ISSUE HIGHLIGHTS

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Teaching
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Extension
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A Message from the Interim Director
As we reflect on the end of 2018, I want to recognize the efforts in teaching, research, exceptional service and volunteerism of everyone in ACBS. I also thank them for the dedication that they bring to their work each day and for making our school an exciting and dynamic place to learn, work and live. I look forward to a rewarding year in 2019, I am confident that together, we will continue to build the strengths and contributions of ACBS.

To our valued stakeholders, faculty, staff, students, and friends, thank you for your support. I want to especially recognize Mr. Victor P. Smith, for his generous support that made possible the creation of an Endowed Chair in Food Safety Education. This endowment will help increase the visibility and prominence of our Food Safety program at the national level, by enhancing the learning experience and training opportunities for students in this program.

I hope everyone was able to find comfort in time-honored traditions and simple joys with friends and family over the holiday season. Take some time as we enter 2019 to reflect on all the great things we’ve accomplished, and the very positive trajectory we are on, overall.

I wish you and your families all the best for a happy, healthy, and prosperous New Year.

With warm regards,
Patricia Stock

Support ACBS
There are many ways you can support the School of Animal and Comparative Biomedical Sciences. Gifts of any size help to propel ACBS closer to its goals and have an immediate and lasting impact on our programs. Your generosity provides outstanding educational opportunities for our students and helps to attract and retain the brightest faculty. With your support, ACBS research gives back to the state of Arizona community through our extension programs, as well as the nation and the world, through the discoveries we make and the products we develop.

Gifts may be made online at the University of Arizona Foundation website: www.uafoundation.org/give/cals. Be sure to designate the funds by selecting other and typing in ACBS.

Or contact our school business office to discuss specific ways your contribution can be made or dispersed. Whether you choose to give to a specific project or program, or simply donate to the school overall, we thank you.
New ACBS Faculty and Staff

Dr. Daniel Engeljohn - Assistant Professor of Practice
Dr. Dan Engeljohn has enjoyed a distinguished career with the Food Safety and Inspection Service (FSIS), US Department of Agriculture (USDA) from which he retired in 2017. He served in both supervisory and non-supervisory positions in various policy development staffs in FSIS. During this time period, he became the USDA spokesperson on food irradiation and was the primary author of a precedent-setting regulation on the irradiation of meat and poultry. Dr. Engeljohn regularly taught food technology and nutritional labeling classes for FSIS inspection personnel. In 2001, he served on a collateral assignment to the White House to provide technical input in response to terrorist threats. He was a member of the cross-governmental group responsible for guiding the Federal government’s decision to irradiate all mail deliveries to Washington, DC governmental offices to prevent intentional harm.

After retiring to the Tucson area, Dr. Engeljohn discovered a newfound passion in horses and riding almost daily in the beautiful Catalina State Park. However, when the opportunity to teach a food safety course at the University of Arizona came available he realized he simply wasn’t ready to fully retire. Dr. Engeljohn is excited to be working with ACBS to share his knowledge and experience in food safety with his UA colleagues and students. In his new position, he will teach various food safety and animal science related courses. About his appointment he says “I’ve had a longstanding passion for teaching at the university level. I like the challenge of getting students excited about learning and deciding on a career path because I will never forget the day that my career path markedly changed. It was my junior year and I enrolled in my first meat science course. That one course was instrumental in helping me have the most exciting and fulfilling life. I want to help students find their path to a fulfilling life.” Dr. Engeljohn can be reached at dengeljohn@email.arizona.edu.

Dr. Kathy Broneck - Assistant Professor of Practice
Dr. Kathy Broneck joined the Race Track Industry Program in July of 2018, returning to the University of Arizona where she earned her MA in communication and a PhD in management information systems from Eller College of Management. Dr. Broneck, previously the department head of business for the Pima Community College campuses as well as the department head of business for PimaOnline, is the RTIP’s Professor of Practice.

Dr.Broneck teaches the general business-focused classes including financial and economic strategies, human resource management, legal environment of business and management of organizations along with the race track marketing and media communications class. She also supports students’ capstone project work and assists with RTIP operations and the organization and presentation of the annual Global Symposium on Racing. Dr. Broneck can be reached at kbroneck@email.arizona.edu.

Beverly Woods - Accountant
The ACBS business office welcomes Beverly Woods as their new accountant. Beverly has many years of accounting experience across several aspects of the field. Most recently she worked at the University of Arizona College of Optical Sciences assisting with accounting, grants, and contracts. She can be contacted at bwoods1@email.arizona.edu or 621-4466.

Victor P. Smith Endowment in Food Safety Education
ACBS is pleased to announce that Dr. Margarethe Cooper has been appointed as the Endowed Chair in Food Safety Education. Dr. Cooper is proud to be a former Wildcat, and to be back as a faculty member in the School of Animal and Comparative Biomedical Sciences. Her position as an Assistant Professor of Practice in Food Safety utilizes both her research and educational experience. In her role as Endowed Chair in Food Safety Education, she looks forward to collaborating with educators and the industry to grow the Food Safety Program and bring it to regional and international recognition to the UA.

