s investment will well position the FPLS to serve the needs of our university and Arizona’s livestock industries long into the future.

An overarching aspect of the renovations is for the facility to continue to improve its humane handling of livestock, which is monitored regularly by the USDA. We are dedicated to using state-of-the art equipment and providing employee training that ensures the highest standards of humane handling. Evaluation of our equipment and practices will be provided by outside expert consultants. Lastly, we have hired Francisco Javier Valenzuela as the new, full-time FPLS manager. We are grateful to Dr. Sam Garcia for his leadership of the FPLS for the past eight years. Dr. Garcia’s experience and expertise will be helpful in the redesign of the facility, as he continues in his full-time position as Associate Professor of Practice.

Although the FPLS has paused its livestock processing so that we can get underway with the renovation, teaching and research activities will continue at the facility for as long as possible. We hope that the newly renovated FPLS will resume its full scope of activities by early 2024.

**(meet the new FPLS manager in related story on page 5)**

- H. Dieter Steklis

Director Interim and Professor, ACBS



Renovations to the UArizona Food Product and Safety Lab will enhance the FPLS’s animal processing, teaching and research capacities.

# Dr. D. Scott Merrell Appointed ACBS Director

ACBS is excited to announce that Dr. D. Scott Merrell has been appointed as the School of Animal and Comparative Biomedical Sciences Director. His first day will be April 3, 2023.

Dr. Merrell is an alumnus of Lyon College (B.S. Biology, 1992), University of Arkansas (M.S. Microbiology, 1996), and Tufts University (Ph.D. Molecular Biology and Microbiology, 2001). After a postdoctoral fellowship with world-renowned microbiologist Stanley Falkow, at Stanford University, he joined the faculty of the Uniformed Services University (USU) in 2004. He has led USU's Emerging Infectious Diseases Graduate Program since 2018 and has a wealth of experience in leading graduate education, curriculum revision, and mentorship. He received the American Society for Microbiology's 2008 Merck Irving S. Sigal Memorial Award for excellence in basic research in medical microbiology and infectious diseases, and since 2015, he received four separate Impact Awards for outstanding contributions to the USU School of Medicine.

Dr. Merrell's "One Health" research focus on human pathogens and host-microbe interactions, perfectly aligns with the school's Extension, teaching, and research missions, as well as the strategic goals for ACBS, CALS, and the UArizona. He is highly motivated to capitalize on the school's One Health breadth, depth, and diversity and exceptionally well-qualified to be a leader at UA in the post-pandemic landscape for higher education.

Please join us in welcoming Dr. Merrell to Tucson and wishing him well in his new position.

## ACBS Welcomes 5 New Faculty Members



### Haley Collins

#### Assistant Professor of Practice, Equine Science

Dr. Collins joins ACBS from Texas A&M University, where she served as an Equine Science Lecturer and Horse Judging Team Coach. At the UArizona, she will begin with teaching ACBS 271/272 Equine Horsemanship and Training courses, ACBS 316 Equine Reproduction, and ACBS 431 Equine Nutrition with additional courses added in the future.

She received her BS in Animal Science from Oklahoma State University, MS in Agriculture from Sam Houston State University, and her PhD in Animal Genetics from Texas A&M University.

Dr. Collins was highly involved with student programs and competitive teams in her previous positions and looks forward to building a more involved equine program, along with more extensive curriculum offerings, for equine students in ACBS.

[haleycollins@arizona.edu](mailto:haleycollins@arizona.edu)



### Emma K. Grigg

#### Assistant Professor of Practice, Companion Animal/Animal Behavior

Dr. Grigg was born in London, England, but moved to the US (near Boston, Massachusetts) at age 4, and lived there until she went to college. She received her BA in English Literature and Anthropology from McGill University in Montreal, Quebec. She then went on to receive her MS in Animal Behavior and Physiology from San Francisco State University in San Francisco, California, and her PhD in Integrative Ecology from UC Davis,

also in California. Her Master's and PhD research both focused on marine mammal behavior.

Over the course of her career, Dr. Grigg has had the opportunity to live in the UK, US,

(New Faculty Continued on 3)



## Support ACBS

*Finding Tomorrow's Solutions, Together.*

Gifts of any size help to propel ACBS closer to its goals and have an immediate and lasting impact on our programs and students. Gifts may be made online at the University of Arizona Foundation website or contact us to discuss more personalized options.

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

## Connect With Us:

Get all the latest news and information about the University of Arizona School of Animal and Comparative Biomedical Sciences.



ACBS EMAIL NEWSLETTER

[acbs.arizona.edu/news-events/newsletters](https://acbs.arizona.edu/news-events/newsletters)



FACEBOOK

[facebook.com/ua.acbs](https://facebook.com/ua.acbs)



TWITTER

[twitter.com/uasacbs](https://twitter.com/uasacbs)

## Photo Credits

Photos created or provided by ACBS unless otherwise noted.

Page 1 - FPSL - Joshua Reed Photography

Page 3 - Symposium - RTIP

Page 4 - Outstanding Students - Jasmine Acosta

Page 5 - All photos - Amber Hubbell

Page 6 - 4H Space Project participants - Dr. Jerry Lopez;

Team Space Goats Photo - Elaine Giles - STEM 4-H

Agent in Clay County, Florida; Launch photo - Higher

Orbits <https://twitter.com/HigherOrbits>

Page 8 & 9 - All photos - Dr. Betsy Greene

Page 10 - APL - Dr. Arun K. Dhar; Ravishankar Lab - Dr.

