

School of Animal & Comparative Biomedical Sciences

Feature

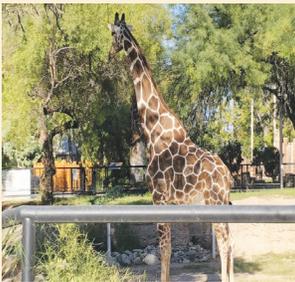
ISSUE HIGHLIGHTS

Research



Dr. Sadhana
Ravishankar named
Tech Launch Arizona
Inventor of the Year.
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Teaching



Students in the ACBS
102 Lab experienced
a redesigned format
with more options for
exploring the wide
range of career options
available to them.

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Extension



ACBS Horse and
Livestock Extension
Specialists traveled
across Arizona to
deliver programing
to tribal producers
through the Native
American Agricultural
Fund (NAAF) project.

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A Promising New Pathway to Treating Type 2 Diabetes

Researchers at the University of Arizona believe the liver may hold the key to new, preventative Type 2 diabetes treatments.

This year marks the 100th anniversary of the discovery of insulin, a scientific breakthrough that transformed Type 1 diabetes, once known as juvenile diabetes or insulin-dependent diabetes, from a terminal disease into a manageable condition.



Today, Type 2 diabetes is 24 times more prevalent than Type 1. The rise in rates of obesity and incidence of Type 2 diabetes are related and require new approaches, according to University of Arizona researchers, who believe the liver may hold the key to innovative new treatments.

“All current therapeutics for Type 2 diabetes primarily aim to decrease blood glucose. So, they are treating a symptom, much like treating the flu by decreasing the fever,” said Benjamin Renquist, an associate professor in the UArizona College of Agriculture and Life Sciences and BIO5 Institute member. “We need another breakthrough.”

In two newly published papers in Cell Reports, Renquist, along with researchers from Washington University in St. Louis, the University of Pennsylvania and Northwestern University, outline a new target for Type 2 diabetes treatment.

Renquist, whose research lab aims to address obesity-related diseases, has spent the last nine years working to better understand the correlation between obesity, fatty liver disease and diabetes, particularly how the liver affects insulin sensitivity.

“Obesity is known to be a cause of Type 2 diabetes and, for a long time, we have known that the amount of fat in the liver increases with obesity,” Renquist said. “As fat increases in the liver, the incidence of diabetes increases.”

This suggested that fat in the liver might be causing Type 2 Diabetes, but how fat in the liver could cause the body to become resistant to insulin or

cause the pancreas to over-secrete insulin remained a mystery, Renquist said.

Renquist and his collaborators focused on fatty liver, measuring neurotransmitters released from the liver in animal models of obesity, to better understand how the liver

(Type 2 Diabetes Continued on 3)

From the Director



As we look forward to a new academic year, I want to extend a hearty welcome to all ACBS faculty, staff, and students. This Fall semester is particularly special in that many of our students have returned to campus and are experiencing in-person classes again after many months of online course work. It is a joy to walk across our beautiful campus and witness the return of so many members of our vibrant community of students, faculty, and staff. All of us are hopeful that with continued precautions and measures against the spread of COVID-19, a full offering of in-person classes will remain available to our students.

This Fall, I am also happy to welcome three new ACBS faculty members, who will add strength to our research, teaching, and extension programs: Drs. Elaine Norton, Joslyn Beard, and Cyprianna ("Chipper") Swiderski. Dr. Swiderski is the new director of the Al-Marah Equine Center, and we look forward to the development of new research and other equine programs under her leadership and to the opportunities the Al-Marah Equine Center will provide for our students. This is also a timely development, in that a much-needed significant revision to our Animal Sciences curriculum, which includes an Equine emphasis, is in its final stages. And speaking of matters equine, ACBS's Racetrack Industry Program will be holding its world-renowned 47th Annual Global Symposium On Racing, Dec 6-8, 2021, here in Tucson. Details of the program and how to register can be found inside this newsletter.

As we move through the Fall semester, our faculty and staff will be busy preparing for a monumental event-- ACBS's Academic Program Review. All university academic units have their academic programs reviewed every seven years by a team of reviewers from outside and inside the university. The team will visit with us in April 2022 to conduct interviews with administration, faculty, staff, and students and issue a report on the overall quality of our academic program. As such, the review is a critical opportunity for our School to showcase its strengths and potential for future growth. This year's Academic Program Review also provides a singular opportunity for all of us to revisit and re-engage with our School's vision.

Lastly, I want to thank several of my ACBS colleagues for accepting directorship positions that are crucial support roles for me and will ensure that the diverse needs of our School are addressed: Dr. Scott Wilbur will continue as Associate Director of Academic Programs; Dr. Gayatri Vedantam will serve as Associate Director of Research; and Dr. Netzin Steklis will serve as Assistant Director of Stakeholder Relations and External Programs. With the advice and help of these colleagues and others that are part of a newly constituted Executive Committee, I am confident that, collectively, we can shape a strong future for our School.

H. Dieter Steklis

Director Interim and Professor, ACBS
Affiliate Faculty, Psychology and Family Studies & Human Development
Co-Director, Human-Animal Interaction Research Initiative (HAIRI)
University of Arizona
Emeritus Professor of Primatology
Rutgers University



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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

Dr. H. Dieter Steklis Appointed Interim Director, ACBS

ACBS would like to announce that Dr. H. Dieter Steklis has been appointed to the position of Interim Director, School of Animal and Comparative Biomedical Sciences.

Dr. Steklis earned his Ph.D. in biological anthropology from the University of California, Berkeley in 1974. He spent 30 years as a tenured faculty member at Rutgers University, chairing the Department of Anthropology for eight years beginning in 1983. While at Rutgers, he taught primate behavior, anatomy, and neurobiology, and with colleagues at the Medical School, co-led a primate neuroethology research program.

In 2007, Dr. Steklis joined the University of Arizona faculty, at UA South, where he primarily taught psychology, led the Psychology Program, and for several years served as associate dean for academic affairs and chief academic officer. He was affiliated with the Norton School of Family and Consumer Sciences for several years and became part of the School of Animal and Comparative Biomedical Sciences in 2017. Drs. Dieter and Netzin Steklis co-direct the Human-Animal Interaction Research Initiative (HAIRI) and co-led a summer Primate Studies Field School in Rwanda for UA Study Abroad students.

Please join us in thanking outgoing school director, Dr. Patricia Stock, for her more than 20 years of service to the UArizona and in welcoming Dr. Steklis to his new appointment.

Dr. Zeliann Craig Appointed CALS Assistant Dean for Research

Congratulations to Dr. Zeliann Craig for her appointment to the position of Assistant Dean for Research in the College of Agriculture and Life Sciences at the University of Arizona.

In her new position, Dr. Craig will assist Dr. Parker Antin, the Associate Dean for Research, to advance CALS research through planning and development of new initiatives, support of existing programs, development of long and short-range goals and objectives, and support of operations related to the College's research portfolio. She will oversee research training programs and workshops, and work with the Associate Dean to foster innovation and advance technology transfer activities across the College.