Stay Tuned - Full Details on the Food Safety Education Endowment will be included in the Summer 2019 ACBS Newsletter.

BLAISER Program Provides Laboratory and Research Experience
Gloria Villa Barbosa, a physiology major graduating this coming May 2019, participated in the University of Arizona Health Sciences (UAHS); Border Latino & American Indian Summer Exposure to Research (BLAISER) program where Dr. Gerardo (Jerry) Lopez was a faculty research mentor. This program is designed to empower undergraduates majoring in the biomedical fields to participate in cutting-edge research while preparing for a translational career in medicine or biomedical research.

Gloria worked with Daniela Cabrera, research specialist/4-H program coordinator, Gloria Villa Barbosa, undergraduate physiology major, and Dr. Gerardo Lopez ACBS assistant professor and extension specialist, 4-H youth development-STEM.
Startup Licenses UA invented Aquatic Animal Growth Assay

Test offers fast, easy-to-interpret indicators for selection at the embryo stage.

At the University of Arizona, Benjamin Renquist, PhD, assistant professor of animal and comparative biomedical sciences at the University of Arizona College of Agriculture & Life Sciences, has invented a new assay that measures the metabolic rate of aquatic animals, from fish to mollusks to crustaceans, to identify those individuals which will grow more quickly. The assay will be used to select brood stock animals — those best for breeding — with a greater genetic potential for growth.

Tech Launch Arizona (TLA), the office of the UA that commercializes inventions stemming from research, working with the inventing team, protected the invention by filing for a patent application and has now licensed it to startup GenetiRate.

The invention is elegantly simple: Individual organisms are placed into each of the “wells” or small tubes of a microplate. An assay buffer containing rezasurin, a colorimetric/fluorescent indicator, is added to each well. This indicator, enters the animal and is converted from a non-fluorescent blue to a fluorescent pink in proportion to the individual’s metabolic rate. Individuals that induce a greater change toward pink have a higher metabolic rate than individuals that have a low metabolic rate. Accordingly, the change in color allows for selection of those organisms that have high metabolism and growth rates. Importantly, resazurin is non-toxic, has no lasting effects on the organism, and is no longer visibly present in the organism 30 minutes after exchanging assay buffer with fresh water.

According to Renquist, different species produce results at different rates: oysters take two to six hours, trout or tilapia take 12 to 16 hours.

“However, in most cases we can start to see signal at three hours,” he says.

Along with whole live organisms, the assay can be also applied to tissue samples drawn from skeletal muscle needle biopsies to identify individuals that are more feed efficient.

“This technology offers a whole new and trustworthy way for selecting top producing stocks,” says Tod McCauley, TLA licensing manager for CALS who worked with Renquist throughout the IP protection and licensing process.

The aquaculture industry has long struggled with this challenge; the economics of the industry are highly dependent on animal growth rate and the efficiency with which they convert feed into protein. This test offers fast, easy-to-interpret indicators that allow for selection of brood stock at the embryo stage rather than at adulthood. Current brood stock selection relies on identifying those animals that grow most quickly. However, in group housed aquatic species this results in selection of fish that consume the most feed, not necessarily fish that are genetically superior for growth. This assay solves this problem for aquaculture producers by allowing for selection for one of the primary traits that influences profitability.

To help develop the company’s startup strategy, TLA’s Assistant Director of Venture Development Bruce Burgess, an experienced life sciences entrepreneur, advised the team.

“Alternative selection methods typically focus on only one characteristic to the detriment of other important factors,” Burgess says. “The GenetiRate approach optimizes both growth and feed efficiency in their selection process.”

The team’s participation in TLA’s NSF I-Corps program helped them better understand their target market and potential customer base. In addition, this experience allowed the startup team to develop a business model that would transform the invention into a saleable product.

Coming out of those processes and with help from TLA, the company has already gained its first customer: Hawaiian Shellfish, a subsidiary of GoosePointe Oysters.

“Bruce and Tod have been by my side throughout this process and are trusted advisors without whom this would not be possible,” says Renquist. “I’ve also had the pleasure of learning from the entire TLA team as we’ve worked through the challenges of starting this venture. Any success at GenetiRate will be the result of the foundation and support provided by everyone at TLA.”

-Tech Launch Arizona
Reprint from Tech Launch Arizona News 9/21/18
https://techlaunch.arizona.edu
2018 Breeders’ Cup

RTIP students participate in mini-internship opportunity during the Breeders’ Cup World Championships at Churchill Downs

For the second consecutive year, Race Track Industry Program (RTIP) students had the opportunity to attend the Breeders’ Cup World Championships, this time held at legendary Churchill Downs in Louisville, Kentucky. Through a competitive application process, six students were selected to participate in the mini-internship.

