

# School of Animal & Comparative Biomedical Sciences

Feature

## ISSUE HIGHLIGHTS

### Research



Postdoctoral Research Associate, Satyendra Pothula, was awarded the Antarctic Service Medal.  
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### Teaching



ACBS Spring Outstanding Seniors recognize ACBS instructors as a key to their success.  
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### Extension



Drs. Duarte Diaz and Joslyn Beard began a new extension research study looking at the impact of improving cattle feed efficiency in high temperature environments.  
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## “Team Steklis” Receives the 2021 Cox Faculty Teaching Award

The 2021 Cox Faculty Teaching Award was presented to “Team Steklis” (Netzin and Dieter Steklis), from the School of Animal and Comparative Biomedical Sciences, in a virtual ceremony on April 26th. This award was created to recognize and honor unusual dedication and outstanding performance by a member of the CALS teaching faculty.



Drs. Dieter and Netzin Steklis, the dynamic teaching duo that is “Team Steklis”.

This is the first time that it has been presented to a teaching team.

This deserving duo’s teaching strategy combines both team and collaborative learning, in which they strive to co-teach their classes in a way that creates a very dynamic teaching and learning experience. This unique and creative approach is complex, and it requires both instructors to have skills in continuously switching roles and assessing students learning.

Since their appointment in ACBS, Team Steklis has developed several upper division undergraduate/graduate courses, as well as one immensely popular general education course, ACBS 160D Human and Animal Interrelationships, which is a major student credit hour contributor to both the School and to CALS. Together they’ve also co-instructed two study abroad Primate Studies Field Schools in Rwanda.

Dieter and Netzin are both very passionate about their teaching. That’s clearly reflected in the vivid and interactive lectures they offer to students which include outstanding scientific research and methodology, as well as, real world applications. The Steklis’ have also mentored several undergraduate and graduate students through the Human Animal Interaction Research Initiative (HAIRI) which was set up for the purpose of providing hands-on research and training experiences to students.

About the pair, one of their graduate student TAs says, “When you first walk into one of Drs. Netzin and Dieter Steklis’ classes you’re greeted by a smiling, energetic pair, that starts class with a jovial mood and unparalleled enthusiasm to teach. Within the first five minutes you know that this class will be a unique and unforgettable experience. Their classes are what you hope all your classes will be like, their excitement is contagious and before long you find yourself forgetting that you’re even sitting in a

classroom learning because you’re so absorbed in their energy. The co-teaching style of the two as husband and wife also contributes

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# From the Director

Dear Faculty, Staff, Students, Alumni and Supporters of ACBS,

It is hard to believe we are at the end of the school year, where did all the time go? This was certainly a different year for everyone as we continued to adapt and stay strong during the pandemic and move forward to successfully deliver our education, research, and extension programs.

In retrospect, the 2020-2021 academic year, was very successful despite the challenges we faced. Many accomplishments were made on several fronts. We successfully completed five strategic hires including two tenure track, and three career-track (professors of practice) faculty members. We also completed a fruitful interview of candidates for the Livestock Extension faculty appointment that led to the hire of Dr. Joslyn Beard earlier this year.

Success in our business office included restructuring and streamlining operations to make work more efficient in coordination with our satellite offices (including the Food Products and Safety Lab, the Race Track Industry Program, the Al-Marah Equine Center, the Aquaculture Pathology laboratory and the Feedlot). Additionally, we hired a new Manager of Finance and Administration, Corrie Gil, who joined us this past January. The Equine Center conducted a very profitable annual sale which was the first online sale and the first sale of horses from the Arabian herd.

On the graduate program front, we successfully conducted the first in-person interviews for graduate students, something that had not been done in the past. This was possible through the reallocation of funds from the ACBS Director's Office, support from the College of Agriculture and Life Sciences, and the dedication and hard work of our two Graduate Program Directors, Drs. Zeliann Craig and Frank Duca.

With respect to our School's undergraduate programs, the Animal Science Task Team, continued to make progress towards the update of its' curriculum. Our general education course, ACBS 160D, Human & Animal Interrelationships, reached a new record enrollment of 2,324 students! We also successfully developed six courses for AZ Online. Four of these were delivered in the Fall of 2020 and two others during this past Spring semester.

Thank you for all you have done to make it another successful year. I want to recognize the commitment and efforts of faculty, staff, and students not only to our School, but to the College, the University, and our community.

Many of our faculty, students and staff were acknowledged for their efforts. I want to congratulate Drs. Netzin Steklis (Associate Professor of Practice) and Dieter Steklis (Professor of Practice), who received the David E. Cox Award for their outstanding teaching efforts. Dr. Jerry Lopez, Associate Extension Specialist, was recognized with the Extension Faculty of the Year Award for his work in STEM. Additionally, Members of the Vedantam and Viswanathan labs received the Team of the Year Award in recognition for their efforts to manufacture and deliver hand sanitizer to not only campus, but Tucson and the state of Arizona.

For all the graduating students of our School, this is a time of celebration and reflection. Please take some time to begin to apply the best of what you have learned from your education to start a new chapter in your lives. From now on, the sky is the limit. Congratulations class of 2021, you did it! Bear down!

Again, thank you all for the support and enthusiasm you have displayed this past year. You have shown the necessary resilience, perseverance, and determination to navigate challenges and succeed.

Best wishes for a happy, safe, and healthy summer!

*S. Patricia Stock*

ACBS Director and Professor  
Weiler Endowed Chair for Excellence in  
Agriculture and Life Sciences



## 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](http://ACBS.ARIZONA.EDU)

## Promotion and Tenure/ Continuing Status

Congratulations ACBS faculty who received promotions and/or tenure/continuing status effective with the 2021-22 academic or fiscal year.

### Promotion to Professor:

- Sadhana Ravishankar

### Promotion to Associate Specialist with Continuing Status:

- Gerardo Lopez

### Awarded Continuing Status:

- Duarte Diaz
- Betsy Greene

# ACBS Faculty and Teams Honored with Awards

## 2020 Cooperative Extension Faculty of the Year Award

The 2020 Extension Faculty of the Year was awarded to Dr. Gerardo “Jerry” Lopez for his work in 4-H STEM Youth Development. The Cooperative Extension Faculty of the Year Award was created to recognize and honor outstanding achievements and contributions by a faculty member in Cooperative Extension.

