



THE UNIVERSITY OF
TENNESSEE



ONE HEALTH
INITIATIVE
UNIVERSITY OF TENNESSEE

2023

Annual Report

Research.

Outreach.

Education.

Director's Update

This has been another busy year for the UT One Health Initiative in research, education/training and outreach, with growth seen in all areas. Researchers within the One Health community secured over \$21M in extramural funds and generated 79 one health-related publication. We are currently reviewing first drafts of chapters for the book on using the One Health approach to tackling the United Nations Sustainable Development Goals, which is targeted for publication in 2025. Although we still don't have a great way of tracking students in the One Health minor, we know that in the previous year, 15 students declared the minor at or before graduation, and there are currently 77 students enrolled in the One Health introductory course; thus, we are seeing a sharp upward trajectory and are working on better ways to track the minor. Our monthly seminar series remains strong with a diverse array of speakers, and our engagement in events both within the UT system and general public has gotten bigger and better. Clearly, we are meeting or exceeding all of our expected deliverables for the 2024 target and are diligently working out details for transitioning into a global center.



Deb Miller with Amy Elias (left), UT Humanities Center Director, at One Health + Humanities Days

In these pages, we highlight several OHI supported projects and events. First, we provide an overview of One Health and Humanities Days. This three-day event was spectacular, showcasing the role of the arts in health. This was such an eye-opening experience and truly inspirational. We also provide the plans for our 2024 celebration, which will take place on Halloween. Next, we highlight a few of our state, national and global engagements. We participated in the state-wide Grand Challenge Summit and the meeting to explore collaborations with Tennessee State University. We participated in the Food-Energy-Water to Support Sustainable Urban Systems (FEWSUS) symposium, which was funded by NSF and hosted by UT. During this three-day meeting, OHI led a workshop from which a manuscript is currently in peer-review, and led a break-out session during which we identified research needs and generated a plan of action for developing a proposal sometime

in 2025. OHI also is preparing a chapter to be included in a book that is being generated by the conference attendees. Globally, we traveled to the Philippines and Japan to explore collaborations and connections with faculty and students. It is energizing to see leaders in other countries acknowledging the importance of the One Health approach and supporting One Health efforts. Many plans for collaborations and engagements are underway, both for faculty and for students. We also highlight the One Health Student Coalition. This group is becoming stronger every day, and I am excited of the plans that are underway for the One Health Student Leadership Summit that they have planned for January of 2025. Finally, we share the amazing work of researchers. First highlighting NSF APPEX, led by OHI Associate Director Nina Fefferman, which will use a One Health approach to study the factors that lead to pandemics. We also visit with a couple of our newly awarded seed grantees to hear how Art and Science can work together to tackle water quality issues and learn of the health impacts of mycotoxins in cannabis. We end with updates on progress from past seed awardees.

It has become increasingly important to join forces to tackle local, national, and global wicked problems. Emerging pathogens, food insecurity, changing climate, biodiversity loss, antimicrobial resistance, and so many other complex issues are ever present. Despite these daunting challenges, we continue to be empowered through consilience and interdisciplinary collaborations. Indeed, all that we have accomplished this past year is a testament to our amazing UT faculty, staff and students. As I have said many times, there is nothing we cannot achieve when we believe in something and work together to make it happen. So, as always, let us continue to inspire one another locally, nationally, and globally as we continue uniting disciplines to protect and promote the health of all life on Earth!

Debra Lee Miller

OHI Team



Deb Miller
Director



Nina Fefferman
Associate Director



Ashley Morgan
Post-Doctoral Researcher



Alyssa Merka
Administrative Specialist

One Health Scholars



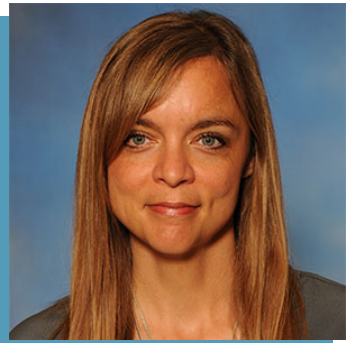
Shigetoshi Eda
One Health Scholar-in-Chief
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School of Natural
Resources



Brad Collett
Assistant Professor,
Dept. of Plant Sciences
Associate Professor,
School of Landscape
Architecture
Director, Tennessee
RiverLine



