2018-2019 Tier One Program Grant Recipients

Translating Science into Policy: Preparing for Pandemics and Bioterror Attacks

Gerald Parker, Veterinary Pathobiology/ Scowcroft Institute of International Affairs, Veterinary Medicine and Biomedical Sciences/ Bush School of Government & Public Service
Andrew Natsios, Scowcroft Institute of International Affairs, Bush School of Government & Public Service
Gregory Brian Colwell, Health Promotion & Community Health Sciences, School of Public Health

The Translating Science into Policy Program will bring graduate students and faculty together in novel and transformational ways to inspire learning and foster greater understanding across disciplines to create solutions for catastrophic real-world problems. The ever-growing threat of infectious disease and bioterrorism can only be addressed through multi-disciplinary teamwork. Our team includes academic and practitioners in science and policy, including the College of Veterinary Medicine & Biomedical Sciences, Institute for Infectious Animal Diseases, the College of Agriculture and Life Sciences, School of Public Health, Bush School of Government and Public Service and others. The Annual Pandemic Policy Summit, which convenes national and international leadership in the fields of science, government, business, and non-governmental organizations, will serve as a foundation to connect students to the policy and science communities. Five graduate-level classes will be co-taught by faculty from diverse backgrounds and include students from various schools and colleges, each culminating in the students' participation in the summit. Two foundational courses will lead into three team learning experiences: an outbreak simulation, a one health field investigation, and active policy engagement. We will provide high-impact and transformational learning opportunities for the next generation of global health security leaders, providing them with the skills to make the world safe and secure from the next major pandemic or biological attack. We will measure learning outcomes through impact evaluations and publish results in peer-reviewed journals. We expect to involve between 60-85 graduate students per academic year.

Hands-On Training in Food Diversity - From Food Fraud to Public Health

Susanne Talcott, Nutrition and Food Science, Agriculture and Life Sciences
Natalie Johnson, Environmental and Occupational Health, School of Public Health
Stephen Talcott, Nutrition and Food Science, Agriculture and Life Sciences
Thomas McDonald, Environmental and Occupational Health, School of Public Health
Gary Acuff, Nutrition and Food Science, Agriculture and Life Sciences
Elena M. Castell-Perez, Biological and Agricultural Engineering, Agriculture and Life Sciences
Matthew Taylor, Animal Science, Agriculture and Life Sciences

Wesley Osburn, Animal Science, Agriculture and Life Sciences
Leslie Cizmas, Environmental and Occupational Health, School of Public Health
Genny Carrillo, Environmental and Occupational Health, School of Public Health
Boon Chew, Nutrition and Food Science, Agriculture and Life Sciences

Our food supply is internationally connected and highly dependent on additives and ingredients from around the world representing different cultures and processing regulations. As such, issues of food safety, food authentication, and food certifications are prevalent and issues of "food diversity" are a nexus between the food industries and consumers. The **Food Diversity Innovation Program (FDIP)** encompasses key principles of increasing importance to the global food industry including **religious and ethnic foods** and other **certified food systems** such as organic, non-GMO, gluten-free, allergen-free, and other personal/socially conscious certifications. Certified food systems require extensive employee training and recordkeeping to verify authenticity, safety, processing adulterations, and fraud. Our endowed FDIP program was established in 2016 as a sustainable high-impact *research* and *education* model based on religious and ethnic foods and other certified foods to educate students through high impact learning in concert with the food industry. The current research and education portfolio of FDIP will join forces with the **training program for environmental health and interdisciplinary program in toxicology** at the graduate and undergraduate levels with research in human exposure to toxins in food and water and environmental impacts of food production. These programs will provide outside the classroom high-impact-learning modules for existing courses and research activities for graduate and undergraduate students exploring complexities of diverse food systems, environmental and food toxicology, food safety, and food authentication/adulteration/fraud while engaging in hands-on, life-long learning, and critical thinking activities that increase our students' ability to thrive and excel in diverse work-environments.

Visualizing Pollution Plumes and Healthy Clouds

Sarah Brooks, Atmospheric Sciences, Geosciences
Timothy Logan, Atmospheric Sciences, Geosciences
Jerry Tessendorf, Visualization, Architecture

In this project, the quality of the air that the students breathe as they journey throughout their daily routines will be monitored by personal particulate matter samplers, and will be compared to 3-D visualizations of aerosol plumes and clouds based on roof-top measurements taken from a high resolution, light detection and ranging instrument (lidar) capable of detecting light scattering. Lidar measurements of aerosol plumes and clouds will be transformed into detailed 3-D visualizations to demonstrate sources of the aerosols, the extent that the aerosols travel, and the complexity of aerosol-cloud interactions. Students will learn the broader concept of how data are collected and how data can

be used to visualize and demonstrate key scientific concepts. Three essential activities in this effort include: operating and maintaining the lidar, visualizations of the lidar data which will make the images of clouds and aerosol plumes come to life, and sampling from a ground based network of student-operated personal monitors. The personal monitors will allow students to compare and contrast air quality at their individual locations to that of their classmates. Furthermore, personalized data from students in College Station (an urban setting), West Texas A&M (dry and dusty Texas Panhandle setting), and Storm Peak, Colorado (a research facility located on a mountaintop), will be compiled to provide a network of measurements to be shared and compared by numerous stakeholders in the science and education (STEM) community. Additional visualizations will be used to further illustrate weather and climate phenomena including cloud formation and storm development.

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