Dr. Craig received her PhD from the UArizona in Physiological Sciences and postdoctoral training from the University of Illinois Urbana-Champaign. She returned to the UArizona in 2013 as an Assistant Professor in the School of Animal & Comparative Biomedical Sciences (ACBS) where she has established an

externally funded research program focused on understanding how environmental chemical exposures influence reproductive function in females. In 2019, she was promoted to Associate Professor with Tenure. Over the past eight years, Dr. Craig has served in various roles including Director of Graduate Studies for the ACBS Graduate Program, ACBS Representative to the CALS Diversity & Inclusion Council, member of the Initiative for Maximizing Student Development Advisory Board, and co-lead of the Adaptive Responses to Environmental Stress Research Focus Group of the College of Pharmacy's Southwest Environmental Health Sciences Center. She has also served in various extramural roles, including many NIH grant review panels, journal editorial boards, and scientific society governance.



(Continued from 1)

Type 2 Diabetes

communicates with the brain to influence metabolic changes seen in obesity and diabetes.

"We found that fat in the liver increased the release of the inhibitory neurotransmitter Gamma-aminobutyric acid, or GABA," Renquist said. "We then identified the pathway by which GABA synthesis was occurring and the key enzyme that is responsible for liver GABA production – GABA transaminase."

A naturally occurring amino acid, GABA is the primary inhibitory neurotransmitter in the central nervous system, meaning it decreases nerve activity.

Nerves provide a conduit by which the brain and the rest of the body communicate. That communication is not only from the brain to other tissues, but also from tissues back to the brain, Renquist explained.

"When the liver produces GABA, it decreases activity of those nerves that run from the liver to the brain. Thus, fatty liver, by producing GABA, is decreasing firing activity to the brain," Renquist said. "That decrease in firing is sensed by the central nervous system, which changes outgoing signals that affect glucose homeostasis."

To determine if increased liver GABA synthesis was causing insulin resistance, graduate students in Renquist's lab, Caroline Geisler and Susma Ghimire, pharmacologically inhibited liver GABA transaminase in animal models of Type 2 diabetes.

"Inhibition of excess liver GABA production restored insulin sensitivity within days," said Geisler, now a postdoctoral researcher at the University of Pennsylvania and lead author on the papers. "Longer term inhibition of GABA-transaminase resulted in decreased food intake and weight loss."

Researchers wanted to ensure the findings would translate to humans. Kendra Miller, a research technician in Renquist's lab, identified variations in the genome near GABA transaminase that were associated with Type 2 diabetes. Collaborating with investigators at Washington University, the researchers showed that in people with insulin resistance, the liver more highly



National Public Radio (NPR) - Arizona Science

Dr. Ben Renquist spoke with Tim Swindle, Director of the University of Arizona Space Institute, about why medical researchers who connect diabetes with obesity think the liver plays a key role.

Episode 293: Seeking a breakthrough for treating Type 2 diabetes

<https://www.azpm.org/s/89163-arizona-science-293/>

expressed genes involved in GABA production and release.

The findings are the foundation of an Arizona Biomedical Research Commission-funded clinical trial currently underway at Washington University School of Medicine in St. Louis with collaborator Samuel Klein, co-author on the study and a Washington University professor of medicine and nutritional science. The trial will investigate the use of a commercially available Food and Drug Administration-approved inhibitor of GABA transaminase to improve insulin sensitivity in people who are obese.

"A novel pharmacological target is just the first step in application; we are years away from anything reaching the neighborhood pharmacy," Renquist said. "The magnitude of the obesity crisis makes these promising findings an important first step that we hope will eventually impact the health of our family, friends and community."

Originally released by news.arizona.edu

Full article <https://news.arizona.edu/story/promising-new-pathway-treating-type-2-diabetes>

Food Safety Students Receive Stipend Awards & Support

The Food Safety Stipends were created to recognize outstanding students majoring or minoring in Food Safety. These Stipends were made possible through the Victor P. Smith Food Safety Education Endowment honoring the Smith family's wish to support students in their Food Safety academic endeavors. These Stipends were also created in honor of Dr. Daniel Engeljohn, who created, inspired, and fostered educational opportunities in the Food Safety Program at the UArizona prior to his retirement.

Four worthy students were awarded with Food Safety Stipends for the 2021-2022 academic year: Madison Goforth and Denver Paradeza at UArizona-Tucson campus and Alysandra Gomez and Maria Zepeda at UArizona-Yuma campus. In addition to the stipend award to support students' enrollment fees, recipients will also have regular meetings with a Food Safety mentor and attend a Produce Safety certificate course to enhance their Food Safety career development. We congratulate our inaugural Food Safety Stipend recipients!

Madison Goforth (top)
Senior, Food Safety minor, UArizona-Tucson

Madison is most interested in the agricultural production of food, specifically the process of knowing what is in the soil and

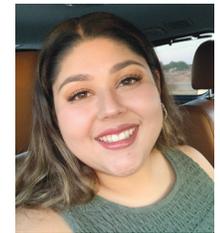
what crops grow where and do well. She is also interested in knowing what pathogens are most prevalent and why they appear in different areas.

Maria Zepeda (middle)
Junior, Food Safety major, UArizona-Yuma

What most interests Maria about food safety is the importance it plays in keeping communities and the world healthy. She says, "Food is one of the most essential needs in life. Making sure that it is up to the necessary standards is a great responsibility."

Alysandra Gomez (bottom)
Junior, Food Safety major, UArizona-Yuma

Alysandra is most interested in educating people about how to prevent deadly pathogens from being consumed from the produce they purchase at the market. She is also interested in the impact of foodborne illnesses on the food industry and the change in demand of food being processed it can cause.



Broadening the Freshman Experience - ACBS 102 Lab

This Fall semester, the teaching team for the animal sciences introductory course redesigned the lab experience to broaden the freshman experience for incoming ACBS students. The goal of the redesign was to showcase an area of ACBS teaching and research expertise each week of the course. Dr. Dieter Steklis, Interim Director of ACBS, explained that "the purpose of this new lab format is to expose students to a wide array of potential career options within ACBS early in their undergraduate years so they can keep several choices in mind."

In addition, this format makes our talented faculty more approachable since each weekly topic is taught by a different faculty member. "During lab, students are interacting with the faculty, which makes it easier to imagine taking their more advanced courses later or approach them to get involved in their research," said Course Coordinator, Dr. Crista Coppola.

Topics covered this semester:

- Meat Sciences
- Sheep Management
- Companion Animals
- Veterinary Sciences
- Racetrack Industry
- Equine Science
- Animal Genomics
- Captive Wild Animal Management
- Microbiology
- Food Safety
- Beef Cattle Management



Top row: (left) Dr. Netzin Steklis traces the evolution of equine locomotion traits as students watch a horse in action at Al-Marah Equine Center; (right) Students learn how to handle sheep.



Middle row: (left) Students dissect a heart; (right) Dr. Dieter Steklis encourages students to trace the route of blood through the heart.