Sadhana Ravishankar

# 48th Annual Global Symposium on Racing Hailed a Success!

The University of Arizona's Race Track Industry Program (RTIP) hosted the 48th annual Symposium on Racing from December 5–7, 2022. Over 550 industry executives from around the world attended this year's Symposium to discuss issues and opportunities in horse racing. The Symposium kicked off with an energizing keynote address from Mike Mulvihill, Executive Vice President and Head of Strategy and Analytics for FOX Sports. Mike's description of horse racing as "a poem, a puzzle and a party" and calling for racing participants to "tell people what makes (racing) great and never stop telling them, and you will grow this game."

The Horseracing Integrity and Safety Authority's (HISA) two programs - the Racetrack Safety Program and the Anti-Doping and Medication Control (ADMC) Program, were a key focus with presentations by HISA CEO Lisa Lazarus, and the leaders of each of the two Programs. A host of other topics were also discussed, including Advancing Equine Safety through Technology, Life After the Track – Second Careers & Retirement, Integrating Horse Racing into the US Sports Betting Environment, Expanding Racing's Reach: Strategies for Diversity and Inclusion, Illegal Betting's Threat to the Racing Industry and Horseplayer Roundtable: What Does the Core Customer Really Want?

The Storytellers of the Game – Racing's Legendary Announcers panel, featured Dave Johnson and Tom Durkin, who kept the audience laughing. Moderated by RTIP alum, Pete Aiello, the two announcing legends recounted stories from working their way up at minor league tracks, to the thrill of calling the Triple Crown. They recounted their stories in a way that only the great storytellers can. - [rtip.arizona.edu](http://rtip.arizona.edu)



Pete Aiello chats with Dave Johnson and Tom Dirkin during the "Storytellers of the Game – Racing's Legendary Announcers" panel session during the 2022 Global Symposium on Racing.



The 49th Annual Global Symposium on Racing will be held on December 4-6, 2023 at the beautiful Ventana Canyon Resort in Tucson, Arizona. Stay tuned for more information on attending, as well as Sponsorship and Exhibitor opportunities.

(Continued from 2)

## New Faculty

Canada, Central America, Australia, and the Caribbean and worn several hats. During her Master's and PhD studies, she worked for Caltrans (California Department of Transportation) for 8 years, supervising a project monitoring harbor seals in San Francisco Bay. She was a visiting assistant professor of environmental studies for two years at Alfred University, Alfred, New York. She also taught Clinical (applied) Animal Behavior for four years at Ross University School of Veterinary Medicine, in St. Kitts, West Indies. Since 2014, has been a research associate and lecturer at UC Davis (Applied Companion Animal Behavior and Cognition, Human-Animal Interactions), while simultaneously teaching as adjunct faculty at Bergin College of Canine Studies in northern California, and raising her son.

Dr. Grigg is currently teaching ACBS 481/581 Principles of Applied Companion Animal Behavior, ACBS 497B Applied Animal Behavior Workshop, and 482/582 Applied Companion Animal Behavior in Practice. In the Fall semester she will be teaching ACBS 311 Understanding Dog and Cat Behavior.

About her position with ACBS, she says, "I'm very excited and honored to be here, working with such amazing educators and researchers in the field of animal behavior and human-animal interactions!"

[ekgrigg@arizona.edu](mailto:ekgrigg@arizona.edu)

## Courtney Pike

### Assistant Professor of Practice

Dr. Pike received her BS in Veterinary Science from the University of Arizona. She went on to obtain her DVM from the University of Illinois and is currently a candidate for her MPH at the University of Arizona. Before joining ACBS, she worked as a general practitioner for 5 years as a relief veterinarian for multiple practices across Tucson.

She is currently teaching ACBS 400 Animal Anatomy and Physiology, as well as, ACBS 406 Companion Animal Diseases. She will be teaching ACBS 449 Diseases of Wildlife in the Fall.

[capike@arizona.edu](mailto:capike@arizona.edu)

## Other New ACBS Faculty Members

### Matthew Medeiros

#### Assistant Professor of Practice

[mmedeiro@arizona.edu](mailto:mmedeiro@arizona.edu)

### Liliana Salvador

#### Assistant Professor

[lilianasalvador@arizona.edu](mailto:lilianasalvador@arizona.edu)



# End of the Semester Celebration & Fall Outstanding Seniors

On December 8th, 2022, the ACBS Advising Center hosted their “End of the Semester” celebration where current students, some parents, and ACBS faculty and staff, honored our Fall 2022 Outstanding Seniors. In addition to honoring our Outstanding Seniors, this event also offered current students the opportunity to take a break from their studies to enjoy free drinks and participate in one of the several art-based stations. Students who attended had the chance to speak with some staff members about how their schooling was going.

During the event, the ACBS Advising Team presented our ACBS Outstanding Seniors with a jacket bundle. The first individual honored was the Animal Science Outstanding Senior, Victoria Ramos. Victoria is planning on earning her Masters in Animal Science upon graduation.

The next individual honored was our Microbiology Outstanding Senior, Evy Ngyuen. Evy was also recognized by CALS with the “Exceptional Academic Performance to the University” award. Evy will be working as a Research Technician until she applies for PhD programs.

Finally, we honored Payton Zarnik, who was the Veterinary Science Outstanding Senior. Payton is working on applying for DVM programs and plans to attend vet school after graduation. Although Payton was unable to attend, her accomplishments were still recognized.

Our students continue to make us proud, and we look forward to another great year!



ACBS Fall 2022 Outstanding Seniors, Evy Ngyuen - Microbiology (left) and Victoria Ramos - Animal Science.

