

DECEMBER 2019 - MAY 2020
Awards Newsletter

TEXAS A&M UNIVERSITY-KINGSVILLE®



this is
YOUR TIME
TEXAS A&M UNIVERSITY-KINGSVILLE



Dear Reader,

It has been a busy spring and summer. This year started off very well for faculty led research at Texas A&M University-Kingsville. However, in the spring, the COVID-19 pandemic created a significant change for the entire campus. Faculty and students adjust to a whole different process to continue working on their research. In many areas this significantly altered scheduled projects. I am happy to say the Office of Research and Graduate Studies have worked through the processes, with Compliance, Pre- and Post-Awards. As we start this fall semester, we will be open. Most of you have adapted to doing virtual meetings and we will continue those. For those who come to the office, you need to sign in utilized a QR code, the same as in classrooms but you will need to answer few brief questions. This will allow for contact tracing, if needed.

This period of transition has not been problem free, we appreciate all of you working with us to make the transitions as we deal with change. We have found some grant deadlines were altered while others were not. It has created confusion at all levels but we will work with you to ensure we try to meet all our required deadlines.

I would like to give a special thanks to the Institutional Animal Use and Care Committee (IACUC) and Office of Compliance for ensuring we met National Institutes of Health's (NIH) requirements to conduct animal research. This dedicated group of faculty and staff continued their work without fail or complaint. They made sure animals were cared for and it allowed us to maintain our research and teaching programs. During this period we had to be reauthorized to by NIH. The entire group was involved and I would particularly like to recognized Ms. Angela Bingham, Mr. Eutimio Alaniz, Dr. Shane Creel and lastly Dr. Randy Stanko (IACUC Chair). NIH approved our renewal for the next 5 years, this week. As a research community we owe them a collective thank you.

The Office of Research and Graduate Studies, we look forward to working with you this coming year. We will be putting out new grant and compliance training dates on our web site. Please look for these opportunities to help you locate funding sources and help to secure new grant opportunities.

*Sincerely,
Dr. G. Allen Rasmussen*



DECEMBER 2019 - FEBRUARY 2020

Support for the Caesar Kleberg Wildlife Research Institute's Deer Research Program (extension)

Stedman West Foundation | One Year | \$14,500

Hewitt, D. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

Funds provided are to continue supporting the deer research program at Texas A&M University-Kingsville.

Texas Title I Priority Schools Cycle 4 Grant - Premont Elementary

Texas Education Agency (TEA) | One Year | \$244,727

Bain, S. | College of Education and Human Performance

Through this project, Texas A&M University-Kingsville works closely with and supports Premont Independent School District in the training of school board personnel, providing staff development in content and curriculum alignment, and facilitating the incorporation of the AVID college Readiness System (ACRS) focused on high expectations for results.

Neurological, Learning and Memory Disorders in *Drosophila melanogaster*

The Moxley Family Foundation | Two Years | \$40,000

Velez-Hernandez, M. | College of Arts & Sciences

The purpose of this research is to study neuromodulation at the behavioral level. This is performed in the courtship circuit of *Drosophila melanogaster* where the consequence is decrements in courtship. The two aims are to look at genes involved in decreasing functionality of this circuit. In one case, these will be genes that affect learning and memory in the courtship circuit. In the other case, these will be genes that modulate the toxicity of a poly-glutamine containing toxic human protein.



Evaluation of a Novel Device for Releasing Volatile Repellents Against Asian Citrus Psyllid: Optimizing active ingredient and deployment strategies for field-scale use

UFL/United States Department of Agriculture-APHIS | Huanglongbing Multi-Agency Coordination (HLB-MAC) | Two Years | \$108,528

Sétamou, M. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The primary purpose of this research is to develop and document a field management strategy that significantly reduces both the infestation rates of Asian citrus psyllid (*Diaphorina citri*, ACP) and necessity of broad-spectrum insecticide application.