Bottom row: Students learn about captive wild animal welfare at the Reid Park Zoo.



RTIP Summer Spotlights

Race Track Industry Program students spent the past summer working in internships across the US learning and gaining hands-on experience in multiple aspects of the racetrack industry. Here are a few highlights:

Giselle Lugo gained valuable leadership, management, and racing industry skills during her summer internship at Arizona Downs in Prescott Valley, AZ. During the Arizona Downs summer race meet, she was assistant to the General Manager, Mike Weiss, and one of the paddock show hosts, alongside RTIP alumnus, Aaron Vercruysse. She also designed the daily racing programs, took entries in the racing office, and helped in whatever capacity was needed. Giselle was able to spend her days off exploring the beautiful surrounding areas of Prescott.

Eric DeCoster spent his summer interning for Wanamaker's, an online auction house, in Saratoga Springs, New York. He also gained hands-on experience in the mornings by hotwalking horses for trainer Ray Handal.

Hailey Shiffer worked hard and gained invaluable experience during her summer internship at Lane's End Farm in Versailles, KY. She worked in the Yearling Division, prepping thoroughbreds for the Keeneland September Sale. She spent her days off touring other farms and sightseeing around Lexington.

MaryRuth Hodsden spent the summer break interning between three racing barns at Wyoming Downs. She got plenty of hands-on experience working with both thoroughbred and quarter horses for trainers Kash Evans, Stacey Rushton, and Josh Taylor.



Clockwise from top left: Giselle Lugo at Arizona Downs in Prescott, Valley, AZ; Eric DeCoster hotwalking horses for trainer Ray Handal in Saratoga Springs, NY; Hailey Shiffer at Lane's End Farm in Versailles, KY; MaryRuth Hodsden at Wyoming Downs in Evanston, WY.

NYRA Scholarship Honoring Elizabeth Bracken

The New York Racing Association, Inc. (NYRA), has created the Elizabeth Bracken Memorial Scholarship, to support and encourage students enrolled in the University of Arizona Race Track Industry Program (RTIP) to secure careers in the Thoroughbred industry.

The \$10,000 scholarship, to be awarded annually, is open to juniors and seniors who have completed one full semester in the RTIP and have expressed the desire to work in the Thoroughbred racing industry. The scholarship honors the memory of Elizabeth Bracken, an RTIP graduate, who spent 16 years at NYRA before returning to RTIP as Associate Coordinator and Instructor. Bracken died in November 2019; she was 52.

"We view this scholarship as a way of attracting talented students to a career in our industry, especially in New York," said NYRA President & CEO Dave O'Rourke. "Liz was an inspiration to everyone who knew her. Our hope is that recipients will share the kind of creativity, vision and drive that Liz brought to everything she accomplished at NYRA and elsewhere in racing."

For more information, annual application dates, and eligibility requirements go to <https://ua-rtip.org/content/scholarships>.

To view full article go to <https://ua-rtip.org/news/2021/06/nyra-announces-scholarship-honoring-elizabeth-bracken>.



Mark Your Calendars!

The Race Track Industry Program (RTIP) will hold the 47th Global Symposium on Racing at Loews Ventana Canyon from December 6-8.

The conference brings together industry thought leaders to discuss issues and trends affecting the equine and business side of racing. RTIP seniors will be presenting their capstone projects to attendees as well.

A complete list of the panel session will be released in September. **All ACBS Faculty and Students are invited to attend Symposium panel sessions free of charge.** Pre-registration is required. Those who are interested should contact Emiliano Alvarado at eia@arizona.edu.

Congratulations Recent ACBS Graduates!

