Department of Environmental Science

Fall 2022 Volume 1, Issue 1

Julie King Honored

SHARING CORE VIRTUES WITH STUDENTS

Professor Julie King, J.D., Senior Lecturer, and Undergraduate Program Director of our department was one of four recipients

presented with the inaugural Core Curriculum Virtues Recognition Award. The College of Arts and Sciences presented the award. The award will be given annually to faculty members who inspire moral, intellectual and/or spirited virtues through the process of teaching a course in Baylor's core curriculum during the previous academic year.

There are 14 Core Vision Virtues identified—humility, courage, rigor, integrity, respect, justice, empathy, compassion, responsibility, patience, wisdom, faith, hope, and love. Professor King was nominated by Dr. George Cobb, professor and Chair of the department and was ultimately awarded for the core virtue of courage.

"The word 'courage' has its linguistic roots in the Middle English, French and Latin words for 'heart," King said. "When considering applying courage in my courses and in life, I ask students to call upon their heart for others to put themselves in the places of the most vulnerable. This may be someone suffering from the environmental health effects of pollution or with the people of a small, less-developed country facing the most devastating effects of a problem they did not cause and do not have the resources to address. I strive to inspire courage to act based on the heart that students have for the poor, oppressed, infirm, underrepresented and most vulnerable. Courage demands strong advocacy motivated by a heart for justice."

Well said, professor King. Sic'em.

If you'd like to read more on this story, click here.







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MESSAGE FROM THE CHAIR— FALL 2022

leven years ago Baylor University took a bold step and embarked on the path toward establishment of a nationally recognized Environmental Science doctoral program, with aspirations of international notoriety. Environmental Science began the planning and implementation process, with strong leadership from the College of Arts and Sciences, the Graduate School, the Provost's Office and the Office of the President. Careful logistics and financial planning took 3 years, and in 2014 the Board of Regents approved a PhD degree in Environmental Science that has blossomed into a vibrant and visible research and education program. In 2014, Environmental Science housed a hand full of master's students, and our faculty were advising PhD students in some interdisciplinary programs. Although those students were excellent in their own right, they did not have a unifying curriculum or programmatic identity. Today, Environmental Science has 49 PhD, 2 MS students, and 3 MPH students. And since 2014, we have graduated 12 PhD, 13 MS students, and 3 MPH students. By developing solutions to real world problems, our students consistently win national and international awards, and publish prolifically. Our Doctoral students serve in leadership positions for regional, national, and international professional societies. Thus, our alumni are highly sought after for a wide variety of careers. Our department's scholarly productivity is currently ranked in the top 25% of all Environmental Science PhD Programs in the USA. The growth and quality of our graduate program is clear evidence of the diligent work by outstanding faculty and students. We are now highly visible on the national stage and are becoming broadly recognized from an international perspective. The decade of work by faculty, staff and students has been truly successful. For the second decade we simply need to Sic 'em!



Dr. George P. Cobb Professor and Chair, Department of Environmental Science

		Env Sci Gradu	ate Enrollment	
		Numbers		
		PhD	MS	TARGET
2014-15	Summer		14	
	Fall		15	
	Spring		10	
2015-16	Summer	1	10	
	Fall	8	5	15
	Spring	10	6	
2016-17	Summer	12	7	
	Fall	13	8	
	Spring	14	6	
2017-18	Summer	15	4	
	Fall	17	6	
	Spring	19	5	
2018-19	Summer	18	5	
	Fall	20	5	25
	Spring	19	5	
2019-20	Summer	18	5	
	Fall	22	6	
	Spring	24	6	
2020-21	Summer	25	5	
	Fall	29	3	
	Spring	26	2	
2021-22	Summer	25	1	
	Fall	38	3	
	Spring	38	2	
2022-23	Summer	37		
	Fall	49	2	34*
*SY 23-				
24				

EHS STUDENTS HELP DESIGN AN ADDENDUM TO THE DISASTER RESILIENCE SCORECARD FOR CITIES

MPH students with the EHS department teamed up to help design the latest scorecard for the "Disaster Resilience Scorecard for Cities: Food System Resilience—Addendum". Disaster Resilience Scorecard for Cities: Food System Resilience – Addendum is structured in sections around the same "<u>Ten Essentials for</u> <u>Making Cities Resilient</u>" as the Scorecard. The Ten Essentials provide a holistic coverage of the many issues that affect resilience in the "system-of-systems", which make up a system. This includes food production, supplies, transport and services.