After arriving in Kentucky, the students enjoyed a day of live racing at Keeneland Racecourse on the closing day of the fall meet. There, they met with director of wagering development Jim Goodman, who showed them racetrack hospitality at its finest, as the group took in the racing in the VIP-only Green Room. The following day, the group attended a tour of historic Claiborne Farm in Paris, where they met 2013 Kentucky Derby winner Orb, and international leading sire War Front. After the tour, the group headed to Louisville to begin their week of work.

Throughout the week, students got a taste of the backside lifestyle, arriving at 4:15am to drive shuttles for horsemen and women, including prominent owners and trainers, media members and Breeders’ Cup staff. The students were able to network with these dignitaries, making connections that could lead to internships, or future jobs in the racing industry. The early morning hours also allowed students to see many of the Breeders’ Cup contenders test out the surface at Churchill Downs as they prepped for their races.

Another responsibility the students had involved gathering information for the new VR360 paddock cam that debuted at this year’s championships. The group was given a barn list and tasked with finding “fun facts” about the competition entrants. This afforded the students a rare chance to speak with trainers about their horses in a relaxed setting. For example, Breeders’ Cup Classic runner Yoshida had a knack of taking his own halter off, earning the nickname “Houdini” and Breeders’ Cup Mile entrant Bucchero had a cat friend named Spook that stayed in the stall with him. This information was displayed as fans at home used their virtual reality headsets to “join” in on the action.

On Friday and Saturday, the group shifted gears to assist with other tasks. Each day, two students helped present the “best turned out” award, which is given to the groom of one horse in each Breeders’ Cup race that looked the best according to the judges. Those students were in the paddock for each of the races and escorted the winning groom to their position in the winner’s circle.

Another two students assisted the Breeders’ Cup corporate sponsorship team, preparing rooms for sponsors attending the races. They placed goodie bags on tables in the exclusive Trophy Lounge before the races, and assisted with hospitality as the racing unfolded.

Finally, two students worked in the media interview room, where the winning connections gave their thoughts on the race and answered questions from the press. The students relayed notes and quotes for press releases, gave the moderator facts and observations to use for the press conference, and congratulated the winners.

- Zach Taylor
UA RTIP, Senior

From Mentor Lunch to the Breeders’ Cup

When Jade Eisenzimmer picked Peter Rotondo to be her mentor at the RTIP luncheon in December 2017, she had no idea how fruitful that decision would end up being. Fast forward ten months and Jade was on a plane headed for Louisville, Kentucky to spend a week in the Blue Grass, volunteering for the Breeders’ Cup.

The first part of the week meant time spent at Equestricon, an international horse racing convention. While attending, she was able to talk to industry professionals, allowing her inner horse racing fan to completely come out. “It seemed like every prestigious horse farm had a booth. I was able to introduce myself and get my name out there.” Jade was graduating in December 2018, so any chance she had to network was not an opportunity she wasted.

The rest of the week meant working behind the scenes to see the cogs that make this well-oiled machine run. From working a silent auction benefiting the Permanently Disabled Jockeys Fund (PDJF) to prepping menu signs, no task was too big or too small.

Eight days in Kentucky didn’t mean all work and no play though. She was able visit two historic stud farms while in the area, Claiborne Farm and Taylor Made. “I honestly can’t thank Pete enough, it was an amazing experience and an opportunity I won’t soon forget.”

- Jade Eisenzimmer
UA RTIP Graduate, Fall 2018

RTIP students with Breeders’ Cup chief marketing officer, Bryan Pettigrew, at Churchill Downs.

- Zach Taylor
UA RTIP, Senior

RTIP Breeders’ Cup intern, Zach Taylor gets the ultimate selfie with champion mare Enable.

Photo: Churchill Downs

ACBS - VS:5 Spring 2019
Preventing Foodborne Illness with Natural Antimicrobial Plant Wash

TechLaunch Arizona works with Dr. Sadhana Ravishankar to bring novel product to market.

It is estimated that 480 million people get sick from foodborne illnesses like Salmonella, Listeria and *Escherichia coli* (E. coli) each year. To prevent such illnesses, produce is typically washed with chlorine or hydrogen peroxide antimicrobial washes, both of which are harsh on produce and bad for human consumption. With resistance to the antibiotics that are used to treat foodborne pathogens on the rise, there is an increasing demand for the development of a safer and more natural alternatives to today’s methods. Sadhana Ravishankar, Ph.D., an associate professor in the University of Arizona College of Agriculture and Life Sciences, has done just that.

Ravishankar, who has dedicated her research to the control of foodborne pathogenic bacteria and use of natural antimicrobials, developed an organic antimicrobial wash solution for leafy greens that utilizes three plant essential oil formulations that are food compatible, natural, and safe for human consumption.