Jerry has been a key contributor in growing the 4-H STEM Youth Development Program for the entire state of Arizona. Through the program that he coined the “4H STEM YOUiversity” he has added the ag innovators experience, augmented reality programs, engineering design and sustainable energy, Codex virtual robotics, underwater robotics and the Mars base camp for 4-H STEM challenge projects. These projects have created opportunities for reaching and engaging youth, both within the 4-H community and external to it, across all 15 counties and five federally recognized tribal extension programs, directed through Arizona Cooperative Extension.

One of Jerry’s nominators states, “Our motto in 4-H is to make the best better and I cannot think of anyone who better embodies this phrase than Dr. Jerry Lopez. His record and achievements speak for themselves, and he strives to not only meet but exceed all expectations.”

In March of 2020 everyone was faced with the incredible challenge of adjusting programs do to COVID-19. Jerry is credited with immediately switching gears and taking incredible initiative to create the engaging virtual STEM learning experiences that have led to noted increases in recruitment and later the expansion of the 4-H youth development programs throughout Arizona. Through Jerry’s leadership, these projects have been developed, revised and redeveloped to accommodate in-person, virtual, or hybrid delivery to participating youth.

About Jerry’s receipt of this award, former Cooperative Extension

Director, Jeff Silvertooth, says, “Congratulations to Jerry, not only in the early stages of his career in this position, but to a commitment, to a goal, and to a vision, that he’s had for himself and it’s being realized very nicely in the work that you’re doing today.”



Jerry is humbled by his receipt of this award and states, “There’s no way I could have done this by myself, it’s a big team that has really worked together. Thank you to everyone that has come together to make this program happen.”

## UA Team Award for Excellence

The ACBS “Bend the Curve” Hand Sanitizer Team was recognized with the UA/CALS Team Award for Excellence for their work in producing hand sanitizer for Arizona health care workers amid the COVID-19 pandemic. In addition, the team coordinated several drives to collect personal protection equipment (ppe), water, and food to accompany their hand sanitizer deliveries to local and state-wide community hospitals and tribal locations.

The team began with producing just 100 bottles of sanitizer in March 2020, and was able to scale their production to more than 30,000 bottles over the summer. Team members comprise staff and students from the Vedantham/Vishwanthan Labs and includes Jennifer Roxas, Shylaja Ramamurthy, Rachel Claus-Walker, Bill Florence, Alison Williams, Kayley Manuel, Cole Puetz, Daniel Quijada, Shobitha Jillela, Anusha Harishankar, and Farhan Anwar.

About the team’s work and the response to COVID-19, Dr. Vishwanthan says, “It’s been a privilege to work with people from across the entire campus. It’s been humbling, a lot of people have done a lot of things, but this effort was actually led by grad students and undergraduates and postdocs in the lab so a very big thank you to them.”

The team would also like to thank Sadhana Ravishankar, Carrie Cooper, Michael Riggs, and Deborah Schaefer who also supported the team’s effort with additional supplies. As well as a special thank you to Shamrock Foods, who was the Team’s industry partner, supplying all the hand sanitizer bottles once the project began to ramp up and move away from UArizona donated supplies.



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## “Team Steklis”

to what makes their classes so enjoyable.”

Outside the formal classroom, both Netzin and Dieter, also provide advice to providers of animal assisted learning therapies, including Banner Medical Center Dog Therapy Program, Hacienda on the River Senior Care Equine Activities, Little Hooves Big Hearts Equine Therapy, and the Pima County Sheriff’s canine therapy for jail inmates.

About receiving this award Dieter and Netzin say, “We’re deeply moved because we love our students, we love being in ACBS, we love being in CALs, we love our colleagues, and both of us particularly want to thank our leader ACBS Director Patricia Stock, for nominating us and supporting our team teaching. She’s always been immensely supportive of that effort and we also want to thank the students that responded so positively to our team approach.”

Congratulations Dieter and Netzin on this well deserved award!



Demonstrating some of the characteristic humor their students love, Dieter and Netzin join the award ceremony in chimp masks.

# Welcome New ACBS Faculty and Staff Members

## **Dr. Joslyn Beard** **Assistant Livestock Extension Specialist**

Joslyn Beard joined ACBS on May 3, 2021. We are excited to have her working with Arizona livestock producers and look forward to collaborating with her on state-wide projects.



Joslyn grew up with animal agriculture just outside the Las Cruces, New Mexico city limits raising and showing cattle, sheep, and hogs. She graduated from New Mexico State University (NMSU) with a Bachelor's Degree in Animal Science. While pursuing her undergraduate degree, Joslyn was able to be involved with animal science research working for Dr. Dennis Hallford as the Flock Manager of the West Sheep Unit and as a Lab Technician in Hallford's endocrinology lab. During this period, she found a new passion for animal research, which led her to continue her Master's studies at NMSU, where she simultaneously served as the NMSU Wool Judging Coach.

Joslyn's master's research focused primarily on nutrition and reproduction interaction, looking at how maternal stimuli during gestation impacted beef progeny performance. Following her masters program she continued her education receiving her Ph.D. in Animal Physiology from the University of Nebraska-Lincoln (UNL). While at UNL, Joslyn was able to work on a large scope of projects from optimizing fatty acid mobilization from fat tissue, evaluating cow age effects on calf performance, and identifying mechanisms related to adaptation and resiliency in 2 yr old lactating range cows.

Dr. Beard's future research aspirations focus on the nutrition and reproductive interaction associated with sustainability and resiliency of beef cattle grazing on extensive rangelands.

Joslyn is located at the Agricultural Research Center, N121 and can be reached at [joslynbeard@arizona.edu](mailto:joslynbeard@arizona.edu) or 520-626-9532.