## ACBS Advising Team Welcomes Two New Members



### Jabril Thomas

*Graduate Coordinator*

Jabril Thomas began his position as ACBS Graduate Coordinator on February 13, 2023. In his new position, Jabril will coordinate graduate recruitment and admissions, provide program and administrative advising of graduate students, as well as undergraduate and graduate room and course scheduling support.

Jabril has worked at the UArizona for almost 10 years in diverse departments and colleges, including for Undergraduate Admissions, the College of Medicine Phoenix, Immunobiology, and the Graduate Interdisciplinary Programs Administration. Prior to his work at the UArizona, he worked for the Tucson Unified School District as a Behavior Specialist.

Jabril holds a Bachelor of Science in Psychology from the UArizona and is currently a candidate in the nondegree seeking pathway to Master of Business Administration also at the UArizona.

In addition to his ACBS position, Jabril is an entrepreneur. He owns a management company that oversees various real estate acquisitions he makes as well as a rental portfolio of roughly 10 properties. He is a big supporter of local businesses, especially up and coming entrepreneurs striving to establish themselves.

In his spare time, Jabril enjoys going to the batting cages, playing basketball, reading, and loves learning.

Jabril can be reached at [jabrilthomas@arizona.edu](mailto:jabrilthomas@arizona.edu).



### Micah Parrish

*Academic Advising Professional II*

Micah Parrish joined ACBS on October 31, 2023, to advise Microbiology major and minor students. Her previous work experience includes working for the World Campus Registrar Office and PSU Education Abroad Office at Penn State University, and for the UArizona College of Engineering, advising undergraduate Mining

Engineering students. Micah holds a Bachelor of Arts in Communications with a Print Journalism emphasis from Penn State University.

About her new position, she says, “My favorite part of the new position has been joining the ACBS Advising Center and working on a team of advisors to serve ACBS students. I love meeting with microbiology students and learning about the microbiology curriculum. I’m also enjoying learning about students’ post-graduation career plans. It’s such a diverse major in terms of what students want to do after graduation.

In her free time, Micah enjoys hiking, biking, spending time with her pets, and learning about different cultures and parts of the world.

Micah can be reached at [micahparrish@arizona.edu](mailto:micahparrish@arizona.edu).

# ACBS Farm has a Successful Calving Season

Calving season is the best season! Watching the calves being born and after a couple days, watching them run and play is always a fun time! For the 2023 calving season, the ACBS Farm crew calved first time heifers and cows all bred via artificial insemination (AI), with 95% calving over 8 days. Using AI allows for estrous synchronization protocols to be used which results in a close birthing time frame between all the cows and heifers at the farm. Being able to better predict when a cow or heifer will calve makes it more likely that observation will occur during birth and assistance can be provided if needed.

Students enrolled in the UArizona Calving Management Class for the Spring semester were able to witness live births, help apply ear tags for identifying calves, give vaccinations, and weigh calves for record keeping; all part of high quality stockmanship and management practices. Students learned how to process the calves while not stressing the cow. One way to do this is to not separate the cow from

her newborn while gathering information for records. This gives the cow ease as students are working with her baby and also comforts the calf.

Course instructor, Amber Hubbell, emphasizes to students that observing and knowing what is normal for their cattle is also an important practice. Amber monitors the animals on the farm regularly throughout the day. Watching their specific “normal” behavior helps her know when something is wrong, and she needs to address it. She feels the most important part of the Calving Management course is the hands-on aspect. About the course she says, “Students need to be around the cattle, watching their behavior, watching how the cattle behave while eating, not eating, birthing, caring for their baby, not caring for their calf, to better understand the small differences that could help them decipher when an animal needs treatment. But beyond that, how to make management decisions to prevent catastrophic events”.

Photos clockwise from top right:

- Calving Management students, Trinity Powell, Erin Anderson, and Shai Foreman checking on the calves.
- Independent Study student, Erin Anderson, feeds hay to a calf.
- A calf nurses from it’s mother.
- Students, Geena Kollman, Emily Davis and Erin Anderson, help start the synchronization protocol for the next calving season.
- A mother cow keeps a watchful eye on her calf.
- Bath time.
- Nap time.



# UArizona FPSL Announces Hiring of New Manager

The University of Arizona School of Animal and Comparative Biomedical Sciences is thrilled to announce the hiring of Francisco Javier Valenzuela as the Manager of the UArizona Food Product and Safety Lab (FPSL).

Valenzuela brings a wealth of industry and business experience to the FPSL. For the past 11 years, Valenzuela has been the Plant Manager at beef processor Procesadora y Empacadora Ganadera de Sonora in Hermosillo, Sonora—a facility with 120 employees,

harvesting 60 cattle per hour.

Valenzuela earned a bachelor’s degree in financial management at the Instituto Tecnológico Superior de Monterrey in Guadalajara in 2000, and a master’s in business administration in 2014. He has also held managerial positions at Curtiss-Wright in Nogales, Sonora; Sargent Controls & Aerospace in Guaymas, Sonora, and Trane in Monterrey, Nuevo León.

In his new position, Valenzuela will be

responsible for both the operational and fiscal management of the FPSL. Valenzuela will manage the FPSL’s role in facilitating UArizona’s teaching, research and extension missions, while ensuring compliance with USDA-FSIS meat inspection regulations and delivering high quality services and products for FPSL clients and stakeholders. Valenzuela will start his new role at UA sometime in summer 2023 after completing the visa process.