Summer 2020

Animal Sciences

Baraquiel Molina, BS

Microbiology

Marilyn A Mews, MS

Susan America Avila, BS

Cesar E Grijalva, BS

Nina Marlene Herz, BS

Max J Holland, BS

Lucy Tran Luong, BS

Bree Chante Rios, BS

Leo Murray Rusch, BS

Jamie Young, BS

Shelby Katherine Young, BS

Veterinary Science

Skyelar Kathryn Beaman, BS

Evelyn Guadalupe Bolanos, BS

Sierra Kathleen Campbell, BS

Rachel Marie Ciemniewski, BS

Delaney Alyssa Drew, BS

Scout Gannon-Griffith, BS

Sarina Brooke Hopkins, BS

Jazmine Anna Jones, BS

Samantha Guadalupe Mendieta, BS

Michelle Diane Mendoza, BS

Sabrina Nicole Padilla, BS

Victoria Elise Vineyard, BS

Fall 2020

Animal Sciences

Pablo Cesar Grijalva, MS

Christopher David Buick, BS

Jacqueline Nicole Cartwright, BS

Demi Rae Marcella Dunham, BS

Andrew J Lick, BS

Chloe Georgia McQueen, BS

Alison Nguyen, BS

Matthew Brice O'Connor, BS

Taylor Marie Owens, BS

Dakota Skyler Robinson, BS

Kristen Anne Solberg, BS

Microbiology

Shobitha Jillella, MS

Javier Sanchez Bastidas, BS

Eliu A Bautista, BS

Natalie Campbell, BS

Rachel Lynn Colwell, BS

Kathryn Denton, BS

Cole Richard Puetz, BS

Camryn Margaret Rasch, BS

Alicia Kathleen Scull, BS

Christian Peter Sutherlin, BS

Cody William Trego, BS

Brook Taylor Williams, BS

Veterinary Science

Amber Paige Beeney, BS

Esmeralda Noemi Bolanos, BS

Elisabeth Marie Carter, BS

Cassidy Lauren Cole, BS

Nia Taylor Dean, BS

Chandler LeeAnn From, BS

Luisa Alexandra Fulton, BS

Natasha Marie George, BS

Cheyenne Adelaide Henry, BS

Racquel Kiara James, BS

Madeline Ann Johnson, BS

Melanie Ellen Jones, BS

Dalton Ashton Kelahan, BS

Rauland Jon Sterling La Russa, BS

Haley Elizabeth Monteith, BS

Kelsie Sue Neill, BS

Melisa Quezada, BS

Winter Cooke Ruljancich, BS

Cierra Rochelle Smith, BS

Valeria Borquez Smith, BS

Bridget Elizabeth Rose Spooner, BS

Roxanne Nicole Teran, BS

Sarah Walid Murad Abdulla Albaloooshi, BS

Layni Ann Wells, BS

Spring 2021

Animal Sciences

Lorena Canez, BS

Megan Ashley Cordery, BS

Jessica Nicole Cusack, BS

Jesus Enrique Fimbres, BS

Manuel Hernandez, BS

Leslie Kay Jull, BS

Jacob Nathaniel Meeker-Hackett, BS

Valeriu Ion Monchamp, BS

Faye Regan Munoz, BS

Ariel Mae Olvey, BS

Shelby Lynn Robling, BS

Daniela Rodriguez Rios, BS

Topacio Salazar, BS

Microbiology

Andrew Joseph Aguilera, BS

Charlene Aparicio, BS

Justin Brandon Billy, BS

Catherine Elizabeth Brooks, BS

Brandon Kyle Dahl, BS

Jenny Fleitman Ramirez, BS

Morgan Lynn Frost, BS

Kalani Jayde Goodrich, BS

Reya Nicole Holmes, BS

Curtis James Johnson, BS

Martin Austin Johnson, BS

Claire Marie Gabrielle Jurecky, BS

Michael Martin Lopez, BS

Jessica Mary Martin, BS

Veronica Esther Murrell, BS

Megan Noel Nickerson, BS

Kamal Jitendra Patel, BS

Sophia Lee Quick, BS

Andrew Rabe, BS

Jacob Keith Robishaw-Denton, BS

Wade Isaac Sumner, BS

Rachel Lynn Whitman, BS

Jessica Lynn Wynn, BS

Isaac Zarif, BS

Veterinary Science

Taylor Kennedy Albert, BS

Korina Alice Bailey, BS

Gaetano Ellsworth Barnes III, BS

Madison Raye Bates, BS

Zachary Dale Bristow, BS

Lauren Elizabeth Burrow, BS

Laura F Cagnetta, BS

Alejandra Canett, BS

Judea Francis Canez, BS

Megan Alyssa Colborn, BS

Analisa Marie Del Grosso, BS

Alexis Breanne Goldstein, BS

Gemma Esmeralda Hernandez, BS

Nicole Elizabeth Jablon, BS

Bethany Ruth Johnson, BS

Brennen Britt Jones, BS

Brooke Madison Kearney, BS

Natalie Marie Kimble, BS

Maia A King, BS

Kathryn Marie Kleier, BS

Skylar Ann Knight, BS

Claire Alexandra Loethen, BS

Cierra Mariellen Lohr, BS

Annie Marie Lucas, BS

Nicole Kanako McHugh, BS

Sydney Diane McKarns, BS

Jacob Joseph Melcer, BS

Alyssa Maria Menendez, BS

Cara Marie Obluck, BS

Alexander Jacob O'Dell, BS

Maggie Taylor Orm, BS

Paloma Adriana Orozco, BS

Camryn Ashley Parker, BS

Faithlyn Belle Peek, BS

Brianna Ashley Perez, BS

Emma Simone Potter, BS

Maria Ninoshka Quinones-Sesto, BS

Melanie Alejandra Quintero-Cardenas, BS

Hannah Leigh Reilly, BS

Taylor Marie Reynolds, BS

Bryanna Nicole Rodda, BS

Serena Raquelle Sanchez, BS

Reilly Daniella Scheppers, BS

Alexandra Lee Schlecht, BS

Lucia Fernanda Serrano, BS

Cecilia Renee Stebbins, BS

Kiarra N Tarver, BS

Amanda K Van Asdall, BS

Kacey Paige Wellard, BS

Laura T Wilson, BS

Karlie Alexandra Wood, BS

Devyn Noel Yrizarry, BS

Bend the Curve Hand Sanitizer Distribution

Dr. Betsy Greene coordinated and delivered multiple cases of hand sanitizer from the ACBS “Bend the Curve” project to Native American communities across Arizona. The “Bend the Curve” project produced hand sanitizer for Arizona health care workers amid the COVID-19 pandemic when hand sanitizer was scarce to impossible to obtain. The project, run by staff and students from the Vedantam/Viswanathan Labs, 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 of 2020.

Top row (L-R) – Betsy Greene picking up hand sanitizer from graduate student, Katie Cocchi and Research Specialist Jason Lindsey; Betsy Greene and Joslyn Beard (center) deliver hand sanitizer to Nathan Notah (left) and Grey Farrell (right) to disperse in the Navajo tribal community.

Middle row (L-R) – Betsy Greene delivers hand sanitizer to Juan Arias for the San Carlos Apache Tribe; Elisabeth Alden for the Hualapai Tribe; and Susan Sekaquaptewa for the Hopi Tribe.

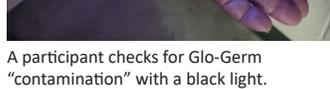
Bottom row (L-R) – Some of the organizations receiving hand sanitizer include the Hopi Cancer Support Center; Carrie NDC Vice President, Apache community; Marcella James NDC non-profit, San Carlos community; 4H families, Apache community.



ALIRT First Responder Training Workshop

This summer the UArizona hosted an Arizona Livestock Incident Response Team (ALIRT) First Responder Workshop on July 29th and 30th, at the University of Arizona Food Product and Safety Lab in Tucson. Over the course of two days, ALIRT members and veterinarians participated in several lectures and an interactive training. Dr. Betsy Greene and Debbie Reed planned and coordinated the event with many thanks to Dr. Joslyn Beard for her assistance with day-of logistics.

The first day of the workshop consisted of lectures that included an array of topics, including how ALIRT works, what types of situations can activate ALIRT, how personnel other than veterinarians assist in an ALIRT response, how to handle an event involving criminal activity, and what forms and documentation must be utilized during a response. Dr. Tony Knight, Poisonous Plant Consultant and Professor Emeritus at Colorado State University, delivered an engaging lecture concerning livestock poisonings and reviewed a large list of poisonous plants that can be found in Arizona. Dr. Mo Salman, Professor of Preventive Veterinary Medicine and Infectious Animal Diseases at Colorado State University, gave an animated and detailed lecture concerning lessons gained from COVID-19. Not surprisingly, lecture topics of the first day of the workshop generated hearty discussions and questions from participants.



A participant checks for Glo-Germ “contamination” with a black light.

The second day of the workshop included a mixture of lecture and practical training. Lecture and

video were provided to review putting on and taking off (donning and doffing) personal protective equipment (PPE) for an ALIRT response. After review of procedures and technique, participants broke out into groups and practiced their skills. After fully donning PPE and enduring the toasty feeling of being enveloped in a Tyvek suit, gloves, boots, duct tape, and mask, participants were sprayed with a solution called Glo-Germ, which mimicked being “contaminated” with disease particles. Participants were then asked to doff their PPE carefully to avoid “contamination”. The results of the efforts were verified by black light inspection. If a participant was successful in doffing their PPE, there would be no florescent glow on any of their skin or clothing. The day concluded with restocking ALIRT kits – large rolling red bags that carry all the supplies a first responder would need to respond to an ALIRT event.



Attendees were “contaminated” with Glo-Germ to test their PPE doffing proficiency.

Throughout the course of this two day workshop, members came together to share their knowledge and dedication to the ALIRT Program. This workshop was a fantastic venue for new and old members to become acquainted, facilitated outreach between the AZDA and collaborating members and organizations, and allowed for a review of knowledge and skills that keep ALIRT program members ready to spring into action, should the need arise.

- Originally published in the Arizona Cattlelog, Sep 2021

Native American Agricultural Fund (NAAF)

Grant work on “Empowering Tribal Ranches by Educating Adults/Youth on Methods to Improve Animal/Human Health...” has shifted to include in person, hands-on livestock and horse care/stewardship workshops at many sites with all our Tribal Extension Agents, and the State Horse and Livestock Specialists.