Jennifer DeBruyn
Professor,
Dept. of Biosystems
Engineering and Soil
Science



Michelle Dennis
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Dept. of Biomedical and
Diagnostic Sciences



Jeanine Fletcher
Professor,
Agriculture and
Veterinary Medicine
Librarian



Matt Gray
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School of Natural
Resources



Dan Grove
Extension Assistant
Professor,
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Resources



Becky Jacobs
Waller Lansden
Distinguished Professor,
College of Law

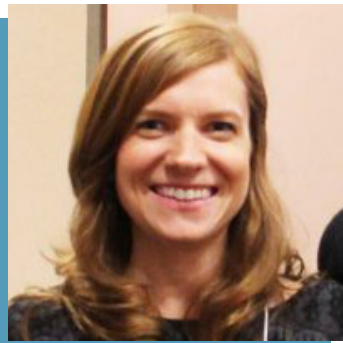
One Health Scholars



Xueping Li
Dan Doulet Faculty
Fellow and Professor,
Dept. of Industrial and
Systems Engineering



Emily Martin
Associate Professor,
Dept. of Medicine,
Division of Research



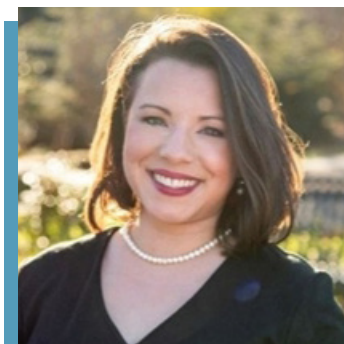
Laura Miller
Associate Professor,
School of Communication
Studies



Hollie Raynor
Executive Associate
Dean of Research and
Operations, College of
Education, Health, and
Human Sciences
Professor, Dept. of
Nutrition



Laura Russo
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Heather Sedges
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Marcy Souza
Professor and Associate
Dean, College of
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One Health Scholars



Chunlei Su
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Becky Trout Fryxell
Professor,
Dept. of Entomology and
Plant Pathology



Brynn Voy
Education Director, UT-
Oak Ridge Innovation
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Adam Willcox
Research Associate
Professor,
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Coordinator, Smith
Center for Int'l
Sustainable Agriculture



Yang Zhao
Associate Professor,
Dept. of Animal Science

Year Four Accomplishments

Research



One Health Research Seed Grant Program

Funded three new transdisciplinary research projects across UT In the 2023-24 academic year

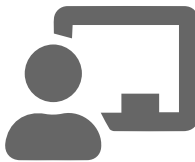
Extramural Funds Generated

Of the 35 new proposals submitted by the One Health community in the 2023-24 academic year, 16 have been funded, totaling \$21M+

Peer-reviewed Publications

The UT One Health community had 79 health-related publications published in the 2023-24 academic year

Education



One Health Minor

15 students graduated with the One Health minor in 2023-24; additional courses are being added each year

Student Coalition

The One Health Student Coalition continues to gain momentum and participate in campus events; they are holding a leadership summit in early 2025

Intro to One Health

The Intro to One Health course continues to grow each year; 77 students are currently enrolled

Outreach



Monthly Seminar Series

Features local and international speakers discussing their One Health approach to current global challenges

Community Events

OHI continued participating in community and campus events like Big Orange STEM, Ag Day, and UT's Earth Day Festival

One Health Day

The 2023 annual celebration was a three-day series of events in partnership with the UT Humanities Center

Deliverables by 2024

How are we doing according to our plan at launch in 2020?

Formation of the Tennessee Center for Global One Health

>1.2M annual operating budget supported by state and federal funds and private industry



Increase in extramural grants

>2.7M per year

Expected >8 proposal submissions per year by One Health-associated faculty



Peer-reviewed publications

Increased by 10-20



Provide diagnostic support for research/surveillance activities

>20 UT faculty per year



Train >100 students and post-docs in One Health



Organize 12+ public seminars and 4 One Health Day celebrations



Become nationally recognized as one of the premier One Health programs and partners



A SPECIAL ONE HEALTH DAY CELEBRATION

One Health + Humanities Days

One Health Day is a global campaign launched in 2016 that celebrates the interconnectedness of human, animal, plant, and environment health and considers how health challenges might be solved with an interdisciplinary approach. OHI has held One Health Day events each fall since 2020.