The wash employs three essential oils that have exhibited antimicrobial properties, a method that has never been used in commercial or industrial products, and is specifically efficient in treating organic leafy greens where antibiotic resistant *Salmonella enterica* is often found.

“Consumers want natural products that are effective, yet do not cause harm to the environment,” she says. “Our formulations have a specific niche market in food safety to provide an effective alternative solution to chemicals, with added benefits of residual activity for higher efficacy that can enhance safety during transportation and storage.”

Ravishankar noted that the development of this technology was driven by the “clean label movement,” a consumer driven movement that demands products with no artificial ingredients or synthetic chemicals.

Tod McCauley, Tech Launch Arizona’s Senior Licensing Manager for the College of Agriculture and Life Sciences, is currently working with Ravishankar to bring this novel product to market.

Program Provides Support to STEM Students

*Arizona’s Science, Engineering, and Mathematics Scholars (ASEMS) Program adopted in CALS.*

Arizona’s Science, Engineering, and Mathematics Scholars (ASEMS) program at the University of Arizona started off as a grass roots movement to increase, retain, and graduate students in Science Technology Engineering and Math (STEM) from diverse backgrounds. Now, with the help of federal and private grants, they have multiple programs to support more than 275 students per year through graduation. The program focuses on promising students who are underrepresented in STEM, especially students who are first in their family to attend college, from low-income households, who transferred from a community college, and/or are from underrepresented groups, such as women and minorities.

The College of Agriculture and Life Sciences (CALS) ASEMS Program began in the Fall 2018 semester by serving approximately 75 first year students and 25 community college transfer students. This program is aimed specifically at STEM majors in CALS, including Agricultural Technology Management and Education, Animal and Biomedical Industries, Animal Sciences, Biosystems Engineering, Environmental Sciences, Food Safety, Microbiology, Natural Resources, Nutrition and Food Systems, Nutritional Sciences, Plant Sciences, Sustainable Plant Systems, and Veterinary Science.

Dr. Gerardo (Jerry) Lopez, assistant professor in the school of animal and comparative biomedical sciences and assistant extension specialist, 4-H youth development-STEM, will serve as the new CALS ASEMS Faculty Fellow. The CALS ASEMS Program would not have been possible without the leadership of CALS Dean Shane Burgess; Associate Dean Mike Staten; Dr. Ramin Yadegari and Dr. Frans Tax (ASEMS board members); and Nancy Rodriguez-Lorta, senior director of advising and student services. We would like to recognize the commitment and hard work of Maya Azzi and Teresa Sosa, CALS ASEMS student support specialists; Lupita Mendez, ASEMS program manager and transfer specialist; and Kimberly Sierra-Cajas, ASEMS program director who all assisted in bringing this successful program to CALS.

For more information on the ASEMS programs at the University of Arizona go to [http://asems.arizona.edu/](http://asems.arizona.edu/).
STEM RISE Arizona

**Summer and 4-H programs impact underrepresented youth.**

Science, Technology, Engineering, and Math Renewing Initiative and Sustaining Environment (STEM RISE) Arizona, a grant-funded program, introduces and fosters the pursuit of STEM related careers by underrepresented youth in Arizona. STEM RISE Arizona, through a partnership with the San Xavier Education Department of the Tohono O’odham Nation, Pascua Yaqui Education Department of the Pascua Yaqui Tribe, Sunnyside High School, Pueblo High School, Lawrence 3-8 School and Baboquivari Indian Oasis Intermediate School impacted over 230 youth through various summer and 4-H programs. These programs included conducting professional development workshops, focused on project-based learning using a STEM curriculum, for teachers, paraprofessionals, and students at Pima Community College and the University of Arizona. The workshops concentrated on providing culturally relevant instruction in greenhouse and garden projects as well as wind and solar energy. STEM RISE Arizona offered seven, 3-week summer camps for elementary students at the San Xavier Education Department, Lawrence School and Indian Oasis Intermediate. Five, 5-week summer camps, two each at Sunnyside High School and Pueblo High School for middle and high school students and one at Lawrence for middle school students.

Students in the 5-week program attended field trips to the University of Arizona to participate in STEM activities and attend tours with the Indians Into Medicine Program, the Southwest Environmental Health Science Center, ACBS, and the Institute of the Environment. Additionally a new San Xavier Co-op Farm 4-H was developed and STEM activities were conducted with the San Xavier Voices of our Youth (VOY) program. The summer programs culminated with students, parents, community members and staff celebrating the collaborative student greenhouse and garden projects by hosting student showcase and recognition events, where 255 family and community members had an opportunity to see and hear students present posters and projects.