What is a Food System?

The Scientific Group of the UN Food Systems Summit in 2021 identified food systems as the entire range of actors involved in the production, processing, distribution, consumption, and disposal of food products originating from agriculture, forestry, fisheries and food industries, and the broader economic, societal, and natural environments in which they are embedded. Production includes farming and preproduction actors such as input industries producing fertilizers or seeds. The range of actors includes those involved in science, technology, data, and innovation. Others include public and private quality and safety control organizations.

The Food and Agriculture Organization of the United Nations refers to a sustainable food system when it delivers food security and nutrition for all, in a way that does not compromise food security and nutrition for future generations.

- Integration of the food system and governance (Essential 1);
- Integration of the food system and disaster scenarios (Essential 2);
- Integration of the food system and finances (Essential 3);
- Integration of the food system and land use/building codes (Essential 4);
- Integration of the food system and ecosystem services (Essential 5);
- Integration of the food system and institutional capacity (Essential 6);
- Integration of the food system and societal capacity (Essential 7);
- Integration of the food system and infrastructure resilience (Essential 8);
- Integration of the food system and disaster response (Essential 9);
- Integration of the food system and recovery/building back better (Essential 10)

There are 29 indicators with a score of 0-5, where 5 is best practice.

REQUIRED DATA FOR ANALYSIS

Data you will need to complete this Addendum will include:

- Demographic data, including nutritional related statistics (especially for stunting);
- Food system capacity, infrastructure, stakeholders and planning documentation;
- Data on ecosystem services, finance, resilience capacities and food system outcomes of previous disasters, if available;
- Climate change-related assessments, trends on climate if these exist, and how they affect the food flows (price volatility, availability, etc.);
- Emergency management planning and procedural documentation



PHD CANDIDATE NAMED NOAA FINALIST



Kendall Scarlett, a doctoral candidate in Environmental Science, has been named a finalist for the 2023 class of the <u>Sea Grant John A. Knauss Marine Policy Fellowship</u> <u>program</u>, announced by the National Oceanic and Atmospheric Administration (NOAA) and Sea Grant. Nominated by the Texas Sea Grant program, Scarlett earned the premier marine policy fellowship that places early career individuals in legislative

or executive branch offices in Washington, D.C., offering both educational and professional experiences. It's another real-world example of Baylor having a seat at the table in developing solutions to real-world challenges. Congrats, Kendall!

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GRADUATE STUDENTS WIN MULTIPLE AMERICAN CHEMICAL SOCIETY AWARDS









Mike Penrose (far left) was awarded the ACSENVR Graduate Student Award. This award recognizes students who work in areas related to environmental chemistry, have transcripts and records of research productivity, provide a brief discussion of their future goals, and a letter of recommendation from their faculty advisor.

Our other graduate students, Sahar Pradhan and Dinny Stevens won oral presentation awards for the ENVR division and undergraduate student Alec Kramer (far right) won best poster award for the TOXI division.

Mike is with Dr. George Cobb's lab and Sahar, Dinny, and Alec are all with Dr. Christie Sayes' lab.



Great job!

BAYLOR UNIVERSITY ENVIRONMENTAL SCIENCE GRADUATE STUDENT SELECTED FOR AUTUMN SCHOOL SERIES IN GERMANY



Sahar Pradhan was selected to go to the Autumn School Series hosted by the European Psychoneuroimmunology Network hosted by Justus-Leibig University in Geissen, Germany. Around 40 individuals were selected (approximately 1/3 were American) internationally and were able to present their work (both as a poster and an oral presentation). Below is a primer on what the call was for applications and the link to the application which summarizes what they were looking for:

"The European Psychoneuroimmunology (PNI) Autumn School Series explores innovative ideas and research avenues in a multidisciplinary field that includes neuroscience, immunology, and

mental health/stress research from basic to clinical

science."

https://www.uni-giessen.de/fbz/zentren/ggl/events/ autumnschool



About her time at the school, Sahar says, "It was a super cool opportunity to go and network with individuals in the crossroads of immunology and neuroscience and how environmental

exposures combined with those can ultimately affect human behavior and health."