## **Robert Hartman** **Chair, Race Track Industry Program**

Hartman, a graduate of the Race Track Industry Program (RTIP), brings a broad range of experience to the role. For over a decade, he held marketing and management positions at the New York Racing Association, Santa Anita Park and Golden Gate Fields. His previous experience also includes serving as the Associate Athletic Director at the University of California, Berkeley and CEO of the American Contract Bridge League.

Hartman sees new possibilities for the RTIP students going forward. "A traditional on-campus four-year education experience may not be the right fit for some prospective RTIP students. We need to meet students where they are by developing offerings tailored to fit their needs. We will explore ideas such as additional remote learning opportunities, certificate programs, international programs and continuing education programs."

"Listening to the needs of racing industry stakeholders will be



an important first step as we begin to reshape the Program," said Hartman. "The Global Symposium on Racing has been the premier industry gathering for the exchange of ideas and best practices. We plan to continue to build on that success."

## **Emiliano Alverado** **Administrative Assistant, RTIP**

Emiliano Alvarado was born in Rochester Minnesota. He spent his childhood in Tempe, AZ, and went to high school and college in Flagstaff. He rounds out the trifecta with now living in Tucson and considers himself somewhat of an Arizona college town nomad.



Emiliano began his position with the Race Track Industry Program in early May, where he provides administrative support. A major component of his new position will be coordinating for the success of the annual Global Symposium on Racing, which has traditionally been held in December each year. The conference attracts attendees representing Thoroughbred, Standardbred, American Quarter Horse, Greyhound, and Racino interests from across the United States and internationally.

About his new position, Emiliano says, "I am excited to bring my skills to a unique program that has seen a lot of change over the past year. Plus, I am thrilled to work with some great people and students along the way."

Emiliano brings over 10 years of experience providing support to various organizations in higher learning, technology, and publishing, to his new position, with his prior most position being with the University of Arizona Foundation. He has a BS in Criminal Justice from Northern Arizona University and is currently studying to obtain his professional certificate in Digital Marketing from Arizona State University.

In his free time, he likes to photograph the beautiful, unique, and odd things that make southern Arizona an amazing place to live.

Emiliano is located at the Louise Foucar Marshall Bldg, 158B and can be reached at [eia@arizona.edu](mailto:eia@arizona.edu) or (520) 621-5660.

## **Austin Driscoll** **Systems Administrator**

As the new System's Administrator, Austin Driscoll will support and maintain all of the technology used by ACBS faculty, staff, and students. He comes to the UArizona from Silverado Technologies, where he served as a network technician.



Born and raised in Tucson, he received an Associate's Degree from Pima Community College and has explored UArizona courses in computer science and journalism. Austin is excited for the opportunities working in ACBS will bring, as well as, the experience he can apply from his previous positions. In his spare time he recently started playing the guitar, which has quickly become a big part of his life.

Austin is located in ACBS 230 and can be reached at [austindriscoll@arizona.edu](mailto:austindriscoll@arizona.edu) or 520-621-4430.

## In memoriam

The world of aquatic animal disease specialists lost an iconic figure, Dr. Donald V. Lightner, passed away on May 5, 2021, in Tucson, Arizona.

Dr. Lightner began his career receiving his PhD in Fish Pathology from Colorado State University. From there he served at the National Marine Fisheries Laboratory in Galveston, Texas, working with a team developing the basics of the captive culture of shrimp. In 1975, he took a position with the Environmental Research Lab at the University of Arizona and worked on shrimp health issues at the station in Puerto Peñasco, Mexico, the shrimp culture display at EPCOT Center in Florida, and the Marine Culture Enterprise project in Hawaii.

During the 1970's, Lightner put together a team of researchers and founded the Aquaculture Pathology Laboratory at The University of Arizona. The lab went on to provide much of the basic knowledge on infectious diseases of shrimp. This work enabled shrimp aquaculture to grow into a global industry which now supplies more than two-thirds of all the shrimp consumed world-wide.

Lightner led the way in his field through innovative research and the education and mentorship of students, researchers and shrimp farmers from around the world. Through his work and vision, virtually every shrimp disease expert in the world today has had some connection with Dr. Lightner and the Aquaculture Pathology Laboratory (APL) in The University of Arizona.

Dr. Lightner received many awards and accolades throughout his career, including the Lifetime Achievement Award of the World Aquaculture Society and the OIE Gold Medal, the highest award of the World Organization for Animal Health (OIE, Paris, France) for his lifetime contributions. He will be missed by his family and friends, and colleagues from academic and industry alike.



## GenetiRate Acquired by Aquaculture Biotech Company

University of Arizona startup GenetiRate has been acquired by biotechnology company IMV Technologies.

GenetiRate was founded in 2018 on a technology invented by Benjamin Renquist, associate professor of animal and comparative biomedical sciences at the UArizona College of Agriculture and Life Sciences and a member of the university's BIO5 Institute. Renquist's laboratory developed a new assay that

measures the metabolic rate of individual aquatic animals, from fish to mollusks to crustaceans, to identify and sort out those that grow more quickly, making it a useful technology for the aquaculture industry. Kyle Kentch, a research specialist at UArizona, was the lead developer of technology that automated the GenetiRate process.

"IMV's acquisition of GenetiRate is great news for the technology's future, and a testament to the impactful research being undertaken at the University of Arizona," said Doug Hockstad, assistant vice president of Tech Launch Arizona. "This is a great achievement for Dr. Renquist, and we look forward to working with him more in the future."

IMV Technologies is the world leader in animal assisted reproduction biotechnologies. Founded in 1963, IMV Technologies, a French company, has subsidiaries and/or manufacturing facilities in Brazil, China, France, India, Italy, the Netherlands, Russia, Scotland, South Africa and the United States.

"We are excited to welcome GenetiRate and its team to the IMV Technologies family," said Eric Schmitt, director of innovation, science, and technology at IMV Technologies. "Dr. Renquist and his lab have developed important technology that we believe should be taken to the market for the benefit of the salmon and trout industries and beyond."

