

# Engaging Research

TEXAS  STATE  
RESEARCH AND SPONSORED  
PROGRAMS

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## AVPR Message



Dr. Walter E. Horton

It's summertime and we are coming to the end of the "long semesters" for the current academic year. Hopefully y'all are looking forward to some vacations, trips, and other activities with family and friends. Sara and I are ready for our second full summer here in Texas, so bring on the AC!

Our summer newsletter is somewhat abbreviated in length but no less enjoyable. Please do take some time to read about another group of amazing researchers working on everything from river water to anxiety. Also, I appreciate the Research Coordinators sharing the story of CIRG (I will let you find out what the acronym means) and how faculty can form collaborative teams to conduct cutting-edge research.

As always, I want to express my sincere appreciation to all of the research community here at Texas State and pledge my continued support of your efforts. See you in the fall!



### **SHARE YOUR RESEARCH STORIES!**

**Would you like to appear in our newsletter or suggest one of your colleagues who's doing cool research? Fill out our [brief story form](#) for consideration.**



# Faculty Research Spotlight

**Timothy Bonner, PhD, Biology:** “My team is working to quantify how swift water communities respond to flow at 14 biomonitoring sites within three river basins of Texas.”

**Your research:** Since 2014, my collaborators and I, through funding from Texas Water Development Board, have been studying the effect of river flows on aquatic life. While some species of aquatic plants, insects, mussels, and fishes are more common in slackwater environments, such as swamps, small creeks, and lakes, others are more common in swift water environments, such as streams and rivers. In Texas, waters within streams and rivers are impounded and diverted to meet societal needs (e.g., drinking water, agriculture, industry). If too much water is diverted from a stream or river, swift water environments decrease, and species shift from a swift water community to a slackwater community. Population decline in swift water species is a concern if the stream or river represents a substantial portion of a species range.

My team is working to quantify how swift water communities respond to flow at 14 biomonitoring sites within three river basins of Texas. We are attempting to identify and define components of river flows (e.g., average flow, frequent small floods, infrequent large floods, or a combination of all three) necessary to maintain swift water species and communities. Understanding flow components associated with persistence of swift water species will enable water resource managers to plan amount and timing of flows left in or diverted from streams and rivers.

**Rewards/challenges:** Identifying ecological processes that lead to community patterns is exciting because we can apply our understanding to guide sustainable use of our water resources and to accurately predict consequences of management options. Challenges are



numerous. For one, water quantity standards adopted by the state's regulatory agency are unique; therefore, my team and I had to develop unique approaches, techniques, and experimental design. Another challenge is that we convey our findings to a large and diverse stakeholder group, consisting of water users, water managers,

resource managers, ecologists, public officials, agriculturists, industrialists, and conservationists. As such, I'm constantly improving my communication skills in order to convey our results, interpretation, and limitations to a large group of individuals with various backgrounds, experiences, and often contrasting positions on water management.



Dr. Tim Bonner, colleagues, and Aquatic Resources students conducting aquatic biology and habitat surveys in west Texas during the summer of 2016.



# Faculty Research Spotlight

**Araceli Martinez Ortiz, PhD, LBJ Institute for STEM Education & Research:** “In these roles, working in both the U.S. and overseas, I learned the power of collaboration and of managing teams.”

**Your research:** I am honored to serve as the principal investigator of the Texas State STEM Rising Stars, a \$1.5M National Science Foundation research grant that is very collaborative in nature. Texas State STEM Rising Stars was designed to address challenges in freshman and sophomore major retention rates and baccalaureate graduation rates in physical science, engineering, computer science, and mathematics courses. The project team includes co-PIs and senior personnel from Curriculum & Instruction, Engineering, Engineering Technology, Physics, Computer Science, Mathematics, and Chemistry.

**Research impact:** The Texas State STEM Rising Stars project has already increased our understanding of effective undergraduate STEM teaching and learning practices that address the needs of large public universities serving a diverse student population of STEM students, such as Texas State University. By establishing communities of learners at both the student and faculty lev-

els, Texas State STEM Rising Stars has made a significant and sustainable impact on the overall STEM learning culture at Texas State University. Since the team began our work, over the last four years we note 1) a greater than 10% increase in the overall second-year STEM undergraduate student retention rate; 2) a greater than 12% increase in the retention rate of Hispanic and African American STEM majors; 3) a greater than 15% increase in the number of female students completing undergraduate STEM degrees; and 4) a greater than 20% increase in the overall representation of Hispanic and African American students (combined) as STEM majors.

**About you:** Prior to earning a PhD in engineering education, I spent 15 years as an industrial engineer, engineering project manager, and strategic business director in the automotive and information technologies industries. In these roles, working in both the U.S. and overseas, I learned the power of collaboration and of managing teams.



Along with my spouse, I am also the proud parent of three wonderful young people beginning their own careers. My professional and personal life experience have taught me that by working together, we have a greater opportunity to bring out the best in each of us, and this collective impact can lead to new discoveries, an improved quality of life for self and others, social justice, and joy in finding our life's purpose.

**Lesli Biediger-Friedman, PhD, Nutrition, Research Director-Bobcat Bounty:** “It has been exciting to work with leading coalitions and partnerships to address food policy and food security.”