ENVIRONMENTAL SCIENCE WELCOMES FALL 2022 INCOMING GRADUATE STUDENTS

This summer the Environmental Science graduate faculty had another successful recruiting term to ultimately bring in another excellent group of 14 graduate students. Having reached a total enrollment of 49 PhD students, the department has already exceeded the overall enrollment target number of 34 for 2023. The students will begin their research journey and ultimately complete their PhD degrees within a few years. We are so happy to have them be a part of our program and wish them all great success!

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Asha Ashraf - Kerala Agricultural University, India Krishnakumar Athikkuthuparambil - Cochin University of Science & Technology, India Joseph Choi - Calvin University, Grand Rapids MI Nilkamal Jaisawal - Banaras Hindu University, India Alisha Janiga - UT Rio Grand Valley, TX Madusha Malalanayake - University of Peradeniya, Sri Lanka Tate Matthews- Baylor University, TX (Masters) Zachary Nowlis - Washington University, St. Louis, MO Jeewan Poudel - Tribhuvan University, Nepal Afroze Rifa - University of Koblenz-Landau, GE Prakash Sharma - Kathmandu University, Nepal Mohammed Sheikh Yamin - Adam Mickiewicz University, Poland Melinda Stevens - Baylor University, TX



MEET DR. HYEONG-MOO SHIN



Dr. Shin joined Baylor University as an Associate Professor in the Department of Environmental Science in August, 2022. Prior to joining Baylor, he was an Assistant Professor at the University of Texas at Arlington (UT Arlington). His major scientific contributions at UT Arlington are related to epidemiologic studies on how exposure to endocrine-disrupting chemicals (EDCs) during pregnancy contributes to risk for child autism spectrum disorder (ASD). As a principal investigator, he completed two NIH-funded autism projects. Dr. Shin received his Ph.D. degree at the University of California at Irvine, where he conducted retrospective exposure assessment of perfluorooctanoate (PFOA) for use in various epidemiologic studies in the C8 Health Project. At the University of California at Davis where he worked as a post-doctoral re-

searcher, he expanded his research in environmental health to include a suite of organic compounds (e.g., flame retardants, pesticides, plasticizers) used in common household products and filled knowledge gaps to improve estimates of exposure to these organic compounds. He also received comprehensive, interdisciplinary training in autism research by world-renowned leaders in their field at the UC Davis Medical Investigation of Neurodevelopmental Disorders (MIND) Institute.

Research

Dr. Shin's research focuses on the measurement, modeling, and health effects of environmental pollutants. Pollutants of interest include particulate matter, pesticides, and organic compounds such as those found in consumer products and building materials. Many of these pollutants have been found to be toxic in animal testing or be associated with adverse health effects in human epidemiological studies. Ultimately, his goal is to develop tools to alert policy makers to environmental pollutants and to assist them to reduce exposure and ill health effects on society. His research interests include:

- 1. Environmental risk factors of autism spectrum disorder
- 2. Mathematical modeling of environmental quality
- 3. Assessing exposure to consumer product chemicals

High-throughput chemical screening and prioritization

Welcome to Baylor University and the Environmental Science Department Dr. Shin!



SPOTLIGHT ON EDITOR IN CHIEFS

Professor Bryan Brooks is Editor-in-Chief of *Environmental Science and Technology (ES&T) Letters*, which is published by the American Chemical Society. With a Journal Impact Factor of 11.558, *ES&T Letters* is considered one of the leading environmental science and technology scholarly journals in the world.



Published as soon as accepted and summarized in monthly issues, *ES&T Letters* provides an international forum for brief communications on experimental or theoretical results of exceptional timeliness in all aspects of environmental science (pure and applied), Global Perspectives, and short reviews on emerging environmental science, engineering and health topics. Manuscripts describing cross-disciplinary research or addressing emerging issues are of particular interest. Among the areas the journal covers are:

Anthropogenic Impacts on the Atmosphere Biogeochemical Cycling Contaminants in Aquatic and Terrestrial Environments Data Science Ecotoxicology and Public Health Energy and Climate Sustainable Systems Treatment and Resource Recovery



EDITOR-IN-CHIEFS-CONT.