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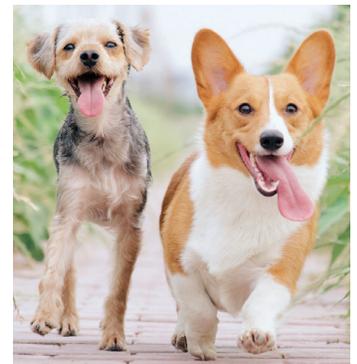
## 'Howl-itis' a Problem? UArizona Inventor Creates Bacteria Strain to Quell Bad Dog Breath

University of Arizona researchers have developed a harmless bacteria strain to battle bad breath in our furry friends.

When administered orally, the additive produces a minty aroma that improves dogs' breath, said inventor Eric Lyons, who developed the technology with co-inventor David Baltrus. Both are associate professors in the College of Agriculture and Life Sciences, School of Plant Sciences, with Baltrus also holding a joint appointment in the School of Animal and Comparative Biomedical Sciences.

"The applications of the invention are vast," Lyons said. "Our plan is that they will eventually find a home among all sorts of pet treats, food and oral care products."

Other products, such as toothpastes and chew treats, use flavors and scents to cover bad breath. When the harmless bacterial strain Lyons developed enters a dog's mouth, the bacteria remain for about two hours, producing a pleasant smell. The bacteria could be incorporated into specially formulated treats, chews and food for dogs, making them easy to use.



- Originally published by TechLaunch Arizona  
View full article <https://techlaunch.arizona.edu>

# Spring 2021 ACBS Outstanding Seniors

## Megan Cordery

*Outstanding Senior | Animal Science*

Megan Cordery, graduated with a BS in Animal Science with an emphasis in Science and Pre-professions and a minor in Business Administration. She chose her major in animal science because of her background in raising livestock and the endless possibilities she felt she would have with the degree, including pursuing science related graduate programs. After graduation, Megan will move to Phoenix and continue the process of applying to Physician's Assistant (PA) school to pursue her goal of becoming a pediatric or family medicine physician's assistant.



When reflecting on her choice in undergraduate major, Megan says, "My major was extremely beneficial in understanding the correlation between the health of humans and animals. With my interest in the medical field, the ability to compare the human body to other animals, is a useful perspective that will really help my PA school application stand out amongst others. The animal science program also included hands-on experience that allowed me to become familiar with a variety of procedures and equipment that other majors may not have included."

Megan is honored to receive this award, particularly in a major that contains such an outstanding graduating class, she is amazed by the hard work and dedication of her peers and is grateful to be recognized amongst them. She credits her mom as being her biggest cheerleader and support throughout the past four years. She also found the community that exists within the UArizona campus to be unmatched and will cherish the memories and friendships she has made.

About her time at the UArizona Megan says, "I am really grateful to have had such great professors throughout my college career. I am convinced that ACBS contains some of the most caring and passionate professors that the university has to offer and each of them have improved my college experience. My major advisor, Christina Garcia, has been a lifesaver more times than I can count, and I absolutely could not have gotten this far without her."

## Justin Billy

*Outstanding Senior | Microbiology*

Justin Billy was born in New Mexico in the Four Corners region and received his Bachelor's of Science degree in Microbiology. About his major, Justin says, "I selected my major because bacteria offer great insights on what kinds of tools humanity can build upon, from generating insulin to vaccine development".



During his time at the UArizona, Justin participated in the McNair Scholar Program, a competitive program designed to prepare undergraduate students for doctoral studies through involvement in research. Additionally, he was named as a Chief Manuelito Scholar from the Office of Navajo Nation Scholarship. The scholarship recognizes high

achieving high school graduates, with the goal of encouraging Navajo people to seek education and protect and preserve Navajo tradition and culture.

Justin would like to recognize Dr. John Wilbur, for his ability to translate complex scientific concepts and provide substantial advice on how to become a better scientific communicator. He would also like to thank his mother, for instilling the values and skills in him to achieve what he sets his mind to, even when life throws a curveball his way. About receiving the Outstanding Senior Award in his major, he says, "I did not anticipate seeing myself in a position to receive this award, however, when I reflect on the work I put in during my junior year during a pandemic, I feel honored and proud that I excelled as an Indigenous student in my undergraduate career."

Following graduation, Justin will continue his training as a scientific researcher by pursuing a doctoral degree in Microbiology at the University of Wisconsin-Madison. He plans to conduct research that strengthens global biosecurity by identifying how diseases interact with the body, developing novel non-antibiotic interventions, or monitoring zoonotic agents for policy formation. Beyond his research he aims to help create scientific outreach programs that inspire young individuals and to pursue new avenues of science communication.

Connect with Justin on Twitter, [@NavajoJustin](https://twitter.com/NavajoJustin), where he will share his journey as a microbiologist.

## Reily Scheppers

*Outstanding Senior | Veterinary Science*

Reilly Scheppers was born and raised in Longmont, CO. She received her Bachelor's of Science degree in Veterinary Science with an emphasis in Applied Animal Behavior, as well as a minor in Spanish. She originally chose to major in veterinary science because of her interest in animal physiology but then discovered a passion for companion animal behavior through her coursework.



Overall, Reilly's favorite part about attending the UArizona was the people she met through the clubs she joined. Attending school out-of-state meant she knew no one on campus which she found to be an incredible opportunity to meet new people. About which she says, "I have made friendships during my undergrad that will last for a lifetime".

After graduation, Reilly will begin a job at a veterinary clinic in Boulder, CO and plans on attending veterinary school in the future. She feels incredibly honored to receive this award and finds it rewarding to know that her hard work over these past four years has paid off. Reilly goes on to say, "I would like to thank Dr. Coppola for nominating me for this award! Dr. Coppola has been my favorite professor and she always motivated and challenged me throughout her behavior courses. My time here at the University of Arizona will always have a special place in my heart and I can't wait to see where life takes me next!"