Through these summer workshops and programs we were able to begin the process of encouraging, transforming and empowering our Native American and Hispanic youth to excel in high school and plan to attend the University of Arizona to pursue STEM related fields. STEM RISE is funded by the Agnese Nelms Huary Program in Environmental and Social Justice. More information on STEM RISE https://www.youtube.com/watch?v=r6WlAbtG0a4

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**Exploring LEGO Robotics**

Several UA undergraduate students helped the 4-H STEM Cooperative Extension Team engage local youth in a series of six, 3-hour sessions exploring LEGO Robotics at University of Arizona Campus. Scott Omo (Mechanical and Aerospace Engineering) led the LEGO Robotics curriculum, while ACBS Vet Science majors Katlyn Benally and Jasmine Lopez also assisted Daniela Cabrera (Research Specialist/STEM program coordinator) and Dr. Gerardo (Jerry) Lopez provided support.

Eight students ages 10-17 learned how to assemble a robot with LEGOs and program them using an app installed onto an iPad. Students learned to work in teams, sharing knowledge with each other and experiential learning throughout each session. On November 17, students showcased their skills to their families, such as a robot dance, navigating through a maze with different attached sensors and other assorted activities. Overall, students were able to take away new skills in programming and gain interest in a stem-related field. A phase two is planned for next semester.

This program was part of the STEM RISE summer programs and is funded by the Agnese Nelms Huary Program in Environmental and Social Justice.

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**4-H Summer Camp 2018**

**Biofuels powering your world.**

The Sustainable Bioeconomy for Arid Regions Center (SBAR) 4-H Cooperative Extension program conducted a week-long summer camp on the UA main campus to encourage and expose youth from diverse backgrounds to the many career opportunities in the agricultural industry. The program introduces students to emerging technologies and hopes to inspire students to pursue STEM related careers in agriculture. To engage students in agricultural industry and technology the program focused on biofuels and their importance. Students participated in hands-on activities where they were able to create biofuel.

Watch this video to learn more about the camp: https://www.youtube.com/watch?v=kKOGUatX4L4&feature=youtu.be

For more information on the overall SBAR project visit: https://sbar.arizona.edu
Annual State 4-H Horse Show

Each year, 4-H horse members from across the state qualify for and compete in the AZ State 4-H Horse Show at the Horseshoe Park and Equestrian Centre in Queen Creek, AZ. Youth compete in many classes across several disciplines including English, Western, Gymkhana, Team Roping and Ranch Sorting. Over 100 youth competed in 766 individual classes over the three day show on November 2-4, 2018. The third annual Groom Squad Contest was held on Saturday night, preceded by a Ranch Horse Demonstration by former 4-H member Kaitlyn Dirkschneider. The Show is organized by volunteer committee members working with UA Equine Specialist, Dr. Betsy Greene and several county agents and program coordinators. Thanks especially to county 4-H extension personnel Renee Carstens (Gila Co.), Misti Todd (Pinal Co.), and Michael Yates (Maricopa Co) for all of their help on-site. Jane Scott and Kerry Officer were key volunteers from start to finish, and we had State 4-H Office representation at the show for the first time (Dr. Jeremy Elliott-Engle and Malisa Grantham).

For show highlights: (https://extension.arizona.edu/2018-arizona-state-4-h-horse-show-highlights)

Ag Agents’ Work Shines at National Meetings

The state-level work of Arizona Cooperative Extension agents and specialists was recognized nationally for high quality, and fared well against national competition at the National Association of County Agricultural Agents Annual Meeting and Professional Improvement Conference in Chattanooga, TN. In the Communications Contests, Josh Sherman came away with two National winners (Published Photo and Caption and Feature Story). Betsy Greene’s Publication entry was a National Finalist, as was Andrew Brischke’s entry in Team Newsletter. AZ also had Western Regional finalists (Ashley Wright, Fact Sheet and Andrew Brischke, Personal Column). Rick Gibson, Ed Martin and Betsy Greene served in their national committee roles.

Horse Shade Pilot Study at UA Horse Facilities Well Received at International Meetings

Dr. Betsy Greene (UA Equine Specialist) presented “Shade Use by Horses in the Arid Southwest” at the 14th International Society of Equitation Sciences Annual Meeting in Rome, Italy in September. This applied research project was created to gather scientific data to address horse shade use and welfare questions to provide research based, practical information to Arizona stakeholders and beyond.

Dr. Greene collaborated with Dr. Duarte Diaz (UA Dairy Specialist), Ashley Wright (UA Area Livestock Agent), and Dr. Colt Knight (UMaine Livestock Specialist, UA Alum) to examine if horse shade seeking behaviors changed as the Temperature Humidity Index (THI) increased during daylight hours. In this pilot study, university horses were fit with gps collars to collect movement and time spent near the shade in four different pens for 5-day periods. Data was gathered from 5:00am to 8:00pm at 5 second intervals. Overall, horses spent little time under/ near the shade (average of 17%), and the THI was not correlated with distance traveled (activity). The presentation was very well received, and further data evaluation is currently underway.