Hopi Equine Webinars

- “Colic Prevention and Treatment” Webinar. (August 2, 2021) conducted by Betsy Greene.
- “Hay Quality and Horse Digestion” Webinar. (July 12, 2021) conducted by Betsy Greene.
- “Biosecurity for your Horse and Tack Safety” Webinar (June 7, 2021) conducted by Betsy Greene and Ashley Wright.

Livestock/Equine Hands-On Workshops

Topics Covered Included: Vaccination Protocols, Record Keeping, Body Condition Scoring (horse and cattle), Low Stress Handling, Drought Strategies, Plant Identification, Equine Health and Resources, Cattle Processing/Treatment, Beef Quality Assurance, Aging Cattle, Culling During Drought. All workshops were conducted by Betsy Greene, Joslyn Beard, and Grey Farrell with assistance from the Tribal Extension Agent at each location.



Grey Farrell speaks to livestock producers in San Carlos, AZ.

- “Free Summer Livestock Seminar” at

Equine Extension Podcasts:

- [Tack Box Talk - Studying Teaching?: The stories of how equine teachers learn to be better at our jobs](#)
With Kris Hiney, Sara Mastellar, Rhonda Hoffman, & Betsy Greene
- [Tack Box Talk - Fat Horses: The Story of why they just won't quit eating!](#)
With Kris Hiney, Krishona Martinson, & Betsy Greene

National Association of County Agricultural Agents

Dr. Betsy Greene and colleagues presented at the NACAA Annual Meeting/Professional Improvement Conference, July 6-9, 2021.

- Betsy Greene, Julie Smith, Kris Hiney, Joanna Cummings, Susan Kerr – 4-H and Youth: Youth Biosecurity Education Community Conversations
- Juan Arias, Betsy Greene, Ashley Wright – Animal Science: Reaching Tribal Ranchers in San Carlos Apache Tribe

2021 Cooperative Extension Livestock/Horse Survey

To better assess the changing needs of livestock and horse producers in the state of Arizona we are requesting your participation in the 2021 Cooperative Extension Livestock/Horse Survey. The survey should be completed by individuals in Arizona who raise any type of classification of livestock such as beef and dairy cattle, horses, sheep, goats, llamas, swine, and/or chickens. Scan the QR code to access the survey.



This is a five-year update to the statewide survey conducted by Livestock Agent Ashley Wright and Horse Specialist Dr. Betsy Greene.

Hopi Veterinary Services, Keams Canyon, AZ (9/25/2021) hosted by Susan Sekaquaptewa.

- “Summer Livestock Seminar” at Rodeo Grounds, Tuba City, AZ (9/24/2021) hosted by Grey Farrell.
- “San Carlos Apache Livestock/Equine Resource Workshop” at San Carlos Old Sale Dripping Springs Rd (9/17/2021) hosted by Juan Arias.
- “Summer Livestock Seminar” at Kirtland Sale Facility, Kirtland, NM (8/21/2021) hosted by Alexendra Carlisle.
- “Summer Livestock Seminar” at Navajo Nation Fairgrounds, Window Rock, AZ (8/20/2021) hosted by Nathan Notah.
- “Livestock Producers Demonstration Day” at 4-H Agricultural Facility, Peach Springs, AZ (8/7/2021) hosted by Elisabeth Alden.



Dr. Betsy Greene giving a presentation in Window Rock, AZ.



Dr. Joslyn Beard conducts a cattle demonstration in Peach Springs, AZ.

UArizona Horse and Livestock Specialists Work with Hualapai Buck and Doe 4-H Club

Dr. Betsy Greene and Dr. Madeleine Melchior presented a half-day NAAF horse workshop on Aug 6, 2021 for Hualapai Buck and Doe 4-H club members and volunteers. They taught the youth and adults how to evaluate horse health, how to take vital signs, and the patterns of foot falls for different horse gaits. Both youth and adults were excited to learn and practice hands-on horse health care!

That evening, Buck and Doe 4-H club got hands on help with their livestock project animals with Dr. Joslyn Beard at the “4-H Youth Livestock Meet and Greet with UArizona Faculty” The youth were excited to discuss their projects, ask nutrition questions about their beef, swine and sheep projects, and get hands-on help with how to show a market lamb.



Clockwise from top left: Dr. Joslyn Beard teaches 4-H youth to present their sheep; Dr. Madelyn Melchior demonstrates taking the horse's pulse; Dr. Betsy Greene helps a 4-H member check the height of the horse.

Dr. Sadhana Ravishankar Named TLA Inventor of the Year

Tech Launch Arizona (TLA), the office of the University of Arizona that commercializes inventions stemming from research, hosted its eighth annual I-Squared Awards and Expo event on September 28, 2021. Along with honoring the top inventors and entrepreneurs dedicated to commercializing UArizona inventions, the evening included an expo of UArizona innovations and startups hosted by the entrepreneurial, innovative teams.

The Inventor of the Year Award was presented to Dr. Sadhana Ravishankar. The award honors a UArizona innovator who has demonstrated a significant commitment to commercialization throughout their career, with a focus on activity in the past year. Ravishankar is a professor of Animal and Comparative Biomedical Sciences in the College of Agriculture & Life Sciences and the BIO5 Institute. She has been working with TLA on developing natural antimicrobial products for the marketplace, and last year launched a new company – PhytoCentric Solutions – to commercialize inventions developed in her lab.

In her acceptance comments, Ravishankar thanked many who have contributed to her success, including PhytoCentric Chief Executive Officer Bibiana Law, Chief Strategy Officer Daphne

Prusse, her laboratory staff, and all of her graduate and undergraduate students.

“For a woman entrepreneur to be recognized like this it makes me feel so empowered, and I hope it serves as a motivation to others,” she said. Her message to all women researchers and potential inventors was, “Please do not hesitate to pursue your passion. The sky is the limit. Definitely go for it!”

To learn more about the 8th Annual I-Squared Expo & Awards read the full article at <https://techlaunch.arizona.edu/news/2021/09/uarizona-inventor-year-has-message-women-innovators-sky-limit-definitely-go-it>



Left to right: UArizona Sr. Vice President of Research and Innovation Elizabeth “Betsy” Cantwell, Sadhana Ravishankar, and Assistant Vice President of Tech Launch Arizona Doug Hockstad.

Renquist Lab News

Recent Graduates

Susma Ghimire graduated with a MS in Physiological Sciences. Project: The role of GABA shunt and hepatic GABA transporters on hyperinsulinemia and insulin resistance.

Jason Kronenfeld graduated with Honors with a BS in Chemistry. Project: Development of a GABA transaminase inhibitor that does not penetrate the blood-brain barrier.



(left - right) Susma Ghimire; Stephanie Bruggink; Jason Kronenfeld.