In 2023, we partnered with the UT Humanities Center to produce One Health + Humanities Days, a three-day event series showcasing the critical role that the arts and humanities play in understanding and exploring sustainability and global wellbeing. Presenters were selected through a call for proposals from UT research faculty in arts and humanities fields, and they were encouraged to be creative with their presentation format.

Twelve events were held across campus over three days and included research talks, panel discussions, a film screening, and a musical performance. It was a truly unique event and creative exploration of One Health themes.



The UT Humanities Center and the UT One Health Initiative are pleased to present



One Health+ Humanities Days

Arts + Humanities
Interventions



tiny.utk.edu/ohhd

One Health + Humanities Days is a 3-day series of events showcasing the critical role that arts and humanities play in understanding and exploring sustainability and global wellbeing, including human, animal, plant, and environmental health.



Free and open to the public
OCTOBER 25-27, 2023

WEDNESDAY, OCTOBER 25

MORTALITY AS AN OBJECT OF TEAM RESEARCH: A SPARKS EVENT

PULITZER PRIZE FINALIST DAVID HASKELL LECTURE + BOOK SIGNING: "SOUNDS WILD + BROKEN: LEARNING FROM THE BEGINNINGS OF SOUND"

300 YEARS OF SURGERY: MARIN MARAIS + A MUSICAL PERSPECTIVE ON THE MEDICAL HUMANITIES

 THE UNIVERSITY OF TENNESSEE
KNOXVILLE

HUMANITIES CENTER

THURSDAY, OCTOBER 26

EQUINE HEALTH + MEDICINE: HISTORICAL + LITERARY PERSPECTIVE

BLACK MATERNAL HEALTH COMMUNITY THINK-TANK

CLIMATE CHANGE, LANGUAGE CHANGE: CREATING A VOCABULARY OF HEALING THROUGH THEATRE GAMES

DR. ERIC AVERY LECTURE: "ART AS (MY) MEDICINE"



ONE HEALTH
INITIATIVE

FRIDAY, OCTOBER 27

HELENE SINNREICH: "THE ATROCITY OF HUNGER: STARVATION IN THE POLISH GHETTOS DURING WORLD WAR II"

CENTERING THE MARGINALIZED

EMBODIED CINEMA: AFFECT, DANCE, + SPECULATIVE WELLNESS

ONGOING EVENTS

October 25-27, 2023
ENVIRONMENTAL CHANGE + THE DECLINE OF AN ANCIENT CITY: THE CASE OF LIXUS, NORTHERN MOROCCO

October 15, 2023-Jan 30, 2024
PRINT EXHIBITION

SPOOKY SCIENCE

A ONE HEALTH DAY CELEBRATION



THE LIVING DEAD

HOW MICROBES RECYCLE OUR BODIES AFTER DEATH



Jennifer DeBruyn
Biosystems Engineering & Soil Science

WOMEN WHO EAT CHILDREN

WITCH MYTHS & THEIR RACIST & MISOGYNIST LEGACIES



Maria Stehle
World Languages & Cultures

October 31 | 1:00 - 4:00pm | Student Union 270

TRICKED BY TREATS

UNWRAPPING THE BITTER HISTORY OF CHOCOLATE



Chris Magra
History

CREEPY CRAWLY CLUES

DECODING CRIMES SCENES WITH INSECT EVIDENCE



Charity Owings
Entomology & Plant Pathology

FANGED FRIENDS

SOCIALITY & DISEASE TRANSMISSION IN VAMPIRE BATS



Sebastian Stockmaier
Ecology & Evolutionary Biology



Free & open to the public.
RSVP in advance to claim a Halloween goody bag!

tiny.utk.edu/SpookyScience



ONE HEALTH INITIATIVE
UNIVERSITY OF TENNESSEE

OHI ON THE MOVE

USDA Faculty Exchange Program: Reciprocal Visit to the Philippines

In August, OHI Director Deb Miller traveled to the Province of Isabela in the Philippines for a U.S. Department of Agriculture reciprocal visit to Isabela State University (ISU). There she visited Karina Nicolas and the faculty of the Isabela School of Veterinary Medicine. Jennifer Bermudez, dean of the veterinary school, also accompanied her throughout the visit.