# 2021 Range Livestock Workshops

The Range Livestock Workshops looked a little different in 2021. Typically held the second week of March, these workshops travel around the state and visit three different locations. This year, Dr. Betsy Greene and Debbie Reed organized/moderated a virtual workshop series over three evenings, each dedicated to a different range/livestock focus. These included Beef (107 participants), Range (97 participants), and Small Ruminant (41 participants). In total, there were 155 attendees who attended at least one night of the workshop series.

The beef night focused on drought and increasing value. Dr. Joslyn Beard (University of Nebraska-Lincoln, and Arizona's new Livestock Extension Specialist, starting May 3rd) brought us information on drought and management decisions that have long term implications to the herd. Dr. Duane Wolf (UARizona Food Product and Safety Lab), discussed factors that affect beef carcass quality, and Nate Brawley (UARizona Extension), followed up with value added programs for your operation. Ashley Wright (UARizona Extension), finished up the night with nutritional management considerations for livestock during drought.

The range night again brought home the importance of drought in Arizona, with Dr. Doug Tolleson (Texas A&M AgriLife Research Station), discussing additional effects of drought on grazing animals. Dr. Elise Gornish (UARizona Extension), shared with us the trials

(and tribulations) of reseeding rangelands. Finally, Dr. Aaron Lein and Dr. Barbara Hutchinson (UARizona School of Natural Resources and the Environment), took everyone on a tour of the new Rangelands Gateway website and the Public Lands Grazing Resources Modules.

For the third night, we were able to bring some much requested information on small ruminant animals to the series. The small ruminant evening included information on managing maternal nutrition in sheep (Dr. Joslyn Beard), and dealing with common sheep parasites (Dr. Chad Page, Utah State University). ACBS Graduate Student, Andrea Rios Lugardo, discussed assessing and mitigating heat stress in small ruminants, and Dr. Sam Garcia (UARizona Food Product and Safety Lab), wrapped up with current trends in small ruminant processing.

Special thanks to all of the speakers and organizers who made this event happen, as well as to Jim Loughead and Boehringer Ingelheim, for sponsoring the event! We look forward to seeing you next year (in person!) March 8-10, 2022 (locations TBA).



Virtual Range Livestock Workshop

Presented by:



## Arizona Livestock Incident Response Team

The Arizona Livestock Incident Response Team (ALIRT) is a program offered to Arizona livestock producers that provides diagnostic services in the case of unexplained livestock deaths. The goal of the program is to decrease the response time during an animal health crisis in order to minimize any economic or animal impact. This is done by sending ALIRT trained veterinarians and extension personnel to evaluate and collect samples for testing when a producer notifies the program of a livestock loss. The program is a cooperative effort between the Arizona Cattlemen's Association, the Arizona Department of Agriculture, and the University of Arizona Cooperative Extension.

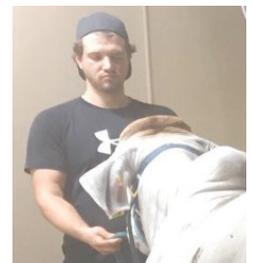
An important component of ALIRT, which is provided by cooperative extension, is training for first responders. Funding for training and educational materials is provided by a grant from the Arizona Department of Agriculture, in coordination with grant PI, Dr. Betsy Greene.

With in-person training on hold last year, the program hosted two ALIRT Training webinars on 4/21 and 5/19, with a third scheduled for 6/23. Topics covered included background information on the ALIRT program, how a response is conducted, the roles of first responders, and more. To learn about the ALIRT program go to <https://extension.arizona.edu/alirt>.



## Feed Efficiency Study

Drs. Duarte Diaz and Joslyn Beard began work with 3 graduate and 3 undergraduate students to conduct a research trial investigating the impact of improving cattle feed efficiency in high temperature environments. The study will continue through the summer and utilize the environmental chambers at the Agricultural Research Center. Additionally, as part of the study, meat quality will be evaluated which will be provided by Dr. Sam Garcia.



Undergraduate student, Jahel del Cid (animal science), assists with preparing cattle for temperature checks.

## National & State Extension Awards

- 2021 Regional Winner - NACAA Communications Award. "Blister Beetle Toxicity in Horses". Publication (Betsy Greene and Ashley Wright)
- 2021 State Winner - NACAA Search for Excellence in 4-H Programming Award. "AZ 4-H Ag at Home program". (Betsy Greene and Ashley Wright)
- 2021 National Finalist - NACAA Search for Excellence in Livestock Production Award. "San Carlos Apache Rancher Program". (Juan Arias, Betsy Greene, Ashley Wright, and Nate Brawley)
- 2021 NACAA Achievement Award – Dr. Duarte Diaz
- 2021 Regional Winner - National Association of Extension 4-H Youth Development (NAE4HYDP) Denise Miller National 4-H Innovator Award. "AZ 4-H Ag at Home Program: Learn-Do-Teach". (Betsy Greene and Ashley Wright)
- 2021 State Winner - NAE4HYDP Excellence in Animal Science Award. "San Carlos Apache Rancher Family and Youth Animal Science Program". (Juan Arias, Betsy Greene, and Ashley Wright)

# Native American Agricultural Foundation (NAAF) Grant Update

*Empowering Tribal Ranches by Educating Adults/Youth on Methods to Improve Animal/Human Health and Enhancing Economic Stability by Using Proven Animal Health and Food Safety Programming.*

We have had to be very creative to move our Native American Agricultural Foundation grant efforts forward due to COVID-19 in-person seminar/workshop restrictions on tribal lands. However, as always, we as extension professionals adapt and adjust. To date, we have done the following:

- 4 poultry webinars were conducted, recorded, and posted (Raising Pullets for Hens + Nutrition 101, Coop Design and Predator Control, Diseases of Poultry, and Egg Safety).
- Beef Quality Assurance has been offered 5 times targeting Hopi, Navajo, San Carlos Apache, and neighboring tribes.



(l-r) Renee Carstens and Dr. Betsy Greene set up for the Saturday Gila County 4-H event.



San Carlos Apache Cattleman's Association members find out who had the best vaccine cooler design (i.e. lowest temperature).

A virtual method for certifying producers was developed and implemented.