Deploying Intensified, Automated, Mobile, Operable, and Novel Designs (DIAMOND) for Treating Shale Gas Wastewater - Collaborative proposal Submitted through TAMU

U.S. Department of Energy (DoE) | Rapid Advancement in Process Intensification Deployment (RAPID) | Two Years | \$58,228

Camacho, L. | Frank H. Dotterweich College of Engineering

This project aims to develop an integrated design and operating approaches of modular systems that can be deployed for treating flowback and produced water resulting from shale gas production.

Developing Wild Turkey Survey Methodology on Camp Bowie and Camp Swift Training Centers

Texas Military Department | FY2020 Turkey Surveys at Camp Bowie and Camp Swift Training Center | Two Years | \$40,000

Kuvlesky, W. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

Through this research project, habitat suitability models will be developed to identify habitats that have the highest probability of observing turkeys. Overall, the PI and their team will research and evaluate the applicability of fall/winter roost counts and road surveys to estimate wild turkey abundance at Camp Swift and Camp Bowie.

Behavioral Incentives to Increase Caregiver Engagement in Juvenile Drug Courts

National Institutes of Health (NIH) | One Year | \$36,388

Faulkner, C. | College of Arts & Sciences

For this collaborative research project, the Texas A&M University-Kingsville PI is responsible for the research integrity of the study, which includes the development of research protocols, hiring, training, and managing research personnel. In addition, their tasks will include supervising recruitment and data collection from participating sites, overseeing data management, manuscript preparation, and ensuring continued collaboration with the Nueces County Department of Juvenile Probation.

Native Plant Material Development and Grassland Restoration in the Trans Pecos and Permian Basin

National Fish and Wildlife Foundation | Pecos Watershed Conservation Initiative 2019 | Two Years | \$186,537

Shackelford, C. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The purpose of this research project is to conduct outreach activities and provide technical assistance to landowners, energy operators, and related contractors to promote best practices and appropriate seed source selection for grassland habitat restoration in the Trans Pecos of Texas and Southeast New Mexico.



Texas Space Grant Consortium Program- additional funding

Texas Space Grant Consortium/ Univ of Texas/ NASA | Four Years | \$3,000

Peel, L. | Frank H. Dotterweich College of Engineering

Funds for this project are to support undergraduate student design projects who travel and present their project near the Johnson Space Center.

2018 College Readiness and Success Models for 60x30TX, at Texas A&M University-Kingsville- additional funding

Texas Higher Education Coordinating Board (THECB) | 2018 College Readiness and Success Models for 60x30TX (CRSM-2018)

One Year | \$12,666

Marin, J. | College of Arts & Sciences

This project endeavors to aid the university in complying with HB 2223 by improving our offerings of corequisite courses. Among other activities, the PI will align placement practices using holistic measures, expand Mathematics corequisite offerings to include developmental Math as well as non-course based mathematics (NCBMs), and to create paired sections of non-course based for integrated reading and writing (NCB I) with ENGL 1301 taught by the same instructor. These efforts will help the university improve retention and completion rates by helping students successfully complete this gateway coursework.

Mapping and Modeling Shorebird Habitat at Use in the Laguna Madre- additional funding

Rob & Bessie Welder Wildlife Foundation | One Year | \$9,000

Ballard, B. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The main objective of this research is to develop a spatial model that delineates the temporal availability of foraging habitat for shorebirds in the Laguna Madre during the spring. By doing so, it will be based on field measures (time substrate has been exposed, water depth, substrate characteristics, etc.) and extrapolated across the Laguna Madre utilizing available geospatial data layers (benthic habitat, tide gage readings, bathymetry, etc.)

MARCH 2020 - MAY 2020

The acute effects of snake venom CRiSP toxins on blood and lymphatic endothelial cell permeability: new insights into the pathophysiology of snakebite

NIH | Academic Research Enhancement Award for Undergraduate-Focused Institutions (R15) | Four Years | \$413,738

Suntravat, M. | College of Arts and Sciences

The goal of this study is to investigate the role that a specific family of snake venom toxins, the Cysteine-Rich Secretory Proteins (svCRiSPs) plays in snakebite, focusing specifically on the effects of these toxins on vascular biology and the possible role that these effects may play in the pathophysiology of snakebite. The knowledge gained from these studies will contribute to a new level of understanding of the pathophysiology of snakebite and the development of new therapies for the treatment of this devastating disease.