4-H Horse Members Compete in State Summer Contests

Many thanks to Kim Horn and Coconino County for hosting a weekend full of competition, education and fun for our 4-H horse members from across the state at the end of July. The four contests had both Junior and Senior divisions and included Individual Presentations, Individual and Team Demonstrations, Horse Bowl and Hippology. While Horse Bowl is a team against team test of knowledge (and quick trigger fingers to buzz in), Hippology is similar to the “decathlon” of the contests, where 4-H members test their knowledge and skills by judging two horse classes, completing a series of Stations (identification), taking a written test, and solving team problems.

The senior 4-H members were competing to qualify for the National 4-H Roundup in Colorado, while the junior division was intentionally user-friendly to help the youth learn about the contests while building interest and excitement for future competitions.

Many volunteers and agents pitched in and helped with scoring, monitoring, and much more. Thanks to Dru Alberti (Maricopa), our State 4-H Horse Committee Chair (Jane Scott) and Vice Chair (Esther Sutherland), Renee Carstens, and many other volunteers who helped before and during the event. Hattie Braun and Mike Hauser even stopped in to see what the contests were all about!
RTIP Bloodstock Project

Meet the new members of the Race Track Industry Program “teaching” faculty.

An exciting new RTIP initiative designed to give additional insights and opportunities to students interested in the equine side of the industry was launched during the 2018 fall semester. The creation of the RTIP Bloodstock Project began with the generous donation of seed money from Dana Parham and will continue to offer a hands-on engagement experience for many years to come.

Students met with bloodstock agent and RTIP alumnus, Kathy Berkey; they became the “client” during her visit to the UA and learned the strategies used when purchasing a broodmare for a commercial operation. Not only did the students learn theory, but they put that information into practice as they scoured the Keeneland November catalog for potential broodmares using the parameters set.

After sharing her long list of potential mares and reporting the physicals on those mares, the short list was created. After some of the initial selections went beyond the budget, the RTIP was the successful bidder and signed on two mares that became the property of the initial selections.

Students are looking forward to participating in every aspect of the decision-making process—starting with next season’s stallion selection to strategies for selling the foals the mares are currently carrying.

- UA Race Track Industry Program

https://ua-rtip.org/

ACBS Outstanding Seniors – Fall 2018

Animal Sciences

Karin Floyd chose to pursue a major in Animal Sciences with an Equine Science concentration after many years of working with horses, through all levels of training and development, which became a deep seeded passion in her life. Karin’s future plans include continuing her equine hoof trimming business and attending equine dental school to expand her horse care business practice. In addition, she will continue to build an Arabian preservation breeding practice which she developed with the purpose of preserving early Arabian bloodlines introduced to America and the UK from the Arabian Peninsula. About attending the University of Arizona she says “I’ve really enjoyed the ACBS classes and the dedicated teachers who are always willing to help and answer questions. I have learned so much! It has really helped my professional and personal goals.”

Microbiology

The 2018 Fall Outstanding Senior in Microbiology is Fallyn Markosian. Fallyn will graduate with a double major in Animal Sciences and Microbiology. She is particularly interested in food safety related to the meat industry which she feels her dual degree plan has prepared her for. Fallyn’s current plans include gaining work experience in her chosen field and pursuing a graduate degree in a few years. She credits Dr. Kerry Cooper with teaching her about microbiology in food safety and supporting her career aspirations.

Fallyn would like to thank her family and husband for supporting her throughout her college career and ACBS adviser, Dari Trujillo, for helping her plan her college career path. About receiving this award, she says “I feel very honored to receive this award because Microbiology was my second major and I felt that I was behind everyone else. I am truly passionate about microbiology in food safety and am happy to be recognized for my hard work.”

Veterinary Science

Kelsey Purdy was born and raised in Chandler, Arizona where she grew up riding horses and competing in barrel racing at rodeos. This experience helped her realize her love for livestock and agriculture and helped her decide to pursue a career in veterinary science. After graduation, she plans to take a semester off to relax and spend more time working at Therapeutic Ranch for Animals and Kids (TRAK) then hopes to attend Veterinary School in Fall of 2019 and pursue her doctorate in Veterinary Medicine.

Kelsey would like to recognize Dr. King for her influence and support throughout her time at the University of Arizona. About Dr. King she says, “She has taught me so much in and out of the classroom and provided so many opportunities for me. I have been able to take her classes at the UA, shadow her at Southern Arizona Veterinary Specialty & Emergency Center where she is an emergency vet, help her with the veterinary care at the BLM’s Wild Horse and Burro Facility, and assist with the veterinary care at TRAK. She has gone above and beyond for me and many other students to ensure we are competitive and knowledgeable veterinary school applicants.”