Awards

Jason Kronenfeld

- National Science Foundation – Graduate Research Fellowship Program – 2021
- University of Arizona Undergraduate Researcher Recognition Award – 2021
- University of Arizona Chemistry and Biochemistry Department Excellence in Research Award – 2021
- University of Arizona Chemistry and Biochemistry Department Outstanding Senior Award – 2021

Stephanie Bruggink (above center)

- ARCS Foundation Research Scholarship – 2021

Ravishankar Lab Updates

Outreach Activities

Dr. Ravishankar and her team members gave a national presentation on the importance of food safety including a demonstration on appropriate handwashing, efficacy of antimicrobial washes on fresh strawberries, and extraction of DNA from fresh strawberries to high school students attending the Virtual USDA-Ag Discovery camp on June 17, 2021.

Dr. Ravishankar’s lab team, gave a lab tour with a demonstration of various ongoing food safety projects, to a group of high school students attending the SaferFoodCats Summer Camp on June 25, 2021.

Zhou Lab Welcomes New Members

New Additions

The Zhou Lab welcomed two new ACBS PhD students for the Fall 2021 semester, Shereen Lam and Shaira Perez.

In July 2021, Ayna Tracy, a postbaccalaureate student, joined the Zhou Lab. Ayna is a participant in the Postbaccalaureate Research Education Program at the University of Arizona (PREP @ UAZ). PREP @ UAZ seeks to provide American Indian/Alaskan Native students with a rigorous research and educational program that honors Indigenous perspectives and nurtures a strong sense of well-being and belonging. The program provides mentored research and professional development opportunities to selected postbaccalaureate students in order to increase the success of participants with their matriculation into strong biomedical PhD programs. To learn more about the program go to <https://pathology.arizona.edu/uaprep>.

Aquaculture Pathology Laboratory

Laboratorio de Sanidad Acuicola, SANIPES

Drs. Luis Fernando Aranguren Caro and Arun K. Dhar visited Laboratorio de Sanidad Acuicola, SANIPES (equivalent to the USDA), Tumbes, Peru, to audit a shrimp disease diagnostic laboratory. This is part of an on-going collaboration with the Aquaculture Pathology Laboratory. During the visit, Dr. Dhar gave a talk on “Infectious Hypodermal & Haematopoietic Necrosis (IHHN): A Multifaceted Viral Pathogen of Shrimp”.



Dr. Arun K. Dhar (second from left) and Dr. Luis Fernando Aranguren Caro (second from right), at the Laboratorio de Sanidad Acuicola, SANIPES, Tumbes, Peru.

USDA Virtual Training

Dr. Arun K. Dhar gave three presentations in the USDA “Aquatic Foreign and Emerging Diseases Virtual Training”, August 9-11, 2021.

Aquaculture America - 2021

Dr. L. Fernando Aranguren Caro Chaired a session on Shrimp Diseases in Aquaculture America-2021, August 11-14, San Antonio, Texas. Dr. Fernando Aranguren Caro, Dr. Hung N. Mai, and Mr. Paul Schofield presented papers during the conference.

Research Experiences for Undergraduates

Maya Ricardo, an undergraduate from Occidental College in Los Angeles, California, worked in the APL as a Research Experiences for Undergraduates (REU) Summer Intern. Her project involved “Pathogenicity study of acute Hepatopancreatic necrosis disease in *Penaeus vannamei*”. Maya was supervised by Dr. Hung N. Mai at a bench level.



Maya Ricardo (left) with Dr. Hung N. Mai.

New APL Employee

Rika Nakamura - Research Technician IV



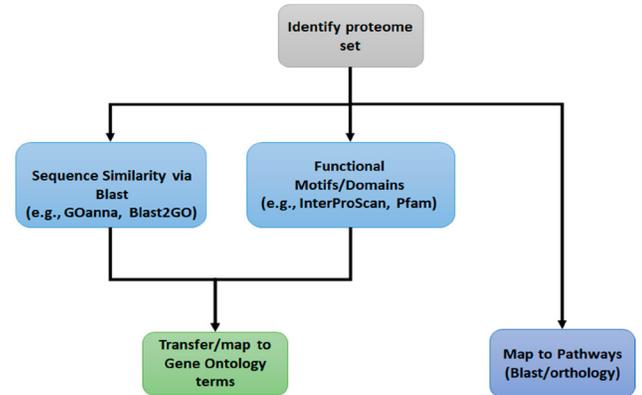
UA Meat Science Team Attends Reciprocal Meat Conference

Dr. Samuel Garcia, Dr. Duane Wulf, and graduate student Bryanne Waller, attended the American Meat Science Association’s (AMSA) Annual Meeting, the Reciprocal Meat Conference (RMC), in Reno, NV, on Aug 13-18. Bryanne competed in the AMSA Student Iron Chef competition and Drs. Garcia and Wulf served as judges for the Iron Chef. Some key presentations addressed the Future of Meat, Pre-Harvest Factors Influencing the Biology of Skeletal Muscle as a Food, and Emerging Technologies for Microbiological Safety of Meat Products. In addition, Dr. Wulf was elected to the Board of Directors of the Intercollegiate Meat Coaches Association. This year marks the first time in many years that the University of Arizona has had a contingent participating in the annual RMC.



(l-r) Dr. Samuel Garcia, graduate student Bryanne Waller, and Dr. Duane Wulf at the Reciprocal Meat Conference.

Workflows for Rapid Functional Annotation of Diverse Arthropod Genomes



A current collaborative project between Dr. Fiona McCarthy’s laboratory and the USDA National Agricultural Library, focuses on developing genomic resources to support the application of modern genetics and genomics approaches to managing insect pests. Genomic technologies are accumulating information about genes faster than ever before, and sequencing initiatives are expected to increase this rate of acquisition. However, while genomic projects provide a catalog of insect genes, sequencing does not provide information about what genes do and how their products interact to ensure the survival of the insect. One such project is the Ag100Pest Initiative, whose goal is to produce high quality genome assemblies for the top 100 US arthropod agricultural pests. The role of ACBS researchers is to provide functional information about these genes, most of which have not previously been studied. Providing information about the function of these genes will enable researchers to translate their research more easily into information that can be used for agriculture.

As a part of the AgBase database, a curated resource for functional analysis of agricultural plant and animal gene products, researchers in Dr. McCarthy’s laboratory have created a well-defined computational workflow for rapid functional annotation that can be associated with newly sequenced genomes. The workflow was tested on a diverse set of arthropod genomes and compared to common arthropod reference genomes. The workflow is freely and publicly available through a collaboration between the AgBase and CyVerse resources so that it is widely accessible for researchers to use. This work has been published recently in MDPI Insects (<https://www.mdpi.com/2075-4450/12/8/748#>).