Crocodile is highly endangered with less than 150 (and perhaps even less than 100) animals left in the wild. At the center, Miller met with biologist Bernard A. Tarun who explained how they developed their headstart program. The adult (breeding) crocodiles are those who, for various reasons, cannot be released back to the wild. It took many years, but the breeding pair have begun to produce offspring



The trip included visits to fruit farms to see how they grow their crops using integrated farming techniques. In fact, her first full day was spent at the Nicolas farm, owned and operated by Nicolas' family. While on the farm, Miller was treated to generous quantities of freshly picked fruit and hot cocoa.

Another highlight of the trip was the visit to Mabuwaya Foundation and the tour of the Philippine

for the program. The hatchlings will be used to restock areas where populations have disappeared. Headstarting the hatchlings in captivity will hopefully increase their chances of survival. Program leaders also shared about the challenges experienced in educating the local people about crocodiles (and other species whose populations are declining). Huge efforts are put into education because biologists realize that they need the support of communities if their conservation efforts are to be successful.



Photos: Miller with Jennifer Bermudez (left) and Karina Nicolas (right) of ISU; Miller at the Philippine Crocodile Conservation Center; Miller at the Nicolas Integrated Farm; Miller meeting with ISU President, Ricmar Aquinas (center)



One day was spent at Kalinga State University visiting the Kalinga Cultural Heritage and Eco-Tourism Center. There, Miller met with Jessie Grace M. Sannadan, center director, and learned about tribal relations and traditions of

the indigenous peoples of the Philippines. Through the stories, it was evident that “living with the land” (One Health approach) is the premise of their society. Animals, plants, air, water, soil were all woven into every story as well as traditional dance, music, dress, and beliefs.

At ISU, Miller met with Ricmar Aquino, ISU president, who is very keen to find ways for UT to collaborate on research and education. He had just returned from a meeting in Hawaii where there was discussion about forming a coalition of universities focused on conservation. They discussed the importance of using a One Health approach in these efforts. President Aquino also arranged for Miller to visit the

Cagayan Valley Cacao Processing Center, where she was treated to lunch and a taste of some of their products, including chocolate wine.

At ISU, Miller delivered a seminar on the importance of using a One Health approach to tackle complex issues. The seminar was held in the Climate Change Center and attended by both faculty and students. As it was the first day of classes, upper-level veterinary students predominated but it was also open to medical, nursing, and other students, as well as faculty. The seminar was recorded so that those who were not able to attend (or were at other universities throughout the Philippines) could view it as well. Although initially slated for 2 hours, in the end it was 3 hours of lecture and discussion. Miller was thoroughly impressed that attendees remained alert and had many questions! She focused primarily on the United Nations Sustainable Development Goals but also gave examples of research projects at UT and how a One Health approach is applied. After the lecture, Miller was able to interact with many of the students. She was inspired to hear the diversity of interests, especially in native species and conservation efforts.

There were many plans that were discussed for moving forward, including rejuvenating the clinical rotation at the Crocodile Conservation Center for veterinary students. This was in place prior to COVID but was halted during COVID and has not yet been reinstated. Another plan is for the center to begin using the veterinary school for diagnostic help with their animals and to implement a herd health program, including routine health checks, collection of baseline blood and fecal parameters, and conducting full necropsies on animals that die. Because students want to gain knowledge on wildlife diseases, another plan is to schedule a follow-up (and perhaps recurring) zoom conference to discuss interesting (or even just straight-forward) cases.

There are many opportunities for future engagement and collaboration with this amazing country!



Photos: Miller with Edgar Nicolas, owner of Nicolas Integrated Farms; Miller at the ISU Veterinary Teaching Hospital.

UT Hosts Second International Symposium on Food-Energy-Water Bioeconomies for a Net-Zero Transition

This March, OHI hosted a workshop as part of the Food-Energy-Water to Support Sustainable Urban Systems (FEWSUS) international symposium. The workshop, titled “Food-Energy-Water Nexus for One Health Ecosystems,” facilitated discussions on how to meet the increasing demand for food, energy, and water by developing and implementing sustainable systems that interface with and impact human, animal, plant, and environmental health, aligning with the One Health approach. The workshop drew participants from seven countries, bringing together a diverse range of expertise. Key topics of discussion included team science, sustainable cold chains, genomics and metagenomics as tools for bioremediation, chemical and biological environmental contaminants, the economics of human health at the rural-urban fringe, wastewater management, as well as smart sensing and precision livestock farming tools.