Kelsey is honored to receive the Fall 2018 Outstanding Senior in Veterinary Science award.
Recent Activities of the UA Aquaculture Pathology Laboratory

Dr. Arun K. Dhar was invited to give a talk on “Current status of Acute Hepatopancreatic Necrosis Disease (AHPND) in shrimp: Biology, Diagnostics and Disease Management”. Acute Hepatopancreatic Necrosis Disease, also known as Early Mortality Syndrome (EMS), has caused major economic losses to shrimp aquaculture worldwide including the US. Dr. Dhar also presented a paper in the World Aquatic Veterinary Medical Association (WAVMA) Special Session entitled “The University of Arizona-Aquaculture Pathology Laboratory: A Worldwide Resource for Diagnostic Services and Collaborative Research to Shrimp Aquaculture Industry”. The conference was attended by professionals from academia, industry, government and graduate and undergraduate students/researchers worldwide.

“Indoor Shrimp Farming” workshop. 2018. Kentucky State University, Frankfort, Kentucky, USA.
Dr. Arun K. Dhar was invited to give a talk on “Biosecurity in indoor shrimp farming”. Over 200 participants from the US, Canada, Mexico, Germany and Slovakia attended the workshop. Presenters included USDA officials, industry leaders, and academic scholars.

10th International Symposium of Aquatic Health and Safety 2018, Ensenada, Baja California, Mexico.
The symposium was organized by the Mexican Government through the Aquaculture Health and Safety Committee of Baja California (CESAIBC). This event has been held yearly since 2009 and features talks and workshops by aquaculture pathologists known worldwide. Dr. Arun K. Dhar and Dr. Roberto Cruz-Flores were invited to give presentations and conduct a workshop on the current viral and bacterial pathogens that affect shrimp. Dr. Dhar presented a talk on “The current status of viral diseases in shrimp and its impact on commerce” and Dr. Cruz-Flores presented a talk on “Multiplex PCR for the detection of Acute Hepatopancreatic Nécrosis Disease (AHPND) in shrimp”. The symposium was attended by over 200 participants representing government officials, industry professionals and academia from the US, Mexico, and Argentina. On the second day of the symposium, Drs. Dhar and Cruz-Flores conducted a workshop entitled “Farm Biosecurity and detection of shrimp diseases” that was attended by 20 participants.

In the World Aquaculture Society, Latin American and Caribbean chapter, Dr. Arun K. Dhar was invited to chair a session on “Shrimp Diseases”. Dr. Fernando Aranguren presented a talk entitled “Comparision of the Acute Hepatopancreatic Necrosis Disease (AHPND) effect in the Pacific White Shrimp, Peneaus vannamei raised in the Americas vs. Asia”. Dr. Roberto Cruz Flores gave a talk entitled “Multiplex SYBR Green Real-Time PCR for the detection and quantification of Photorhabdus insect-related (Pir) toxin genes PirA and PirB”. The session was attended by approximately 100 participants including government officials, industry professionals and academia from the America and Europe.

Dr. L. Fernando Aranguren was invited to give a talk on “AHPND: Transicion de una enfermedad aguda a una cronica en el Cultivo de camarones de las Americas” in AQUAEXPO 2018, the Largest conference of shrimp culture in the Americas, held in Guayaquil, Ecuador on October 15-18, 2018. The conference was attended by academia and industry professionals from the US, Latin America, Europe and Asia. Over 1200 participants attended the conference.

OIE Twinning Project between the Kingdom of Saudi Arabia and the University of Arizona

Dr. L. Fernando Aranguren (P.I) and Dr. Arun K. Dhar conducted a workshop on shrimp disease diagnostics and a technical training to staff in Jeddah Fisheries Research Center (JFRC), Jeddah, Saudi Arabia under the OIE (World Organization for Animal Health, Paris, France) Twinning project between the Ministry of Environment, Water and Agriculture of the Kingdom of Saudi Arabia (KSA) and The University of Arizona-Aquaculture Pathology Laboratory. The project is funded by the Ministry of Agriculture of the Kingdom of Saudi Arabia. During the weeklong workshop, Drs. Dhar and Aranguren presented series of talk and conducted hands-on training on shrimp disease detection using histopathology and molecular tools. Drs. Dhar and Aranguren were awarded by JFRC Director for their “Outstanding Contribution in Aquaculture Development in the Kingdom of Saudi Arabia”.

International Scientists Visiting Aquaculture Pathology Laboratory
Dr. Cesar Marcial Escobedo Bonilla, Departamento de Acuacultura CIIDIR-IPN Unidad Sinaloa visited the Aquaculture Pathology Laboratory in connection with a collaborative for research and training on shrimp disease diagnostics. During his stay, Dr. Bonilla worked on a bacterial disease of shrimp, caused by Vibrio parahaemolyticus carrying binary toxin genes, that has caused major economic losses in Mexico, the USA, and South East Asia.