- Vaccine handling training and animal stewardship need assessment/conversation storytelling (information gathering) conducted with San Carlos Apache Cattlemen's Association members.
- 3 equine and hay quality webinars are scheduled to address the nutritional needs, choosing appropriate hay, illnesses that can result from improper/fouled feed sources, and tack and safety training for equine used with both ranching and youth activities.
- Two Train the Trainer sessions on safe fruit/vegetable handling and introduction to proper canning were held by Christy Stuth, Master Food Preserver for Tribal Extension Agents and Co-PIs of the grant.



Participants in the San Carlos Apache Cattlemen's Association vaccine handling and training workshop work as a team to build a vaccine cooler.



(l-r) Dr. Betsy Greene and Juan Arias conduct the workshop and needs assessment for the San Carlos Apache Cattlemen's Association.

## Arizona 4-H Ag at Home: Animal Projects Webinar Series

The 4-H Ag at Home live webinar series (created by Dr. Betsy Greene and Ashley Wright), continued with more great presentation offerings through the spring, including turkeys, goats, cavies, and more. The webinars focus on 4-H animal projects and are designed to provide solid, science-based educational information, from experts in the field.

To increase the excitement for participants, anyone attending 5 or more webinars in the series, is eligible to receive a "webinar warrior" t-shirt with 12 participants having qualified for t-shirts so far!

While targeting 4-H participants, these webinars are appropriate for anyone with an interest in animals. One attendee states, "It's always impressive how these presenters can hold the attention of young kids. The whole family gathers around the computer. These presentations have really been a fun family night in."

Registration for upcoming webinars along with videos of past editions can be found on our website <https://extension.arizona.edu/az-4-h-ag-home>.

### AZ 4-H Ag at Home: Animal Projects

#### Upcoming Summer Webinars

- July 1, 2021 6:00 pm MST - Dairy
- August 2, 2021 6:00 pm MST - Working Dogs

#### Past Spring Webinars

- March 18, 2021 6:00 pm MST - Turkeys
- March 25, 2021 6:00 pm MST - Goats
- April 8, 2021 6:00 pm MST - Cavies
- April 22, 2021 6:00 pm MST - Meat Carcass Judging
- May 6, 2021 6:00 pm MST - Beef Cattle EPDs
- June 3, 2021 6:00 pm MST - Horse Judging



Participants who attended 5 or more 4-H Ag at Home webinars qualified to receive a free "webinar warrior" t-shirt.



Dr. Betsy Greene and Ashley Wright used data and experiences collected from the 4-H Ag at Home series to create her presentation, "Successfully Using Webinars to Engage 4-H Youth with Equine and Animal Science Information", presented at the National Association of Equine Affiliated Academics (NAEAA) Annual Conference, held May 25-26, 2021.

# Building the next generation of STEM Professionals

## Lopez STEM Extension and Research Programs Updates

### Greenhouse (SEED) Camp

The Greenhouse Sustainable Energy and Engineering Design (SEED) virtual Camp is a semester-long, hands-on, problem-based learning experience. The program takes students through the process of building a model scale greenhouse and then recreating it with new ideas based on what they learn through hands-on experiences in solar, wind, and hydro green energy.

The 2021 program, led by Jose Fonseca, Math Department Instructor, coached 7 teams, 4-H members and educators, through the curriculum's 10 modules. Participants learned the engineering design process, technical drawing using scaled blueprint perspectives, 2D, and 3D drawing. Participants also learned how to install circuits using sustainable energy technologies such as solar panels and wind turbines on their model scale greenhouse, while also realizing the importance of working in diverse teams, respecting each others cultural backgrounds, and including their own cultural perspectives into the greenhouse design.



Students presented their greenhouse models virtually at the completion of the camp.

### Underwater Robotics Camp

The Underwater Robotics, Remotely Operated Vehicle (ROV) 10-week Camp had 7 teams make it to the finish line and showcase their ROVs! Teams completed tasks in a pool with several props, as well as prepared a marketing display, and an engineering presentation. 4-H members, staff/volunteers and AmeriCorps members used the SeaMATE Pufferfish ROV kit from Marine Advanced Technology Education (MATE) to learn the engineering design process, soldering, and many other skills to design their ROVs.



Teams showcased their completed ROVs by completing tasks with props in a pool.

The 4-H STEM program partnered with Arizona Project WET (APW) to bring this project to fruition. Thanks to the 4-H Youth Foundation and all the donors, as well as, the 4-H Agents/Coordinators and staff who supported the program!

### Lopez Lab Updates

Dr. Gerardo (Jerry) Lopez and the Food Safety and Environmental Microbiology Laboratory are happy to announce that three of our Undergraduate Research Assistants; Cesily Cirerol, Sophia Quick and Rachel Whitman, graduated this May with Bachelor of Science degrees in Microbiology. In addition to these three graduating seniors, the Lopez Lab also hosted four students; Lorraine Quevedo, junior, Microbiology major; Amber Notah, junior and Dominic Rodriguez, sophomore both Biology majors; and Chi Nguyen, freshman Environmental Science major. Students collaborated on *Cyclospora cayetanensis* and Norovirus research projects, prepared reports and research

posters, and gave presentations to the Lopez Lab.

Students were sponsored through several programs that aim to provide students with research experiences, mentoring, and preparation in applying to graduate school, including the Western Alliance to Expand Student Opportunities (WAESO) program (an Arizona State University grant funded by the Louis Stokes Alliance for Minority Participation (LSAMP) program of the National Science Foundation - Award number:1101728); the College of Agriculture and Life Sciences (CALs) Arizona Science, Engineering, and Mathematics Scholars (ASEMS) Program; and the Ronald E. McNair Achievement Program (McNair).

## Virtual Shrimp Disease Diagnostics Lecture Series

A banner for a virtual lecture series. At the top, there are logos for the Peruvian Ministry of Production, SANIPES, the National Program for Innovation in Fisheries and Aquaculture, the Bicentennial of Peru 2021, and the University of Arizona Aquaculture Pathology Lab. Below the logos, the text reads "Curso virtual" in blue, "Métodos de diagnóstico para enfermedades de Langostinos" in large white letters, and "Subproyecto PNIPA ACU002" in smaller white letters. At the bottom, there is a group photo of seven people, including Dr. L. Fernando Aranguren Caro, who is on the far right wearing a light green polo shirt.