From these conversations, the group worked collaboratively on a perspective paper entitled “3E + 3B: An elaborated One Health approach to bridging the researcher-stakeholder disconnect at the food-energy-water nexus.” In this paper, we proposed a complementary framework consisting of three “E”s—Earn trust, Explore fears, and Educate—and three “B”s—Build partnerships, develop Business models, and Bear the perceived risks—designed to address the gap between researchers and stakeholders in the food-energy-water nexus. The team is now preparing to share the findings of this international



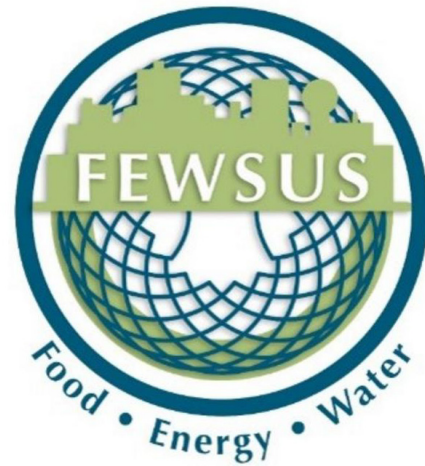
and interdisciplinary workshop through this paper, highlighting actionable pathways toward a more integrated and effective One Health ecosystem. This paper is currently in review with *Sustainability Science*.

Additionally, OHI’s Ashley Morgan presented as part of the Junior Researchers Lightning presentations on Integrated Multi-Trophic Aquaculture (IMTA). This culture technique utilizes multiple species to create a chain of waste consumption resulting in circular and sustainable seafood production. The prototype system, built at Florida Atlantic University Harbor Branch Oceanographic Institute has successfully



Photos: UT President Randy Boyd giving the opening remarks at the 2024 FEWSUS International Symposium; group photo of FEWSUS attendees.

co-cultured four sea vegetables: sea lettuce, red seaweed, sea asparagus, and sea purslane, as well as three species of fish: red drum, Florida pompano, cobia, and three invertebrate species: Pacific white leg shrimp, sunray venus clams, and sea cucumbers all within the connected system. Ashley focused on highlighting IMTA as a feasible solution to low-waste, energy efficient, and nutrient dense food production and a promising endeavor toward improved sustainability in the food sector. Additionally, she discussed the future use of AI-integrated monitoring technologies to further improve system efficiency.

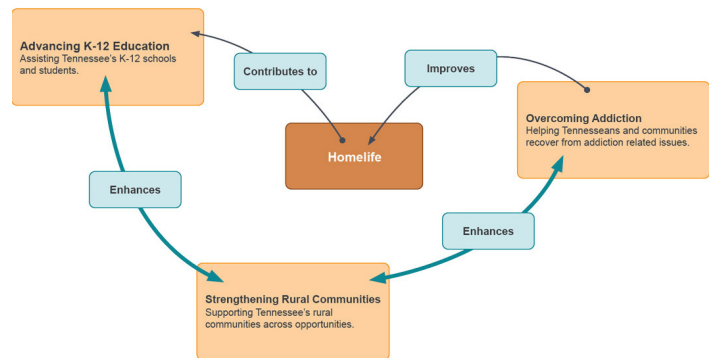


UT Grand Challenges Mini Summit

UT has identified three grand challenges that are critical to the well-being of Tennesseans: Overcoming Addiction, Advancing K-12 Education, and Strengthening Rural Communities. These challenges are aimed at addressing complex, systemic issues facing the state and beyond.

OHI has been actively engaged in this effort from the outset. OHI participated in an initial summit in March of 2024 focused on these grand challenges. The next summit is slated for February of 2025, and we are excited to participate once again. These are opportunities to apply the One Health approach when tackling issues facing rural communities and elucidating how the health of rural communities is impacted by addiction and K-12 education. The One Health approach allows us to identify contributing factors as well as solutions to complex issues. It further allows us to identify missing members of

teams (i.e., who is missing at the table). Perhaps most importantly, the One Health approach allows us to identify ways to *bring* those most impacted to the table, as their input is vital to the conversation. Indeed, the One Health approach guides us in team-building and team-leading strategies that will be applicable to tackling these grand challenges.