OIE Twinning project between Indonesia and the University of Arizona

Dr. Hung Mai, a Postdoctoral Fellow visited the Brackishwater Aquaculture Development Center (BADC), Situbundo, Indonesia, a National Reference Diagnostic Laboratories for Aquaculture in Indonesia in connection with an OIE (World Organization for Animal Health, Paris, France) funded project to visit farms affected by a new outbreak of a major viral disease, Infectious Myonecrosis (IMN) caused by the Infectious Myonecrosis Virus (IMNV) and collect samples for viral genotyping. Infectious myonecrosis

From left to Right: Dr. L. Fernando Aranguren, Dr. Arun K. Dhar and Dr. Roberto Cruz Flores at the Latin America and Caribbean Aquaculture Conference (LACQUA) in Bogota, Columbia.

Photos provided by A.K. Dhar

Continued on 10
News from Patricia Stock’s Laboratory

This past August, Dr. Stock received the Founders’ Lecturer Award from the Society of Invertebrate Pathology at its annual meeting held in the Gold Coast, Australia. This is the highest award made by this society to an active scientist in recognition of outstanding and seminal contributions to a field of research within the general discipline of invertebrate pathology.

The Society for Invertebrate Pathology (SIP) was founded in 1967 as an interdisciplinary international scientific society (currently with over 500 members) that draws together members from diverse scientific backgrounds under the unified discipline of invertebrate pathology. For further information visit: www.sipweb.org

The Stock laboratory welcomes its most recent member, Postdoctoral Research Associate, Dr. Min Woo Lee. Dr. Lee obtained his PhD from the Department of Plant Pathology at the University of Arkansas where he studied plant–microbe interactions. Currently, his research project focuses on the type VI secretion, in particular to unravel the role of this secretion system in pathogenesis and symbiosis in the Photorhabdus and Xenorhabdus entomopathogenic bacteria.

Congratulations to Grant Osborn who graduated this past December with a Bachelor of Science degree in Ecology and Evolutionary Biology. Grant joined the lab in March 2016 and has been a key player in various projects. We all wish him well and success in his future career goals.

Ravishankar Laboratory

Outreach Activities
Dr. Sadhana Ravishankar and her graduate students discussed and demonstrated various pre- and post-harvest fresh produce safety projects going on in her laboratory to produce industry visitors from Yuma on Oct. 19, 2018.

Dr. Sadhana Ravishankar and her team gave a tour of her laboratories and explained the current food safety projects the laboratory is working on to students from City High School for their Food Science class on Nov. 9, 2018. They also discussed their experience in food science and food safety as a career and why they selected this career.
Grants

Cooper K. “Illuminating the Role of Whole Genome Sequencing in Produce Safety.” (Center for Produce Safety Research Award) $88,689.

Cooper K. “Establishing a Rat Model to Simulate Post-Infectious IBS.” (Research, Discovery & Innovation ‘Start for Success’ Award) $24,782 To be used to obtain preliminary data towards NIH R01 grant.

Greene EA and Hiney K. “Science Creates Real Understanding of Biosecurity (SCRUB) Activity Kit to Supplement/Support Biosecurity Learning Objects” (USDA/NIFA) $24,609.


Presentations and Symposia


Cooper K. Poster Presentation at the Lake Arrowhead Microbial Genomics Meeting in Lake Arrowhead, CA from September 16 - 20th. The title of the poster is ‘Characterization of tree fruit bacterial communities during harvest.’


Greene EA, Wright AD, Knight CW, Diaz, DE. 2018. “Shade Use by Horses in the Arid Southwest”. Presented at the 14th Annual International Society for Equitation Sciences Conference in Rome, Italy (September, 2018)

Riggs MW. Invited Presentation on “Adaptive Immune Responses Relevant to Vaccine Development” at Advances in Cryptosporidium Research, an international scientific conference sponsored by the Bill and Melinda Gates Foundation. Tufts University School of Veterinary Medicine, North Grafton, Massachusetts. November 29 - December 1, 2018.

Invited Book Chapters


Publications


Clockwise from top left: The University of Arizona Marching Band leads off the Homecoming Parade; Dr. Sam Garcia with Kaelyn Bitsoi, Miss Native American University of Arizona, 2018-2019 and Veterinary Science Undergraduate; Thank you to the Collegiate Livestock Growers for coordinating set-up, serving, and clean-up!; ACBS faculty, staff, and students enjoy the ACBS Tailgate Tent and Homecoming Parade.

UPCOMING EVENTS

January 26
Southern Arizona Equine Health Symposium
UA Campbell Ave. Farm
extension.arizona.edu/2019-southern-arizona-equine-health-symposium

January 30 - February 1
National Cattlemen’s Beef Association Meeting
New Orleans, Louisiana
beefusa.org

February 19 - 22
Southwest Ag Summit
Yuma, Arizona
yumafreshveg.com/southwest-ag-summit/

March 4 - 8
Spring Break
The University of Arizona

March 5 - 7
Range Livestock Nutrition Workshops
3/5 Willcox, 3/6 Prescott, 3/7 Holbrook
University of Arizona Beef Extension
acbs.cals.arizona.edu/bqa/

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