Grants

Sponsor: National Institute of Dental and Craniofacial Research

Title: Characterizing the Role of Cellular Differentiation in Productive Papillomavirus Amplification

PI: **Koenraad M Van Doorslaer**

Project amount: **\$307,000**

Sponsor: American Heart Association, Incorporated

Title: Preeclampsia Dysregulates Fetal Endothelial Responses to Growth Factors and Cytokines

PI: **Chi Zhou**

Project amount: **\$169,055**

Sponsor: National Cattlemen's Beef Association (NCBA)

Title: The Effects of the F94L Myostatin Gene Mutation in Beef on-dairy Breeding Systems on Beef Carcass Value and Beef Palatability

Co-PIs: **Duane M Wulf & Samuel Garcia**

Project amount: **\$103,656**

Sponsor: Flinn Foundation

Title: A Microbiota-Sparing Live Biotherapeutic for *C. Difficile* Infection

PI: **Gayatri Vedantam**

Project amount: **\$100,000**

Sponsor: World Health Organization for Animal Health (OIE, Paris, France)

Title: OIE Twinning Project. To Improve LNDV Compliance with OIE Diagnostic Standard for Crustacean (Shrimp) and Fish Diseases

Co-PIs: **Arun K Dhar & Gersson M.V. Machado**, Nacional de Colombiano Diagnostico Veterinario Agropecuario-Laboratorio Nacional de Diagnóstico Veterinario (LNDV), Bogota, Colombia

Project amount: **\$78,585**

Sponsor: National Institutes of Health (NIH)

Title: Preeclampsia-Induced Fetal Endothelial Dysfunction in Obese Pregnancy: Novel Roles of miR192-5p

PI: **Chi Zhou**

Project amount: **\$76,750**

Sponsor: University of Virginia/ National Institute of Allergy and Infectious Disease

Title: Genomic Epidemiology of *Campylobacter* to Improve Disease Control in Low and Middle Income Countries

PI: **Kerry K Cooper**

Project amount: **\$48,896**

Sponsor: TLA Tech Launch Arizona

Title: Asset Development Project - Rapid Diagnosis of Microbial Pathogens in Aquatic Species

PI: **Luis F Aranguren Caro**

Project amount: **\$40,000**

Sponsor: CNA (Camara Nacional de Acuacultura)

Title: Determine the Genetic Diversity Among Circulating Genotypes of IHNV from Different Shrimp Producing Regions in the Ecuadorian Shrimp Industry

Purpose: The project will focus on to current situation of IHNV in shrimp industry in Ecuador.

PI: **Luis F Aranguren Caro**

Project amount: **\$34,589**

Sponsor: NuLode LLC/USDA

Title: Oral vaccine delivery for control of Tilapia Lake Virus (TiLV)

PI: **Arun K Dhar**

Project amount: **\$33,088**

Sponsor: G.K. Jim Group of Companies (CANADA)

Title: Palatability and Consumer Preference of Beef from Beef/Dairy Crosses Compared to Commodity Beef

Co-PIs: **Duane M Wulf & Samuel R Garcia**

Project amount: **\$32,151**

Sponsor: SANIPES (Organismo Nacional de Sanidad Pesquera, Lima, Peru) The National Fisheries Health Agency of Peru

Title: Risk Assessment and Risk Management in Peruvian Shrimp Industry with Emphasis on *Hepatobacter penaei* (Necrotizing Hepatopancreatitis-Bacteria, Nhp-B)

Purpose: The project will focus on determining the NHP-B impact on the Peruvian shrimp industry.

PI: **Luis Fernando Aranguren Caro**

Project amount: **\$24,600**

Sponsor: National 4-H Council

Title: 2021 4-H Ag Innovators Experience Implementation

PI: **Gerardo U Lopez**

Project amount: **\$16,000**

Wulf and Garcia Lab Receives NCBA Grant to Study Myostatin Gene Effects

The National Cattlemen's Beef Association has awarded the University of Arizona a research grant of \$103,656 (co-Pi's Dr. Duane Wulf and Dr. Samuel Garcia), to study the effects of the F94L Myostatin gene mutation in beef-on-dairy breeding systems on beef carcass value and beef palatability. Use of semen from beef breeds to inseminate dairy cows has increased substantially in recent years with millions of beef semen units currently being sold monthly for use in dairy herds. The F94L mutation in the gene for myostatin results in increased muscle growth through hyperplasia, an increase in the number of muscle fibers. Dairy breeds of cattle are inherently deficient in muscling, leading to poor carcass yields and lower carcass value. Drs. Wulf and Garcia hypothesize that the F94L gene will increase muscularity, boxed beef yields, and retail product yields from beef-on-dairy carcasses resulting in greater sustainability of beef production. They also will be investigating changes in muscle fiber type to better understand the biology behind the gene effects. These UA researchers are collaborating with Meat Scientists and Muscle Biologists from Texas Tech University on this research.

Zhou Lab Receives NIH Grant to Study Preeclampsia-Induced Fetal Endothelial Dysfunction

Preeclampsia (PE) is a hypertensive disorder and one of the leading causes of fetal/maternal morbidity and mortality during pregnancy. PE is characterized by impaired fetal and maternal endothelial function and excessive inflammation. Children born to PE will face increased risks of cardiovascular disorders later in life, suggesting that PE programs fetal vascular cells in utero. To date, the mechanisms underlying PE-associated fetal endothelial dysfunction remain elusive. This study will test the hypothesis that miR192-5p differentially regulates the PE-induced fetal endothelial dysfunction in lean and obese pregnancies via the TNF α and/or TGF β 1 signaling pathways using human umbilical vein endothelial cells (HUVECs) as a model. This will lead to further studies on the overall hypothesis, that PE programs fetal endothelial cells by dysregulating endothelial function-associated microRNAs and their target genes, leading to fetal endothelial dysfunction, and ultimately laying the groundwork for adult onset cardiovascular disorders in children born to PE.

Presentations and Symposia

Arellano S, Zhu L, Law B, and Ravishankar S. 2021. “Plant-based Microemulsions Inactivate *Escherichia coli* O157:H7 and *Pseudomonas fluorescens* on Iceberg Lettuce and Improve Visual Quality during 28-Day Storage”. Poster presented at the Annual Meeting of the International Association for Food Protection. July 19, 2021. Phoenix, Arizona.

Dhar AK. 2021. “Shrimp Biology, Taxonomy, and Farming- As They Relate to Disease Diagnostics”, “Aquatic Foreign and Emerging Diseases Virtual Training”, USDA, August 09-11, 2021.

Dhar AK. 2021. “IHNV, a Parvovirus that Shaped the Shrimp Industry Worldwide”, “Aquatic Foreign and Emerging Diseases Virtual Training”, USDA, August 09-11, 2021.

Dhar AK. 2021. “Biology, Genome Organization and Detection of Taura Syndrome Virus (TSV) and White Spot Syndrome Virus (WSSV)”, “Aquatic Foreign and Emerging Diseases Virtual Training”, USDA, August 09-11, 2021.

Dhar AK. 2021. “Infectious Hypodermal & Haematopoietic Necrosis (IHHN): A Multifaceted Viral Pathogen of Shrimp”, Laboratorio de Sanidad Acuicola, SANIPES, Tumbes, Peru.

Dhar AK, Cruz Flores R, Mai HN. 2021. Expediting pathogen discovery in shrimp by combining histopathology and genomic tools. Aquaculture America, WAS Conference, San Antonio, TX, August 11-14, 2021.