Dr. Cole Matson is Editor-in-Chief of *Ecotoxicology*, an international journal published by Springer Nature, that is devoted to the publication of fundamental research on the effects of toxic chemicals on populations, communities and terrestrial, freshwater and marine ecosystems. It aims to elucidate mechanisms and processes whereby chemicals exert their effects on ecosystems and the impacts caused at population or community levels. This area of research is well-represented within the Department of Envi-

ronmental Science at Baylor University, and is a rapidly expanding focus area around the world, as numerous ongoing environmental challenges increase the need for ecotoxicological research. The journal *Ecotoxicology* was founded in 1992, and has been a respected journal within the field throughout its existence. Dr. Matson joined the editorial board as an associate editor in 2016, became co-editor-in-chief in 2020, and ultimately sole editor-in-chief in 2021. Studies on individuals should demonstrate linkage to population effects in clear and quantitative ways. Laboratory studies must show a clear linkage to specific field situations. The journal includes not only original research papers but technical notes and review articles, both invited and submitted. A strong, broadly based editorial board ensures as wide an international coverage as possible.

The scope of this journal:

Offers fundamental research on the effects of toxic chemicals on populations, communities and terrestrial, freshwater and marine ecosystems

Shows how chemicals exert effects on ecosystems, examines their impact at the population and community level

Includes original papers, technical notes and review articles

96% of authors who answered a survey reported that they would definitely publish or probably publish in the journal again



**It is very important to note that never before has Baylor had Editor-in-Chiefs of not one but two highly regarded STEM journals in the same department. This is rarefied air for sure.

Sic'em Dr. Brooks and Dr. Matson!

SEMINAR SCHEDULE—FALL 2022

Department of Environmental Science Seminar Series – ENV 5102 & 4102 Fall 2022 - Wednesdays BSB C.105 @ 4:00 PM

Date	Speaker	Affiliation	Area of Expertise	REMARKS
8/31/2022	Yang Li	Baylor University	Atmospheric	
9/7/2022	Kristin Nielsen	UTMSI	Environmental Toxicology	
9/14/2022	Wei Xu	TAMU-CC	Environmental Toxicology	
9/21/2022	No Class			
9/28/2022	Thomas Hanisco	NASA	Atmospheric Chemistry	
10/5/2022	Peter Van den Hurk	Clemson University		
10/12/2022	TBD			
10/19/2022	Dominic Boyer	Rice University	Energy and Society	Virtual
10/26/2022	Evan Gallagher	University of Washington	Environmental Toxicology	
11/2/2022	Art Sedlacek	Brookhaven National Lab	Wildfire plume chemistry	
11/9/2022	Paul Walter	St. Edward's University	Ozone/atmospheric	
11/16/2022	No Class - SETAC			
11/23/2022	No Class - Thanksgiving			
11/30/2022	Teresa Mathews	ORNL	Biodiversity and Ecosystem Health	
12/7/2022	Jamie DeWitt	East Carolina University	Environmental Toxicology - Im- mune	Virtual



Summer research opportunities take Baylor students all over the nation

Baylor Press August 2022

Pollution and Thunderstorms — When Baylor professors receive significant research grants, that funding creates opportunities for students, too. Take, for example, the \$900,000 grant Dr. Rebecca Sheesley and Dr. Sascha Usenko of Baylor's Department of Environmental Science received last year from the U.S. Department of Energy to study the impact of urban pollution on thunderstorm activity.





To collect the data necessary to unpack the relationship between pollution and weather, Sheesley and Usenko have outfitted a 22-foot trailer with monitors capable of gathering information about aerosols, gases, organic compounds and more. Inside the trailer is a mobile lab that students can utilize at locations in and around Houston, the geographical center of the study.

SUMMER RESEARCH- CONT.

Among the many students involved are Kimberly Sauceda, a graduate student working on her first field campaign. The hands-on opportunity provides experience for students to operate important instruments within the lab (pictured below), and the chance to build connections working with collaborators from other universities.



"It's really interesting," says Sauceda. "I'm learning so much about how to use equipment and gather information that I haven't done before, but I'm also getting to teach newer students that have come in. It's enabling me to grow in ways I haven't in the past."