# Inaugural 4-H in Space Project

Arizona 4-H STEM YOUiversity led a 4-H Space Project that provided forty-eight middle and high school students with an experience of a lifetime to travel to Florida's Kennedy Space Center, to attend the Higher Orbits "Go for Launch" three-day summer camp. The multi-state effort comprised four-states from the Universities of Florida, Illinois, Indiana, and Arizona, in partnership with Higher Orbits, and the International Space Station-National Laboratory (ISS-NL) Center for the Advancement of Science in Space (CASIS).

The Twelve Mission Commanders from each state were placed in teams of four (one member from each state). Team members met virtually before meeting in person in Florida and participated in learning space science in preparation for attending the summer camp.

During the camp, held in July 2022, team members collaborated through the engineering process to design and

present a science experiment that could feasibly be flown to the International Space Station. The 4-H teams had to consider the effect of microgravity in their experiment design. Additionally, the teams' experiment designs needed to fit in a box no larger than a rectangular tissue box and had to function autonomously. Sessions were led by Michelle Lucas, founder and CEO of Higher Orbits, and Atlantis Space Shuttle Astronaut, Jim Riley.

The winning team was "Team Space Goats" with Cove Searle representing AZ from Apache County. Their experiment, 'Growing Spirulina in Space' was launched aboard SpaceX CRS-27 on March 15, 2023.

As part of attending, youth were asked to teach a topic about space science in outreach sessions in their communities across the state reaching 799 youth. The Arizona team was led by Stacy DeVeau, 4-H Program Coordinator, Senior, Yavapai County and Deb Martinez, Club Leader, 4-H Discovery STEM Club, Maricopa County who met with youth throughout the project and traveled with them to Florida. Dr. Gerardo U. Lopez, Associate Specialist 4-H STEM, School of Animal & Comparative Biomedical Sciences, led the collaborative consortium and grant.

A special thank you to Deb Lester, AZ 4-H Youth Foundation Director, for the generous support which made this experience of a lifetime possible for the Mission Commanders and to ISS-NL and CASIS for the grant funding.



All 48 Mission Commanders for the 4-H Mission in Space Project from Arizona, Florida, Illinois, and Indiana.



Team Space Goats celebrates their winning project 'Growing Spirulina in Space'.



Four teams of #GoForLaunch students, including Team Space Goats from the 4-H in Space Project, watch their experiments launch aboard SpaceX CRS27 from Florida's Kennedy Space Center on March 15, 2023. <https://twitter.com/HigherOrbits>

# Designing a Virtual Farming System with XR

XR, also referred to as virtual reality and augmented reality (VR/AR) is a Science, Technology, Engineering and Math (STEM) tool many of us have seen using VR headsets and QR codes. In this new 4-H project, "Designing a Virtual Farming System with XR", youth are tasked with integrating Cross Reality (XR) and sustainable agriculture farming systems.

The integrated agricultural and XR curriculum focusses on five activities that engage youth to learn a variety of agricultural topics while at the same time learning XR skills. Agricultural topics include, what is in a farm (land use, sustainability, and ecology), precision Ag, and Ag marketing and careers. XR learning options are dependant on the project and can include Stereoscopic technology, Cube Maps (Paper VR), 360 Panoramic Imagery, 3D Modeling, and Mozilla Hubs an online tool to tour virtual spaces.

A train-the-trainer was offered last year, congratulations to Emilio Martinez, from Maricopa County 4-H Discovery Club, for

completing the training. Emilio is now ready to train his club members on the XR project.

Funding from the National 4-H Council and Arizona 4-H Youth Foundation has supported the expansion of the Floating Farm Project into this new tech and Ag curriculum.

The curriculum was developed by Andie Astra, Instructional Specialist Coordinator, College of Education, Gigette Webb, Associate Area Agent, Ag Literacy & STEM Education, and Dr. Gerardo (Jerry) Lopez, Associate Extension Specialist STEM, School of Animal and Comparative Biomedical Sciences, College of Agriculture and Life Sciences, University of Arizona.



Andie Astra showcasing the XR project in Gila County



THE UNIVERSITY OF ARIZONA

Cooperative Extension

Livestock Extension



# AZCOWS

## Ranch Practicum

\*Applications Available March 1, 2023\*

### A SYSTEMS APPROACH TO RANCHING IN ARIZONA

#### Hands on learning

Each workshop will be held at the University of Arizona Experimental Stations V-V Ranch or DK Crachillo Ranch near Camp Verde, AZ. Participants are given a hands-on, educational program designed for the skills and knowledge needed in today's beef industry.

#### Production Year

Participants will be committed to a 7 day workshop series spaced over a typical cow-calf production year. Workshops do build on each other, so attending the sessions in order is critical.

#### Learn from fellow ranchers

The course will be taught by the collaboration of University of Arizona Extension specialists and industry leaders. In addition to fostering collegiality and relationships between fellow ranchers.



**FOR MORE  
INFORMATION  
CONTACT :**

**Dr. Joslyn Beard**  
[joslynbeard@arizona.edu](mailto:joslynbeard@arizona.edu)  
**575-571-6689**

# 2023 Southern AZ Equine Health Symposium



(l-r) State Vet Dr. Ryan Walker, State Extension Specialist Betsy Greene, and Sgt. Major Duane Uhlig worked with Dr. Ann Pearson (Reata), Cindi Clayton Hilgen (AZ AG) and Sarah Plevel (AZ Vet Diagnostic Lab) to role-play the pieces and mechanics present during a disease outbreak.