Dr. L. Fernando Aranguren Caro organized a week long virtual course on shrimp disease diagnostics in collaboration with SANIPES in Lima, Peru. SANIPES is a specialized technical agency under the Peruvian Ministry of Production (PRODUCE) and is the national health authority in terms of hydrobiological resources for the country. During the virtual course, Dr. Arun K. Dhar and other Aquaculture Pathology Laboratory members, presented a series of lectures covering conventional and genomic tools for infectious disease diagnosis in shrimp.

# Antarctic Study Focuses on Climate-driven Change



Congratulations to Satyendra Pothula, a postdoctoral research associate in Dr. Patricia Stock's laboratory! Satyendra was awarded the Antarctic Service Medal in recognition for his valuable contributions to exploration and scientific achievement under the United States Antarctic Program by The US Secretary of Defense. While a postdoc at Brigham Young University (B. Adams Laboratory), Satyendra spent two months in Antarctica during the 2019 season working on the Long-term Ecological Research Program (LTER).

The LTER project is working to characterize how an entire ecosystem in the Antarctic dry valleys responds to climate-driven changes. Dry valleys are the largest region of

continental Antarctica that is not covered by the Antarctic ice sheet. Long-term experiments have been conducted in the dry valleys since 1993.

Several teams in the LTER are looking at glaciers, streams, and lakes, while the Stock team is focused on soils and in particular, looking at soil biology. The charismatic megafauna of continental Antarctica includes tiny nematode worms, tardigrades (water bears), and rotifers. Satyendra's research focused on the response of these soil animals to climate-driven changes.



## Plucky Ladies Podcast



Dr. Netzin Steklis was featured on the "Plucky Ladies" podcast produced by UA professor Jess Kapp.

Plucky Ladies explores female curiosity, perseverance, and feats of excellence through discussions with women at University of Arizona, across disciplines, and from a variety of backgrounds. Guests include scientists, artists, administrators, and writers.

<https://www.jesskapp.com/podcast>

## News from the Stock Lab

Several undergraduates in the Stock lab are graduating including Shianna Stewart (major - plant sciences and minor - animal sciences), Danny Duong (physiology), and Claire Jurecky (microbiology). Danny successfully completed his Honors College Thesis which focused on the study of Type 6 Secretion System in *Xenorhabdus* bacteria. Shianna was accepted to the UArizona Interdisciplinary Program in Entomology and Insect Science and will continue working in the lab as a masters student. Congrats to all Graduates!



## Ravishankar Lab Updates

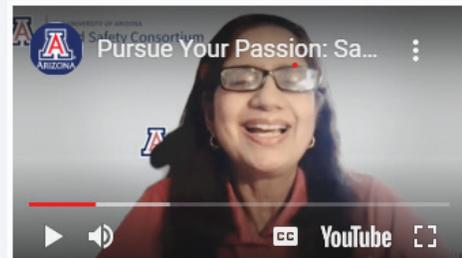
### Convo with Cantwell

Dr. Ravishankar participated in "Convo with Cantwell" a monthly webinar hosted by Dr. Betsy Cantwell, UA Senior Vice President for Research and Innovation on March 18, 2021. The panel discussion focused on Women Entrepreneurs: Ideas and Innovation. This event was conducted as part of Women's History Month to inspire future innovation.



### SARSEF

Dr. Ravishankar, and her team member Richard Park, served as judges for the 2021 Regional Southern Arizona Science & Engineering Foundation (SARSEF) Science and Engineering Fair, held virtually March 1-6. Their judging efforts included evaluating science fair projects from high school and middle school students with a focus on food science and food safety. For more information and results go to <https://sarsef.org/>.



### Women Make It Happen: Meet Three UArizona Inventors

Dr. Ravishankar was interviewed for a Tech Launch Arizona (TLA), Women Make It Happen!, women inventor's campaign. The campaign highlighted Dr. Ravishankar's work, as well as two other UArizona women, in hopes of inspiring UArizona women researchers, faculty, and graduate students to develop impactful inventions stemming from their work. The videos, created in honor of Women's History Month, can be viewed on the Tech Launch website:

<https://techlaunch.arizona.edu/news/2021/03/women-make-it-happen-meet-three-u-arizona-inventors>

## Grants

### Sponsor: TLA Asset Development Fund

Title: Rapid Diagnosis of Microbial Pathogens in Aquatic Species

Co-PIs: **Luis Fernando Aranguren Caro & Arun K. Dhar**

Project amount: **\$41,523.32**

Goal: To develop a point-of-care diagnostics for the detection of shrimp diseases at a pond site.

## Presentations and Symposia

**Dhar AK.** (2021). "Major Diseases in Shrimp Aquaculture". Department of Biology, University of New Mexico. Feb 17, 2021. Albuquerque, New Mexico.

**Dhar AK.** (2021). "Major Diseases in Shrimp Aquaculture". School of Aquatic and Fishery Sciences, University of Washington. March 19, 2021. Seattle, Washington.

**Dhar AK** and **Aranguren Caro LF.** (2021) Featured Guest Speakers. UA Global International Coordination Group Meeting. April 21, 2021. Virtual.

**Greene EA** and Smarsh D. (2021) "Using infographics to engage audiences on social media about horse care and management." Presentation at NAEAA Annual Conference. May 25-26, 2021. Virtual.

**Greene EA** and Wright AD. (2021) "Successfully Using Webinars to Engage 4-H Youth with Equine and Animal Science Information" Presentation at NAEAA Annual Conference. May 25-26, 2021. Virtual.

**Greene EA,** Wright AD, **Reed DL,** and Walsh ME. (2021). The Southern Arizona Equine Health Symposium: Impacts on extension program reach and the change to a virtual format. Presentation at Equine Science Society Conference. June 1-4, 2021. Virtual.