DR. SUSAN BRATTON'S RESEARCH IN THE JULY 2022 ISSUE OF TEXAS MONTHLY MAGAZINE

The July 2022 issue of Texas Monthly has a story in it which features Dr. Susan Bratton's research on water quality. The article is entitled, *"How Okra Could Clean Up Our Drinking Water"*



You can find the story in this link: https://www.texasmonthly.com/news-politics/okra-watermicroplastics/?fbclid=IwAR2lFTh7fiRTWgkhWoANeoIMAwxM5YdZOdV7lDZtSo8Lg6V-QTpAcw91nks

ENVIRONMENTAL SCIENCE POST-DOC AND RESEARCHERS

Baylor University recently celebrated it's Post-Docs during the week of September 19—23 and the Environmental Science department showed appreciation to ours, and their PIs. Lunch from the local favorite pizzeria, Shorty's Pizza Shack was provided along with good conversation and fellowship. Our post-docs are highly valuable personnel to not only our graduate and under-graduate students but also to their PIs as they help to advance research objectives and provide mentorship. The following are ENV's post-docs:



Dr. MD Alam - Bruce Lab



Dr. MD Ibrahim - Lavado Lab



Dr. Laura Langan - Brooks Lab Research Scientist





Dr. Manisha Mehra -Sheesley & Usenko Labs



Dr. Macarena Rojo - Brooks Lab

Dr. Amanda Sevcik - Sayes Lab Research Scientist



Dr. Alen "Ali" Raad -McManamay Lab



The Department of Environmental Science awarded scholarships of various amounts to the following students for the 2022—2023 school year.

Clara Wieland Scholarship -

Maria Calcote, Junior - Environmental Science

Elizabeth & Russell Hallberg Scholarship -Maria Calcote, Junior - Environmental Science

Lindsay Ross, Senior - Environmental Studies

Galen Green Scholarship -

Lindsay Ross, Senior - Environmental Studies

Diedra & Ward Flora Scholarship -

Shelby Dye, Junior - Environmental Science

Tony & Donna Robert Scholarship -

Lindsay Graf, Junior - Environmental Studies

Glasscock Energy Scholarship -

Ben Marsh, Junior - Environmental Science Hope Tucker, Sophomore - Environmental Science/CHE concentration

Doris Kayser Stark Graduate Scholarship -

Lea Lovin, PhD student, Brooks Lab Farzaneh Mansouri, PhD Candidate, Usenko Lab Kendall Scarlett, PhD Candidate, Brooks Lab Jaylen Sims, PhD student, Brooks Lab



Glasscock Endowed Fellowship -

Solomon Ayirsire Taiwo Ayorinde Yanira Baldovinos Micah Bowman Kayla Garrett Jordan Jatko James Liu James Liu James Liu Sach Moran (BMS) Precious Obiako Mike Penrose Mike Penrose Megan Solan Kevin Stroski Jill Sturtevant



CONGRATULATIONS 2022 GRADUATES

ENVIRONMENTAL SCIENCE - (B.S.)

Jared Luke Bockemehl

Alexandra Nicole Chalmers

Jason George Galeas

Emily Aye Gaw

Zachary Terrell Wood

ENVIRONMENTAL STUDIES - (B.A.)

Madeline Maureen Carlone: *magna cum laude*, Commissioning as 1st Lt w/ U.S. Army Ava Elise Corry-Roberts: *summa cum laude* Jack Michael Charles: cum laude

Savannah Faith Hale: magna cum laude

Nichole Briana Zau: BIC requirement completed

Riley Marie Gaska

Luke Johnson

Han Li

Uchenna Nwankwo

Elizabeth Grace Jackson

Meagan Hope Lewis

Kristen Mauffrey

Kelbie Marika Pogoncheff

Ben Sims

ENVIRONMENTAL STUDIES - (M.E.S.)

Marlin Wayne Bullard

Deanna Christine Hellinger

CONGRATULATIONS DOCTORAL GRADUATES—MAY 2022



Thelma Ameh

Dissertation, Environmental Science: Nanocarriers for Infectious Disease Control: Physical, Chemical and Biological Effects



Mentor: Dr. Christie M. Sayes



Sarah Rebekah Burket

Dissertation, Environmental Science: *The Importance of Scale: Bioaccumulation of Contaminants of Emerging Concern by Bivalves*

Mentor: Dr. Bryan Brooks





DURING THE SUMMER SEMESTER, ENVIRONMENTAL SCIENCE HAD TWO PHD CANDIDATES SUCCESSFULLY DEFEND THEIR DISSERTA-TIONS. CONGRATULATIONS FARZANEH AND CLAIRE! WELL DONE.