The 7th annual Southern Arizona Equine Health Symposium provided an excellent environment for learning about horse health! While it was quite chilly during the morning arena demos, many attendees heeded our warnings and came with blankets and coats. Warmer topics inside the classrooms highlighted nutritional needs of horses, a presentation by Dr. Carey Williams from Rutgers University on which supplements have been proven effective and how and when to use them. Dr. Christine Staten tackled a very difficult topic about end-of-life decisions for your horse, addressing the medical and emotional aspects, as well as what to expect (process/procedure) when the time comes. We had a version of speed dating in the arena, with topics on hay quality, Body condition scoring, laminitis, farrier work, and more. The

quick learning stations helped warm up both the knowledge and bodies of attendees.

We welcomed several colleagues from the AZ Department of Ag, Dept. of Public Safety, and AZ Veterinary Diagnostic Lab for two real-life scenario demonstrations on

“Trailer Safety and Emergencies” and “Whodunnit - Disease Outbreak”. These demos laid out exactly who is involved and what processes/priorities are in place when a horse owner’s worst nightmare comes true (accident with horse trailer or exposure to a life-threatening disease). Drs. Betsy Greene and Ann Pearson spoke about the symposium on the Morning Blend Tucson news program <https://www.kgun9.com/the-morning-blend/7th-annual-s-az-equine-health-symposium>.



AZ Dept of Ag personnel including Asst. State Vet Dr. David Byerly (pictured), Capt. Terry Lincoln, Command Sgt. Major Duane Uhlig, and Cindi Clayton Hilgen partnered with Cooperative Extension on the Horse accident scenario.

## SCRUB: Science Creates Real Understanding of Biosecurity

The SCRUB curriculum and the corresponding SCRUB kit link hands-on activities with science, technology, engineering and math (STEM) education, by incorporating science into fun activities to engage youth in grades 6 - 12 with an existing interest in animal science. The curriculum provides all of the information needed for instructors (with or without biosecurity and animal knowledge) to conduct the lessons.

The SCRUB curriculum and the corresponding SCRUB kit were developed through a collaboration between Dr. Betsy Greene, University of Arizona, and Dr. Kris Hiney, Oklahoma State University. <https://extension.arizona.edu/pubs/scrub-science-creates-real-understanding-biosecurity>

### Biosecurity lessons can be fun!

Teams of 4th graders in 11 different classrooms in Globe and Payson have learned about how to prevent diseases in their “animals” (cups with fluid) by learning how it can be spread when they “touched noses” with other team animals, and later found out that two of the cups were sick. When the “veterinarian” tested the cups, many more had contracted the illness. Then, after a separation of sick and healthy animals (quarantine) and a trace back with who touched whose nose, the original sick cups were identified. Now the students have more of a grasp on vectors and disease prevention for themselves and their animals.



## 2022-2023 Influenza and Zoonoses Education among Youth in Agriculture (YIA) Workshop

Three members of the UArizona and AZ Department of Health YIA grant team (Greene, Li, and Williamson, pictured below) participated in an educational workshop put on by the CDC/CSTE in Atlanta, GA in January. They presented their upcoming biosecurity and disease transfer activities that would be piloted in Gila County 4th grade classrooms as a part of the existing Ag Daze (an Ag Literacy program) run by Renee Carstens (Gila County Cooperative Extension).



## SWIAA

The Southwest Indian Agriculture Association Conference was held in January in Tucson, AZ. Dr. Greene and Juan Arias (Tribal Extension Agent, San Carlos Apache) presented on Tribal Horse and Livestock programs, and Dr. Ryan Wolker (AZ Dept of Agriculture) and Dr. Greene shared the ALIRT (Arizona Livestock Incident Response Team) program and discussed how it could potentially help tribal ranchers too.



# Food Testing Services Offered by the Ravishankar Lab

Dr. Sadhana Ravishankar has launched a new website (<https://www.foodtesting.arizona.edu/>) detailing the food testing services offered by her laboratory located in the Animal and Comparative Biomedical Sciences (ACBS) building on the University of Arizona main campus. Dr. Ravishankar is an approved process authority by the Association of Food and Drug Officials (<https://www.afdo.org/directories/fpa/>), and is therefore qualified to help companies manufacture safe food. The Ravishankar Lab has been testing food and beverage products for their safety and quality since 2013, and their services include:

Shelf-life testing: Canned foods, salsas, sauces, dips, cheeses, ranches, protein bars, fresh produce, juices, meats, poultry, seafood, dairy, etc.

- Microbiological testing: Indicator bacteria, including aerobic plate counts, coliforms, generic *Escherichia coli*, lactic acid bacteria, yeasts and molds, and others.
- Foodborne pathogenic bacteria screening for food products: *Escherichia coli* O157:H7, *Salmonella enterica*, *Listeria monocytogenes*, *Staphylococcus aureus*, *Campylobacter jejuni*, *Bacillus cereus*, *Clostridium perfringens*, and *Cronobacter sakazakii*.

- Food quality testing: pH, water activity, moisture content, color, texture, viscosity, etc.
- Aflatoxin testing: mesquite flour, corn flour, acorn flour, spices, cereal products, etc.
- Review and/or development of HACCP plans
- Process validation for food products
- Process Authority services
- Efficacy and validation of sanitizers
- Antimicrobial effectiveness testing
- Bacterial survival and transfer in soils, composts, manure, irrigation water, etc.
- Surface, air, and water sampling for pathogenic and non-pathogenic microorganisms
- Outreach, consumer acceptability of food products via surveys and sensory analysis

For more information, please contact Dr. Bibiana Law at [bibiana@arizona.edu](mailto:bibiana@arizona.edu).