Viper Resource Grant at Texas A&M University-Kingsville

NIH | Animal and Biological Material Resource Centers (P40) | Five Years | \$2,646,605

Sanchez, E. | College of Arts and Sciences

For this research study, the goal of the NNTRC is to provide native venom and purified venom components, recombinant venom proteins and specialized venom research services of the highest quality to support snake venom-related research in the United States and abroad.

Texas Native Seeds Program: Addressing Non-native Grass Competition in Restoration Efforts in South and Central Texas

Lee and Ramona Bass Foundation | Three Years | \$300,000

Smith, F. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The main research objectives of this project is to provide super seeding competitive native seed sources in invaded areas to provide competition and facilitate botanical diversity, collect or increase seed of genotypes of competitive native species in areas that are heavily invaded by common exotic grasses, and explore the use of low-cost annual cover crops to address early competition targeting the regeneration niche advantage of common exotic grasses in south and central Texas.

Feral Swine Damagement Management

U.S. Department of Agriculture (USDA) - APHIS | Wildlife Services | Two Years | \$120,000

DeYoung, R. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The goal of this research is to assess damages caused by feral swine to agricultural crops relative to population control efforts by Wildlife Services Operations. Analysis of current data, writing of reports, and field studies will be conducted in support of this objective. Feral swine ecology and behavior will be studied to optimize the effectiveness and safety of strategies for management of feral swine. Agricultural and Natural ecosystems will be evaluated for signs of damage by feral swine relative to differing times of the year and differing levels of population control.

Research and extension experience in Energy and the Environment across agricultural engineering disciplines

USDA | Education & Workforce Development | Five Years | \$500,000

Li, H. | Frank H. Dotterweich College of Engineering

The overarching goal of the research and extension project is to develop a program and implement a model environment for multidisciplinary collaborative efforts where research and extension are tightly integrated around the different facets of energy and environment research in agricultural fields. The focuses on this project are: energy efficiency in agricultural systems, water quality and management, and agriculture economics and decision-making.

A Study on Cybersecurity Function for Power Transformer Diagnosis System

Korea Electrotechnology Research Institute (KERI) | One Year | \$47,357

Kim, T. | Frank H. Dotterweich College of Engineering

The goal of this project is to study security functions for a power transformer diagnosis system (PTDS, i.e., prognostics and health management (PHM)), which is one of the major barriers that must be overcome for reliability and resilience of modern power infrastructures under potential threats of malicious cyber and physical attacks to power transformers.

Validating HLB detection in ACP using RNR assay

USDA-APHIS-PPQ | One Year | \$22,500

Kunta, M. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

For this project, the research objectives are to verify the RNR/WG duplex qPCR for CLAs detection in ACP using CFX96 Touch Real-Time PCR Detection System (Bio-Rad) at Texas A&M University-Kingsville Citrus Center laboratory, test the serial dilution samples using RNR/WG qPCR to measure the assay's performance characters in side-by-side comparison to current method, test ACP DNA extracts from field collections to evaluate diagnostic sensitivity and specificity of RNR/WG qPCR in side-by-side comparison to current method, and to complete data analysis, report, and prepare work instructions on CFX96 Touch Real-Time PCR Detection System (Bio-Rad).

Development of Community Disaster Recovery Database and Decision Support System for Resilience Planning

DOC-Economic Development Administration | FY 2019 EDA Disaster Supplemental | One Year | \$100,000

Zhang, X. | Frank H. Dotterweich College of Engineering

The purpose of this research project is to develop a software platform and create a supporting database to assist with communities' planning and preparation of, response to, and recovery from natural disasters.

Catalytic Conversion of Natural Gas to Hydrogen Cyanide

Cyanco International, LLC | Two Years | \$259,855

Mills, P. | Frank H. Dotterweich College of Engineering

This research examines the use of novel pathways and identification of new catalyst materials for conversion of methane to small molecules that have application in the recovery of gold from ores, strengthening of iron and steel, electroplating, fumigation, and monomers used in nylon manufacture.