On July 20, 2022 Farzaneh Mansouri defended on, "Reconstruction of carbon and nitrogen stable isotope in Baleen whale earplugs". Farzaneh is currently completing her final semester while in Washington state. She will graduate in December 2022.



On July 25, 2022 Claire Moffett made her defense on, "Sources and composition of organic aerosol on the North Slope of Alaska and effects of a changing Arctic". Claire has accepted a position with PNNL as she completes her last semester and will graduate in December 2022.



SENIOR ENVIRONMENTAL SCIENCE MAJOR TO TAKE PART IN UN CLIMATE CHANGE CONFERENCE

Baylor Press July 2022

Shelby Dye, a senior environmental science major in the Baylor University College of Arts & Sciences, will get the opportunity this fall to take part in international discussions on climate change sponsored by the United Nations.

The American Chemical Society (ACS) has selected Dye to serve as an observer at the <u>27th</u> <u>Conference of the Parties (COP27)</u> to the United Nations Framework Convention on Climate Change (UNFCCC). COP27 was originally scheduled to take place in 2021, but due to the COVID-19 pandemic the event has been rescheduled to Nov. 7-18, 2022, in Sharm El-Sheikh, Egypt.

Dye said the Conference of the Parties focuses on international progress made towards fighting climate change.

Dr. George Cobb, chair and professor of environmental science, said Dye is the latest in a line of exceptional Baylor students over the past decade who have been selected by the American Chemical Society to attend the UN-sponsored climate change conference.

"Shelby is an intelligent, insightful and hard-working environmental science major with an emphasis on environmental chemistry. She has also completed courses in environmental law and policy," Cobb said. "She's one of only eight undergraduates selected by the ACS to attend

COP27 as observers and to report details of the conference proceedings. These students often interact with members of international delegations and obtain a broad spectrum of perspectives regarding approaches and goals of other nations."

Cobb said that attending COP27 and meeting with scientists and policy makers from around the world will be an extension of Dye's studies.

"Each of these events will allow Shelby to apply the breadth of knowledge that she has gained in environmental science here at Baylor," Cobb said. "Selection as a COP observer has also traditionally served as a stepping stone for our alumni to pursue successful careers."

Sic'em Shelby!



1. Rebecca Sheesley, Logistics for and extension of Detecting Events and seasonal trends in biomass burning plumes using black and brown carbon: (BC)2 El Paso. University of Houston (2021), \$337,552.00.

2. Rebecca Sheesley, Collaborative Proposal: BEAR-oNS: Biogenic Emissions and Aerosol Response on the North Slope. National Science Foundation (2021), \$266,622.00.

3. Rebecca Sheesley (Principal Investigator, 50%), Sascha Usenko (Co-PI, 50%), "TRACER-MAP: Mapping Aerosol Processes Across Houston During Convective Cell Events," Sponsored by US Dept of Energy, Awarded. (September 1, 2020 - August 31, 2023). Award Letter Amount: \$891,761.

4. Rebecca Sheesley (Principal Investigator, 50%), Sascha Usenko (Co-PI, 50%), "Perform trace gas measurements in Tyler, TX," Sponsored by University of Houston, Awarded. (September 1, 2020 - November 15, 2021). Award Letter Amount: \$7,710.

5. Rebecca Sheesley (Principal Investigator, 50%), Sascha Usenko (Co-PI, 50%), "AMBIENT MONI-TORING NEAR THE GRANBURY CONTINUOUS AIR MONITORING STATION," Sponsored by University of Houston, Awarded. (July 16, 2020 -October 31, 2021). Award Letter Amount: \$14,812.

6. Rebecca Sheesley (Principal Investigator, 50%), Sascha Usenko (Co-PI, 50%), "Detecting Events and Seasonal Trends in Biomass Burning Plumes Using Black and Brown Carbon: (BC)2 Houston and El Paso," Sponsored by University of Houston, Awarded. (January 31, 2020 -June 1, 2021). Award Letter Amount: \$417,806.

7. Sascha Usenko, Air Quality Data Collection Support for Tracer-AQ (Air Quality) in Houston. University of Houston (2021), \$191,865.00.