## 2023 Arizona State FFA CDE Horse Judging Contest

The State Horse Judging Contest and qualifier for national competitions for High School students enrolled in Future Farmers of America programs in AZ was held at the Campus Ag Center in Tucson (February, 2023). Betsy Greene and Amber Rice spoke with the Morning Blend news program about the event <https://www.kgun9.com/the-morning-blend/uarizona-ffa-spring-conference>.



The champion 4-H Horse Judging Team, their coach, Amanda Huhta, and Mike Lehar served as Official Judges for the State FFA Horse Judging Contest. Becky Callahan (Pima County volunteer) and others organized the horses and riders for the FFA Contest. (l-r) Allison Piper, Cheyenne Callahan, Taylor Mack, Amanda Huhta, Becky Callahan, Mike Lehar, and Haleigh Burgess.



FFA competitors evaluate horses in both Halter and Under Saddle classes at the Campus Agricultural Center (CAC).

### AZ Horse Judging Team at National Western



Arizona 4-H wins big at the National Western 4-H Round up! The State 4-H Horse Judging Team took home first place in January, 2023. (l-r) Allison Piper, Emma Carreon, Taylor Mack, Amanda Huhta (Team Coach), and Haleigh Burgess.

### 2023 Hippology/Horse Judging Workshop



Pima County 4-H volunteer Amanda Huhta organized and conducted a Hippology training for 4-H members with the help of Mike Lehar, Betsy Greene, and others at the CAC (March, 2023).

### HorseQuest meeting Louisville, KY

Dr. Greene worked with her national extension horse specialist group (Extension Horses) on materials for local, regional and national horse owners at the annual meeting in January 2023. Some products related to Informed Arizona Equestrian products include a podcast (Knowing What's Normal) and an infographic (coming soon) on our vital signs publication.

### Equine Extension Podcasts:

#### Tack Box Talk - Knowing Normal: The Story of Practicing Observation Before You Need It.

With Betsy Greene, Sara Mastellar, and Kris Hiney.

<https://www.buzzsprout.com/242373/12119875-knowing-normal-the-story-of-practicing-observation-before-you-need-it>

# Aquaculture Pathology Lab Updates

## Diagnostic Training

### Bogota, Colombia

Dr. Arun K. Dhar and Dr. Luis Fernando Aranguren Caro conducted a training on shrimp and fish disease diagnostics at the Nacional de Colombiano Diagnostico Veterinario Agropecuario-Laboratorio Nacional de Diagnóstico Veterinario (LNDV), in Bogota, Colombia, as a part of an OIE Twinning Project of the World Organization for Animal Health (OIE, Paris, France). The goal of this project is to support scientist in LNDV, ICA to build capabilities in disease diagnostics aquaculture in Colombia.



### Guayaquil, Ecuador

Dr. Luis Fernando Aranguren Caro and Dr. Arun K. Dhar conducted a training on shrimp disease diagnostics at the Escuela Superior Politécnica del Litoral (ESPOL) in Guayaquil, Ecuador, October 13-16, 2022. The training was organized by Ms. Yahira Piedrahita and Dr. Aranguren Caro and funded by Camara Nacional de Acuacultura, Guayaquil, Ecuador. The three day training was attended by forty aquaculture professionals from the shrimp industry throughout Ecuador.



Photos from top:

- Drs. Arun K. Dhar and Luis Fernando Aranguren Caro conducting diagnostic training in Bogota, Colombia.
- Dr. Rod Russel R. Alenton presenting at the Conference of Research Workers in Animal Diseases in Chicago, Illinois, January 22-24, 2023.
- (photo below) Participants in the shrimp disease diagnostics training course held in Guayaquil, Ecuador, October 13-16, 2022. Photograph kindly provided by Dr. Xavier Romero, Produmar, Guayaquil, Ecuador.

## New Lab Members



**Ma Exa Plantig** joined the Aquaculture Pathology Laboratory as a Research Technician. She will work in the molecular diagnostic unit of the laboratory. Exa comes from the Genome Research Center in Manilla, Philippines.



**Tara Detwiler** joined the APL as an Administrative Operations Professional to support the business operations of the lab. Tara is a native of Tucson, AZ, and worked in the private sector before joining the laboratory.



# Ravishankar Lab Updates

## Awards and Recognition

### CALS Grad Slam - Dec 1, 2022

Richard Park, a graduate student in Dr. Ravishankar's lab, won the first place award at CALS Grad Slam. CALS Grad Slam is a college competition for the best 3-minute graduate student presentation of a research or creative project. It is an excellent opportunity for CALS graduate students to enhance their communication skills, and to showcase the innovative research and creative work, associated with graduate education in the College of Agriculture & Life Sciences. The competition, is also an opportunity for CALS students to perfect their presentation in advance of the university-wide Grad Slam held in the spring semester.

### 2021 Lifetime Achievement Award - Jan 27, 2023

Dr. Ravishankar was honored with the 2021 Lifetime Achievement Award by the Indian Association of Applied Microbiologists, at their annual conference held at the Manonmaniyam Sundaranar University in India. This was the first in-person conference

held after the pandemic and Dr. Ravishankar also gave one of the keynote presentations at the conference.

## Outreach Activities

### Yuma, AZ - Nov 18, 2022

Dr. Ravishankar, Dr. Witten, Dr. Law, and graduate student, Luis Rodriguez, visited Yuma, AZ on November 18, toured the leafy green fields and irrigation facilities, and had a meeting with a major grower to discuss their research needs and research collaborations.

### Second Annual Discover BIO5 Open House - Feb 8, 2023

Dr. Ravishankar and her team members demonstrated their antimicrobials research work to visitors, including members of the scientific community and the general public.