Hiney K, Waite K, and **Greene EA.** 2021. "Moooving Media: Utilizing Podcasts to educate and entertain". Invited Workshop at the 2020 Dairy Cattle Welfare Symposium. May 25-27, 2021. Virtual.

Martinson K, **Greene EA,** and Schmidt J. (2021). "Mud Management Issues on Horse Facilities". Facebook Live. 4/20/2021.

**Park R.** (2021) "Why We Peel Melons: A Peek into the Prevalence of Foodborne Pathogens Among Field-Grown Melons in Arizona and Environmental Risk Factors for Cross-Contamination". Symposium "Beyond Chemistry: Consumer Acceptance of Flavor, Food Safety and Health Benefits of Fruits and Vegetables". Annual Meeting of the American Chemical Society. April 7, 2021. Virtual.

**Ravishankar S.** (2021) "Attachment Strength of Foodborne Pathogens and Efficacy of Plant-based Antimicrobials Against *Salmonella enterica* and *Listeria monocytogenes* on Melons Grown in Different Regions of the United". Symposium "Beyond Chemistry: Consumer Acceptance of Flavor, Food Safety and Health Benefits of Fruits and Vegetables". Annual Meeting of the American Chemical Society. April 7, 2021. Virtual.

## Publications

**Aranguren Caro LF,** Alghamdi F, Debelder K, **Lin J, Mai HN,** Alrehailli Y, Alazwari A, Algetham S, and **Dhar AK.** 2021. Effect of the salinity on Enterocytozoon hepatopenaei infection in *Penaeus vannamei* under experimental conditions. BMC Veterinary Research, 17:65.

Chen CH, Marchello J, Friedman M, and **Ravishankar S.** (2021). Plant Extracts and Essential Oils at Concentrations Acceptable to a Sensory Panel Inactivate *Salmonella* Typhimurium DT104 in Ground Pork. Food and Nutrition Sciences. 12: 162-175.

**Greene EA** and Wright AD. 2021. Barn Smarts for Biosecurity:

Tips for Keeping Your Horse Safe and Healthy - Spanish edition. Arizona Cooperative Extension. University of Arizona. <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1709S-2021.pdf>.

**Greene EA,** Wright AD and Dennison K. 2021. Supplemental Poster: "Barn Smarts for Biosecurity: Tips for Keeping Your Horse Safe and Healthy" - Navajo (Diné) edition. Arizona Cooperative Extension. University of Arizona. <https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/horse-biosecurity-poster-navajo.pdf>.

Joshi K, Sparks P, Friedman M, Olsen C, McHugh T, and **Ravishankar S.** (2021). Effect of Antimicrobial Edible Films on the Sensory and Physical Properties of Organic Spinach in Salad Bags. Food and Nutrition Sciences. 12: 176-193.

**Mai HN, Aranguren Caro LF, Cruz-Flores R,** and **Dhar AK.** 2021. Development of a Recombinase Polymerase Amplification (RPA) assay for acute hepatopancreatic necrosis disease (AHPND) detection in Pacific white shrimp *Penaeus vannamei*. Mol. Cell Probes, 57, 101710.

**Mai HN, Aranguren Caro LF, Cruz-Flores R, Noble BL,** and **Dhar AK.** 2021. Differentially expressed genes in hepatopancreas of acute hepatopancreatic necrosis disease (AHPND) tolerant and susceptible shrimp (*Penaeus vannamei*). Frontiers in Immunology, In Press.

Powers Q, **Aranguren Caro LF,** Fitzsimmons KM, McLain JE, and **Dhar AK.** 2021. Crayfish (*Cherax quadricarinatus*) susceptibility to acute hepatopancreatic necrosis disease (AHPND). Journal of Invertebrate Pathology, In Press.

Reyna-Granados JR, Joens LA, **Law B,** Friedman M, and **Ravishankar S.** (2021). Antimicrobial Effects of Plant Compounds against Virulent *Escherichia coli* O157:H7 Strains Containing Shiga Toxin Genes in Laboratory Media and on Romaine Lettuce and Spinach. Food and Nutrition Sciences. 12: 392-405.

## Global Media

**Aranguren Caro LF, Dhar AK** and **Lin J, Mai HN.** (2021). "How salinity impacts EHP in whiteleg shrimp". The Fish Site. May 1, 2021. <https://thefishsite.com/articles/how-salinity-impacts-ehp-in-whiteleg-shrimp>.

McGraw B. (2021). "Expert insights into EMS in Shrimp". The Fish Site. March 26, 2021. <https://thefishsite.com/articles/expert-insights-into-ems-in-shrimp>.

## 2021 Service Awards

Each year, the University of Arizona recognizes employees who reach anniversary milestones in five-year increments. To be honored, you must have served at the University for at least 10 years.

Congratulations to all our ACBS members who reached a service milestone in 2021.

### 10 Years

Margarethe Cooper  
Benjamin Renquist

### 15 Years

Andrea Bushong  
Sadhana Ravishankar

### 20 Years

Tasha Pontifex  
S Patricia Stock

### 25 Years

Raul Islas  
Paul Schofield

### 30 Years

Gregory Bradley



# Taking Class to the Animals

At almost a year of online classes, Zoom was starting to wear on everyone, with students becoming Zoombies. To liven up their ACBS 160 Human and Animal Interrelationships course, Dieter and Netzin Steklis, conducted their Zoom live class at TRAK (Therapeutic Ranch for Animals and Kids) with the animals their students were studying that week. While they would have preferred to have the students there in person the goats and sheep hammed it up for the camera and provided some socially distanced fun for everyone.



## Photo Credit

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Page 4 - Student headshots provided by individuals  
Page 5 - Lab photo Paul Tumarkin/Tech Launch Arizona; Dog photo Alvan Nee/Unsplash  
Page 6 - Headshots provided by individuals  
Page 8 - Betsy Greene, all photos  
Page 9 - STEM photos Jerry Lopez; webinar collage APL  
Page 10 - Antarctic photos & Stock lab - Patricia Stock  
Page 12 - TRAK photos Netzin Steklis



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