8. Sascha Usenko (Principal Investigator, 50%), Rebecca Sheesley (Co-PI, 50%), "Perform trace gas measurements in Waco, TX," Sponsored by University of Houston, Awarded. (June 15, 2020 -October 31, 2021). (/) -Award Letter Amount: \$7,627.

9. Sascha Usenko (Principal Investigator, 50%), Rebecca Sheesley (Co-PI, 50%), "Focus on the air quality and atmospheric chemistry in two urban areas of Texas (Corpus Christi and San Antonio)," Sponsored by Univ of Texas at Austin, Awarded. (July 21, 2020 -August 31, 2021). Award Letter Amount: \$99,798.



Ameh, **Thelma***, Gibb, Matthew, Stevens, Dinny, Sayes, Christie M., *et al*, Silver and Copper Nanoparticles Induce Oxidative Stress in Bacteria and Mammalian Cells, Nanomaterials, ISSN 2079-4991, JUL 2022, Volume 12, 14, 2402, DOI 10.3390/nano12142402.

Ball, Ashley L.*, Solan, Megan E., Franco, Marco E., Lavado, Ramon, Comparative cytotoxicity induced by parabens and their halogenated byproducts in human and fish cell lines, *Drug and Chemical Toxicology*, ISSN 0148-0545, issue 1525-6014, DOI 10.1080/01480545.2022.2100900, JUL 2022.

James P. Grover, J. Thad Scott, Daniel L. Roelke, **Bryan W. Brooks**, Competitive superiority of N -fixing cyanobacteria when fixed N is scarce: Reconsiderations based on a model with heterocyst differentiation, *Ecological Modelling*, Volume 466, 2022, 109904, ISSN 0304-3800, https://doi.org/10.1016/j.ecolmodel.2022.109904.

Carr, Danuel A., Nugent, William H., **Bruce**, **Erica D.**, Song, Bjorn K., Evaluation of an Injectable, Solid-State, Oxygen-Delivering Compound (Ox66) in a Rodent Model of Pulmonary Dysfunction-Induced Hypoxia, *Military Medicine*, DOI:10.1093/milmed/usac059, MAR 2022.

Cecilia A. Sánchez, Michael T. Penrose, **George P. Cobb**, *et al*, Land use, season, and parasitism predict metal concentrations in Australian flying fox fur, *Science of The Total Environment*, Volume 841, 2022, 156699, ISSN 0048-9697, https://doi.org/10.1016/j.scitotenv.2022.156699.

Franco, Marco E., Ramirez, Alejandro J., Johanning, Karla M., Matson, Cole W., **Lavado, Ra-mon**, In vitro-in vivo biotransformation and phase I metabolite profiling of benzo [a]pyrene in Gulf killifish (Fundulus grandis) populations with different exposure histories, *Aquatic Toxicology*, ISSN 0166-445X, February 2022, Volume 243, DOI: 10.1016/j.aquatox.2021.106057.

Liu, James Y.*, Pradhan, Sahar H., Hussain, Saber, Sayes, Christie M., Platform for Exposing Aerosolized Substances to Lung Surfactant and Alveolar Cells at the Air-Liquid Interface *ACS Chemical Health & Safety*, ISSN 1878-0504, DOI 10.1021/acs.chas.2c00033, SEP 2022.

Liu, James Y.*, Sayes, Christie M., A toxicological profile of silica nanoparticles, *Toxicology Research*, ISSN 2045-452X, 2045-4538, AUG 29, 2022, Volume 11, 4, DOI 10.1093/toxres/tfac038.

Franco, Marco E., Johanning, Karla, **Matson, Cole W.**, Lavado, Ramon, Reduced biotransformation of polycyclic aromatic hydrocarbons (PAHs) in pollution-adapted Gulf killifish (Fundulus grandis) *Science of the Total Environment*, ISSN 0048-9697, FEB 1 2022, Volume 806, 150854, DOI 10.1016/j.scitotenv.2021.150854.

* - student author



Khan, Zarrar, Abraham, Edo, **McManamay, Ryan A.**, *et al*, Emerging Themes and Future Directions of Multi-Sector Nexus Research and Implementation, *Frontiers in Environmental Science*, ISSN 2296-665X, AUG 11 2022, Volume 10, 918085, DOI: 10.3389/fenvs.2022.918085.

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