**Your research:** My research focuses on policy, systems, and environmental approaches to improve food security and nutrition-related behaviors. I work with teams on several collaborative research projects. Over the past two years, I have served as the research director for Bobcat Bounty, a student-led campus food pantry. Other current projects include technology innovations with the WIC program and improving early childhood feeding practice in San Marcos, with the Best Food FITS and Caminitos programs.

**Research impact:** My research is participatory in nature and aims to create and innovate public health systems to improve health and food security. My hope is that we are able to explore solutions to improve the communities we work in and translate this work to other systems and environments.

**Rewards/challenges:** The greatest research challenges have also become the



greatest rewards. Gaining access to community populations, building trust, and building a research team can all be challenging. However, once capacity is built in these areas, the work we accomplish together is fulfilling.

It has been exciting to work with leading coalitions and partnerships to address food policy and food security. With research on restaurants and institutions, families, college students, food systems, and classrooms, we have discovered exciting outcomes through participatory approaches.

**Advice:** As a community researcher, I work in teams. Collaborations make work more enjoyable and, typically, more meaningful. The best advice I have been given about funding is to develop the project far in advance and keep looking for a funding home, all while refining the project.

**About you:** I grew up in Seguin, TX and have always enjoyed the beauty of our region. I love to spend time with my family, which includes two children who attend San Marcos CISD. We spend our spare time playing in nature, participating in many sports, and taking road trips.

# Faculty Research Spotlight

**New Faculty Focus: Alessandro De Nadai, PhD, Psychology:** “Anxiety has a clinical-level impact on a third of people at some point in their lives.”

**Background:** I am a clinical and quantitative psychologist, specializing in anxiety and related conditions (OCD, PTSD). I am from Massachusetts, coming to Texas State by way of the University of South Florida. I have also made clinical stops at Boston University, All Children's Hospital/Johns Hopkins Medicine in St. Petersburg, FL, and the University of Mississippi Medical Center. I am incredibly excited to come to Texas State, given the plethora of research opportunities and collaborators with whom to work.

**Your research:** Anxiety has a clinical-level impact on a third of people at some point in their lives. It interferes with their relationships and their work, and it is the sixth leading cause of disability across all physical and mental health conditions. This level of impact is also constant internationally, across countries with low, medium, and high levels of income. Yet, we do not hear about anxiety as much as some other conditions, in part be-



cause people who suffer from it keep symptoms to themselves. My work seeks to improve diagnosis, intervention, and treatment dissemination through clinical research and using models from statistics and data science.

**Funding:** This work is currently manifesting through several grants. One grant (currently under review at NIMH) focuses

on using machine learning to identify brain-based targets for new biobehavioral interventions for pediatric OCD. Another grant (in preparation for submission to AHRQ) focuses on the cost-effectiveness of mental health treatment. Only a third of patients with anxiety receive gold-standard behavioral treatment – if we knew the cost-effectiveness of treatment, we could plan large-scale dissemination efforts.

It is important to see any one grant not as a single isolated project, but in the context of a bigger portfolio of grant submissions. If funding success rates for a single large grant are 20%, that sounds quite low, but a researcher would have upwards of a 60% chance of hitting on at least one out of four. While four grants sounds like a lot, a single area of expertise can be employed in complementary ways across grants. This reduces total effort while allowing for a broad and meaningful impact on multiple domains.

## Research Coordinator Corner

### CIRG Brings Researchers and Communities Together

Are you a researcher looking for a team and wanting to make a difference in the community? If so, a new organization forming at Texas State may be of special interest to you.

Perhaps you previously participated in the Council for Interdisciplinary Research and Grants (CIRG), originally formed under the Center for Children and Families in 2006. This group facilitated networking and collaboration among faculty interested in issues involving children and families across the university. CIRG was housed in the School of Social Work and led by Nancy Chavkin from 2006-2017.

In the Fall of 2017, CIRG was rebranded and renamed to reflect the makeup of its members and its purpose and vision going forward. The new CIRG stands for Community and Interdisciplinary Research Groups and is housed in McCoy College of Business.

Combining two growing trends in academic research, CIRG supports researchers in forming multidisciplinary teams and in conducting community engaged research. Community-engaged research involves researchers, community organizations, and government leaders teaming up, with researchers bringing their expertise and community leaders identifying needs within the community. CIRG's mission is to form a community of people who share similar interests to build research teams for the future.

At this time, CIRG will focus on four group themes, as described below. Each subgroup will meet four times a year to form collaborations, create goals, and remain active in research. Researchers are invited to join any or all of these subgroups:

**Community Health Research Interest Group:** Research that serves the whole life

by Yvonne Natoli

health needs of youth to elders, with emphasis on underrepresented and socially and economically disadvantaged populations.

**Education Policy and Outcomes Research Interest Group:** Research that examines policies, programs, and curriculums to improve K-12 student outcomes.

**Urban Innovations and Sustainability Research Interest Group:** Research that sparks civic innovation and engagement, promotes inclusivity, and transforms modern communities.

**Food Systems and Policies Research Interest Group:** Research that broadly involves food systems, food policies, and nutrition.

CIRG will host a welcome meeting for all interested researchers in August 2018. For more information email Yvonne Natoli at [yvonne@txstate.edu](mailto:yvonne@txstate.edu).

Research or grant questions for RCs? Send them [here](#) or [contact your college RC](#).