Fernando Aranguren L. 2021. Dr. Donald V. Lightner: A Legendary Shrimp Pathologist. Aquaculture America, WAS Conference, San Antonio, TX, August 11-14, 2021.

Fernando Aranguren L, Mai HN, Schofield P, Alenton RRR, Dhar AK. 2021. Development of an *Enterocytozoon hepatopenaei* (EHP) challenge model in screening genetic lines of *Penaeus vannamei* shrimp. Aquaculture America, WAS Conference, San Antonio, TX, August 11-14, 2021.

Greene EA and Reed DL. 2021. Arizona Livestock Incident Response Team (Alert): A Partnership Between The Az Department Of Agriculture, Veterinarians, Uarizona Cooperative Extension, And The Az Livestock Industry. Western Region PIC hosted by the Colorado County Agents Association. Oct 4-6, 2021. Grand Junction, Colorado.

Greene B, Brawley N, Wright A, Arias J, Beard J. 2021. “The How and Why of Calf Castration”. Arizona Cooperative Extension. University of Arizona. (August 2021) <https://www.youtube.com/watch?v=ZCsuTQrxds>

Law B. 2021 “Entrepreneurship and Innovation in Food Safety”. Food Safety Consortium Summer Seminar Series. July 2, 2021. Virtual.

Mai HN, Alenton RRR and Dhar AK. 2021. Identification of receptors of Pirab^{VP} binary toxin released by *Vibrio parahaemolyticus* causing acute hepatopancreatic necrosis disease (AHPND) IN *Penaeus vannamei* shrimp. Aquaculture America, WAS Conference, San Antonio, TX, August 11-14, 2021.

Ravishankar S. 2021. “Filling Science-based Knowledge Gaps in Food Safety: Prevalence of Foodborne Pathogens in Fresh Produce Production Environments”. Burroughs Wellcome Fund. June 8, 2021. Virtual.

Schofield P, Marcos F, Fernando Aranguren L, Dhar AK. 2021. Rapid amplification of *Enterocytozoon hepatopenaei* (EHP) inoculum in *Penaeus vannamei* shrimp. Aquaculture America, WAS Conference, San Antonio, TX, August 11-14, 2021.

Publications

Arellano S, Law B, Friedman M, and Ravishankar S. 2021. Essential oil microemulsions inactivate antibiotic-resistant *Salmonella* Newport and spoilage bacterium *Lactobacillus casei*



KVOA - News 4 Tucson

Dr. Koenraad Van Doorslaer, Professor of Virology in the School of Animal and Comparative Biomedical Sciences at the University of Arizona, speaks with News 4 Tucson's, Angelique Lizarde, about the effectiveness of different types of face masks against COVID-19.

UArizona Professors Rank Most Effective Masks to Protect Against COVID-19

<https://kvoa.com/news/2021/08/30/uarizona-professors-rank-most-effective-masks-to-protect-against-covid-19/>

on Iceberg lettuce during 28-day storage at 4° C. Food Control, 130, p.108209.

Beard J. 2021. Using cows body condition score (BCS) now for successful calving. Arizona Cattlelog. Sep 2021.

Geisler CE, Ghimire S, Hepler C, Miller KE, Higgins MR, Banek C, Yoshino J, Klein S, and **Renquist BJ.** 2021. Hepatocyte Membrane Potential Regulates Serum Insulin and Insulin Sensitivity by Altering Hepatic GABA Release. Cell Rep, 2021. 35(13): p. 109298.

Geisler CE, Ghimire S, Bruggink SM, Miller KE, Weninger SN, Kronenfeld JM, Yoshino J, Klein S, **Duca FA, and Renquist BJ.** 2021. A Critical Role of Hepatic GABA in the Metabolic Dysfunction and Hyperphagia of Obesity. Cell Rep, 2021. 35(13): p. 109301.

Geisler CE and **Renquist BJ.** 2021. The Role of GPR109a Signaling in Niacin Induced Effects on Fed and Fasted Hepatic Metabolism. International Journal of Molecular Science. 22(8): 4401.

Jauregui EJ, Lock J, **Rasmussen L, Craig ZR.** Mono-n-butyl phthalate distributes to the mouse ovary, liver and alters the expression of phthalate-metabolizing enzymes in both tissues. Toxicol Sci. 2021 Jun 27;kfab085. doi: 10.1093/toxsci/kfab085. Epub ahead of print. PMID: 34175954.

Saha S, Cooksey AM, Childers AK, Poelchau MF, and **McCarthy FM.** (2021) Workflows for Rapid Functional Annotation of Diverse Arthropod Genomes. Insects. Aug 2021. 12(8), 748; <https://doi.org/10.3390/insects12080748>.

Zhu L, Wei Q, Porchas M, Brierley P, Friedman M, Crosby K, Patil B, and Ravishankar S. 2022. Plant-based antimicrobials inactivate *Listeria monocytogenes* and *Salmonella enterica* on melons grown in different regions of the United States. Food Microbiology; 101:103876. Feb 2022.

Local, National, & Global Media

Ribakoff S. (2021). “Heat and water stress still affecting local crops and cattle”. Eastern Arizona Courier. Jul 27, 2021. https://www.eacourier.com/copper_era/news/heat-and-water-stress-still-affecting-local-crops-and-cattle/article_ad270cd6-ec2d-11eb-bac9-0bc9c22c6aa3.html

Upcoming Events

December 6 - 8

47th Annual Global Symposium on Racing
The University of Arizona RTIP
Tucson, Arizona
ua-rtip.org/symposium/

December 20 - 21

December Convocation Ceremonies
The University of Arizona
Tucson, Arizona
commencement.arizona.edu/convocations2021

January 22

6th Annual Southern Arizona Equine Health Symposium
UArizona Campbell Avenue Farm
Tucson, Arizona
extension.arizona.edu/southern-arizona-equine-health-symposium

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Page 5 - RTIP, all photos

Page 7 - Bend the Curve - Betsy Greene; Glo-germ under light - Ashley Wright

Page 8 - Betsy Greene, all photos

Page 9 - TLA Award - Tech Launch Arizona; Renquist Lab - Anastasia Vasileva, MD

Page 10 - APL - Dr. Arun K. Dhar; RMC - Dr. Duane Wulf

Page 12 - Effective masks - News 4 Tucson

Page 13 - Equestrian Team - UArizona Equestrian Team Facebook page

Back to Campus

We are excited to have students back on campus and to be delivering the majority of ACBS classes in-person for Fall 2021.

Several ACBS clubs are also back and meeting in-person check out their Facebook pages for the latest updates.

UArizona Equestrian Team

facebook.com/uofaequestrian

UArizona Pre-Veterinary Club

facebook.com/UAprevetclub

Collegiate Livestock Growers Club

facebook.com/uaCLGA/

UArizona Rodeo

facebook.com/uarodeo/

Food Science Club

facebook.com/foodscicats/

Microbiology Club

microua.weebly.com



UArizona Equestrian Team members visit with Wilbur at the 2021 Bash at the Rec.

Connect With ACBS:

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



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acbs.arizona.edu/news-events/newsletters

ACBS Newsletter

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