Lifetime Achievement Award presented to Dr. Sadhana Ravishankar by the Indian Association of Applied Microbiologists.

# Recent ACBS Grant Funding Highlights

## Dr. Frank Duca

**Title:** The Ability of Glyphosate to Impair Metabolic Homeostasis Via the Gut Microbiome and Metabolites

**Funding Agency:** National Institute of Allergy Environmental Health Sciences (\$1,838,500)

**Project Objective:** Increased rates of obesity and diabetes parallels the increased pesticide usage in the United States, especially the use of glyphosate, but to date, no study has comprehensively examined the impact of glyphosate exposure on the development of obesity and diabetes.

The current work will determine if glyphosate impairs metabolic homeostasis, and if this is due to changes in the gut microbiota and bacterially-derived metabolites, like bile acids.

These studies will help understand the impact of environmental exposures on host metabolism and could lead to more targeted therapeutic approaches to treat metabolic disease.



## Presentations and Symposia

**Alenton RRR, Mai HN, and Dhar AK. 2023.** “Overcoming roadblocks for RNA-targeted antiviral therapy in shrimp through a vector-based oral delivery platform”. The Conference of Research Workers in Animal Diseases. Chicago, Illinois. January 22-24, 2023.

**Dhar AK. 2022.** “Discovering Pathogens, Developing Diagnostic Tools & Therapies against Infectious Diseases in Shrimp”. 50th Scientific Symposium of the US- Japan Natural Resources Aquaculture Panel, Theme: Control and Management of Aquaculture Disease. November 14-16, 2022.

**Dhar AK. 2022.** “Developing antiviral therapeutics using reverse genetics approach in shrimp”. AQUAEXPO-2023. Camara Nacional de Acuicultura. Guayaquil, Ecuador. Oct 17-20, 2022.

**Dhar AK. 2022.** “Viral Vector for an Oral Delivery of Antiviral Therapeutics in Shrimp”. Centro Nacional de Acuicultura e Investigaciones Marinas (CENAIM), Escuela Superior Politécnica del Litoral (ESPOL). Guayaquil, Ecuador. October 19, 2022.

**Greene EA and Bishop T. 2023.** “Animal Disease Transfer Hands on Activity from SCRUB curriculum” as a part of the AZ Public Health Zoonosis grant. Presented in three 4th Grade Classes in Copper Rim Elementary School. Globe, AZ. March 2023.

**Greene EA, Davison K, Williams C, Uhlig D, Plevel S, and Pearson A. 2023.** “Who Dunnit?! Disease Outbreak Scenario.” Southern Arizona Equine Health Symposium. Tucson, AZ. Jan 21, 2023.

**Greene EA, Wolker R, Williams C, Wright A, Pearson A, McKenzie E, Hendrichs J, Fahrni O. 2023.** “101:More is not Always Better! (Stations) Hay Quality/Amt, Hooves, Nutrition, Laminitis, Metabolic Issues, and Exercise.” Southern Arizona Equine Health Symposium. Tucson, AZ. Jan 21, 2023.

**Greene EA, Hendrichs J, and Wright A. 2023.** “Toxic Plants, Weeds, Beetles, and more.” Southern Arizona Equine Health Symposium. Tucson, AZ. Jan 21, 2023.

**Greene EA, Davison K, and Williams C. 2023.** “Hor\$e Care on a Budget: Where to Cut -or NOT.” Southern Arizona Equine Health Symposium. Tucson, AZ. Jan 21, 2023.

**Park R. 2022.** “Efficacy of Ozone Against Foodborne Pathogens in Non-Traditional Sources of Irrigation Water”. ACBS Fall Seminar Series, Tucson, AZ. November 28, 2022.

**Park R. 2022.** “Bridging the Gap of Water Use: Ozone Treatment of Alternative Water Sources”. CALS Grad Slam. Tucson, AZ. December 1, 2022.

**Ravishankar S. 2022.** “Emerging Foodborne Microbial Threats: Challenges & Control Strategies”. Invited Seminar Presentation at the Women’s Christian College. Nagercoil, India. January 20, 2023.

**Ravishankar S. 2022.** “Emerging Foodborne Microbial Threats: Challenges & Control Strategies”. Invited Keynote Presentation at the 2023 Annual Conference of the Indian Association of Applied Microbiologists. Manonmaniyam Sundaranar University, India. January 27, 2023.

**Sargent E, Yazdi AM, Ravishankar S. 2022.** “A Comparison of the Total Native Microbiota and Lactic Acid Bacteria in Field-Grown vs Controlled Environmental Agriculture-Grown Leafy Greens”. Poster presentation at the Annual GDP Showcase, University of Arizona. Tucson, AZ. December 8, 2022.

## Publications

**Aranguren Caro LF, Mai HN, Schofield P, Alenton RRR. 2022.** A laboratory challenge model for evaluating enyterocytozoon hepatopenaei susceptibility in selected lines of pacific whiteleg shrimp *Penaeus vannamei*, Journal of Invertebrate Pathology. Volume 196, 2023. <https://doi.org/10.1016/j.jip.2022.107853>.

**Cruz-Flores R, Andrade TPD, Mai HN, Alenton RRR, and Dhar AK. 2022.** Identification of a novel solinivirus with nuclear localization associated with mass mortalities in cultured Whiteleg shrimp (*Penaeus vannamei*). Viruses. 14, 2220. <https://doi.org/10.3390/v14102220>.

**Greene EA. 2022.** 2022 Chad Reid Western Region NACAA Professional Improvement Conference Proceedings. <http://tinyurl.com/WesternNACAAPIC2022>.