Innovation in Ranching Systems: Establishing a Platform for Integrated Research

East Foundation | Four Years, Six Months | \$354,007

Sawyer, J. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The main objectives and specific aims of this project is to enhance decision-making for ranching systems, think of strategies that improve sustainability and resilience of ranching systems, and build research capacity for innovation in ranching systems.

Field implementation of an advanced multimodal attract-and-kill device (CAPUT trap) for sustainable management of Asian citrus psyllids

USDA- APHIS | Huanglongbing Multi-Agency Coordination (HLB-MAC) | Two Years | \$114,799

Setamou, M. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The focus of this research is field deployment of the CAPUT trap under actual field conditions in citrus groves, nurseries, and dooryard citrus in various locations (Florida, Texas, and California) to perform multi-state field testing to further optimize trap components and their combinations.

Evaluation of Toxicity Score and Precise Snake Venom Analytics for Next Generation Antivenom Development

NIH | SCORE | Three Years | \$414,000

Galan, J. | Arts and Sciences

The overall goal of this project is to engage undergraduate and graduate students in innovative studies in molecular toxinology that have the potential to contribute to important advances in our understanding of snake venom pathology and the development of novel antibody-based therapeutics.



2020-2021 NPI-TAMUK Partnership

TAMU, Nuclear Power Institute (NPI) | One Year, Four Months | \$200,000

Yang, X. | Frank H. Dotterweich College of Engineering

The funds for this project are being utilized to enhance the nuclear and other science and engineering education and research in two departments led by the PI and co-PI. The work includes curriculum development, outreach activities, and basic applied research.

SHF: Small: Turning Visual Noise into Hardware Efficiency: Viewer-Aware Energy-Quality Adaptive Mobile Video Storage

University of South Alabama / National Science Foundation | Computing and Communication Foundations (CCF): Core Programs | One Year, Eight Months | \$28,681

Smith, S. | Frank H. Dotterweich College of Engineering

This project integrates viewer-awareness and hardware adaptation to achieve power optimization without degrading video quality, as perceived by users. The main thrusts of this research include (i) experimentally and mathematically connecting the viewer's experience, ambient illuminance, and memory performance (e.g., failure rate); (ii) designing adaptive memories with dynamic energy-quality management; and (iii) implementing mobile videomemory chips and developing a video-streaming system for evaluation.

Hydrogen Evolution using Metal-Organic Framework-complexed Hydrogenase Active Site Analogues as Electrocatalysts (MHAES)

Texas A&M Engineering Experiment Station (TEES) | 2019 Sixth Research Proposal Call | One Year | \$40,000

Liu, J. | College of Arts and Sciences

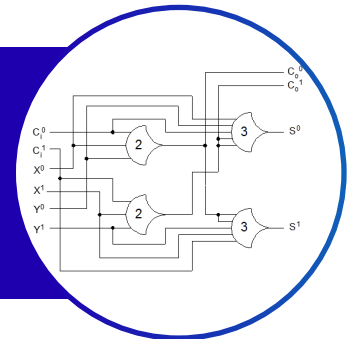
In this collaborative effort, the project goals are to: 1) Synthesize MOF-complexed hydrogenases (H₂ase) active site analogues as electrocatalysts (MHAES, preliminary data were obtained, indicating the formation of the proposed immobilized catalysts); 2) Characterize the structures of MHAES; 3) Evaluate the electrocatalytic ability for H₂ production. This project will provide more definite preliminary data to support faculty in applications for external funds, supervise students in leading edge research of sustainable energy applications and enhance hands-on experiences of minority students.

SHF: Small: GOALI: Formal Equivalence Checking for Quasi-Delay-Insensitive Circuits

NDSU/NSF | Computing and Communication Foundations (CCF): Core Programs | One Year | \$24,999

Smith, S. | Frank H. Dotterweich College of Engineering

For this research project, the PI and their team aim to develop highly-automated algorithms that can be used to check the functional equivalence of QDI circuits against corresponding synchronous circuits as well as develop techniques to ensure tractability, efficiency and scalability of QDI equivalence checking.



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Did you know?

September 25th is the National Research Administrator's Day.