**Greene EA and Hiney K. 2023.** Science Creates Real Understanding of Biosecurity Curriculum (SCRUB). <https://extension.arizona.edu/pubs/scrub-science-creates-real-understanding-biosecurity>.

Malayil L, Ramachandran P, Chattopadhyay S, Allard SM, Bui A, Butron J, Callahan MT, Craddock HA, Murray R, East C, Sharma M, Kniel K, Micallef S, Hashem F, Gerba CP, **Ravishankar S**, Parveen S, May E, Handy E, Kulkarni P, Anderson-Coughlin B, Craighead S, Gartley S, Vanore A, Duncan R, Foust D, Haymaker J, Betancourt W, **Zhu L**, Mongodin EF, Sapkota A, Pop M, and Sapkota, AR. 2022. Variations in Bacterial Communities and Antibiotic Resistance Genes Across Diverse Recycled and Surface Water Irrigation Sources in the Mid-Atlantic and Southwest United States: A CONSERVE Two-Year Field Study. Environmental Science & Technology. 56 (21), 15019-15033.

Weaver SL, **Zhu L, Ravishankar S**, Clark M, and Baltrus, D. 2022. Interspecies Killing Activity of Pseudomonas syringae Tailocins. Microbiology. 168:001258.

## Local, National, & Global Media

**Andrade TPD, Cruz-Flores R, Mai HN, and Dhar AK. 2023.** New Infectious Myonecrosis Virus variant linked with recent disease outbreaks in Pacific white shrimp in Brazil. Global Seafood Alliance. January 09, 2023.

Greene EA, Wright AD, and Arias JM. 2023. “Biosecurity for Horses: Apache Translation” (4:36) <https://www.youtube.com/watch?v=hUcWQBALCUU>. Posted March 17, 2023.

# Congratulations 2022 Summer and Fall ACBS Grads!

## Summer 2022

### Animal & Comparative Biomedical Sciences

Jenna Marie Fenwick, MS

Gabriela Hilda Pedroza, MS

### Animal Sciences

#### Science and Pre-Professional

Kiana Marie Donato, BS

Mattisen Grace Hancock, BS

#### Animal Industry

Ke Bu, BS

Tiffany Rene Drake, BS

Alissa Taylor McCabe, BS

Chloe Sofia McClain, BS

### Microbiology

Sungman Cho, MS

Isabella Viney, MS

Andrew Joeseeph Ashbeck, BS

Meras Matti Balola, BS

Krysta Rai Blampied, BS

Casey J Doyle, BS

Vanessa R Gavin, BS

Alyssa Bella McCay, BS

Jocelyn Rossete, BS

### Veterinary Science

Audra Marie Balland, BS

Danielle Alexandra Barnewolt, BS

Zachary Cody Bauer, BS

Charlotte B Carter, BS

Baylie Elizabeth Case, BS

Celeste Cleofas, BS

Jennifer Racheal DeLong, BS

Suzette Gomez, BS

Atim Kilama, BS

Elisa Martinez, BS

Caroline Elise O'Brien, BS

April Caitlin Pahi-Begay, BS

Jordan L Palmer, BS

Trevor Michael Ross, BS

Shannon Marie Torres, BS

## Fall 2022

### Animal Sciences

#### Animal Industry

Jenna Catherine Harris, BS

Victoria Ramos, BS

#### Race Track Industry

Hailey Reese Shiffer, BS

### Microbiology

Elissa Ivette Arvizu, BS

Sara Christina Boswell, BS

Harry Ray Carrozza, BS

Emma Elyse Casamassima, BS

Geomescia LaToyce Jefferson, BS

Elizabeth Rose LaBate, BS

Caroline Elizabeth Scranton, BS

### Veterinary Science

Saeed Walid Murad Abdulla Albalooshi, BS

Joyceline M Bullock, BS

Venezia Ashley Calderon, BS

Lynette Castaneda, BS

Camryn Michelle Estrella, BS

Paulina Annalise Garcia, BS

Isabel M Gutierrez, BS

Sydney Brooke Skylar Hull, BS

Jessica R Stevens, BS

Payton Elisabeth Zarnik, BS

## ACBS Newsletter

### Volume 9 : Issue 1 Spring 2023

The University of Arizona  
School of Animal and  
Comparative Biomedical  
Sciences

PO Box 210090

Tucson, Arizona 85721-0090

[acbs@arizona.edu](mailto:acbs@arizona.edu)

Editor-in-Chief: Debbie Reed  
[dreed@arizona.edu](mailto:dreed@arizona.edu)

Copy Editor: Aurora Plascencia  
[aplascencia@arizona.edu](mailto:aplascencia@arizona.edu)

The ACBS Newsletter is published three times a year for alumni and friends of the University of Arizona School of Animal and Comparative Biomedical Sciences.

Stories in this print edition have been edited for length. Visit the ACBS Newsletter online at [acbs.arizona.edu/news-events/newsletters](http://acbs.arizona.edu/news-events/newsletters) for past issues.

All contents © 2023 Arizona Board of Regents.  
All rights reserved.

Permission to reprint excerpts from the ACBS Newsletter is granted provided that the intended meaning is not changed and that explicit credit is given to the author(s) and publication source. Product or service names are used only for the sake of clarity and in no way imply endorsement over similar products or services which may be just as effective.

The University of Arizona is an equal opportunity, affirmative action institution. The University prohibits discrimination in its programs and activities on the basis of race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation or gender identity and is committed to maintaining an environment free from sexual harassment and retaliation.