Advancing K-12 Education



**Strengthening Rural
Communities**



Overcoming Addiction

North American One Health University Network

OHI attended a summit at Colorado State University as part of a group organizing a North American One Health University Network (NAOHUN) and contributed to conversations and brainstorming around the formation, structure, and function of this exciting network. The main topics of discussion included:

- **Research:** How to capitalize on industry interests, how to better engage the environmental sector, and how to secure larger funding opportunities for transdisciplinary research;
- **Education:** Connecting veterinary and human medical schools to offer more interprofessional education (IPE) opportunities for students, bolstering undergraduate and graduate One Health programs, and engaging K-12 students

through community service, outreach, and One Health curriculum for teachers;

- **Service:** The importance of building regular service projects into our One Health programs to stay connected to community needs and better disseminate One Health knowledge to others; and
- **Advocacy and Policy:** Working with professionals in the humanities to create more effective science communication tools, advocacy for One Health legitimacy through other professional organizations, and leveraging connections with legislators to increase awareness and lobby for One Health research support and funding.

We are excited for the future direction of this network and are excited to continue being an active member and leader within it.



Tennessee State University and UT Institute of Agriculture Joint Research Summit

Tennessee State University (TSU) and the UT Institute of Agriculture (UTIA) held the third Joint Research Summit this month to further collaborations in research and innovation between the two land-grant universities. OHI's Ashley Morgan presented "Conservation Crossroads: Exploring One Health Approaches in Forestry, Wildlife, and Fisheries" to the group. This presentation highlighted the interdisciplinary work of OHI including current research endeavors in: herpetofauna health, mussel ecology, pollinator health, chronic wasting disease, and environmental toxicology. It also emphasized the importance to include climate impacts and indicators of climate change resilience into health-related

research. We are in continued contact with TSU researchers to solidify future research collaboration.



Photos: Group photo of NAOHUN summit; group photo of TSU-UTIA joint research summit.

Fostering One Health Collaboration Between UT and Japanese Universities



In January 2024, One Health Scholar-in-Chief Shige Eda traveled to Japan to visit four universities in Tokyo and Nagoya. The universities were selected based on potential connections with UT's One Health Initiative, School of Natural Resources (SNR), and Herbert College of Agriculture (HCA). At each university, Eda gave a presentation on UT, OHI, SNR, and HCA. At each meeting, potential collaborations, partnership, student and faculty exchange, and funding opportunities were discussed. Eda met with a total of 14 faculty members who showed great interest in collaborating with UT. They agreed to begin the process with activities that require minimum cost, such as zoom meetings and remote seminars and workshops, with a goal of establishing an exchange program for small groups or individual students and faculty in the near future.

One Health research is growing in Japan; Tokyo University of Agriculture and Technology is trying to establish a One Health center, and the first Japanese One Health Science conference was held in September 2023. At each university, Eda identified a representative who will act as a facilitator of the Japan-UT connection. As Smith Global Leadership Fellow, he is currently working with UT's Smith International Center and Center for Global Engagement to create a Study Abroad Program for UT students.



Photos, left page: Inuyama-castle near the city of Nagoya, which Eda visited as a candidate for sightseeing opportunities for of study abroad students; Eda with Takashi Sato, Professor at Tokyo University of Pharmacy and Life Sciences, discussing future collaborations.

Photos, right page: "Welcome Back" ice cream social hosted by the One Health Student Coalition (OHSC); OHSC leaders Heather Smith and Sarah Fiedler; Fiedler interacting with visitors to the OHI booth at Ag Day.

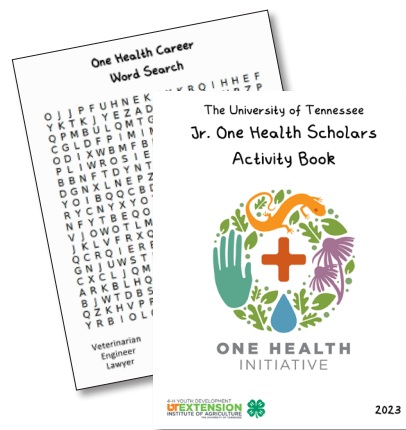
ONE HEALTH STUDENT COALITION

Student interest in One Health continues to grow at UT! Our One Health Student Coalition participated in several outreach campaigns this year to elevate the One Health concept campus-wide and introduce students of all disciplines to the services and opportunities the initiative offers.

The group hosted an ice cream social in August, welcoming students back to campus and kicking off the new semester with UT Creamery ice cream. Dozens of students stopped by and discussed their academic and professional goals, the One Health minor program, and upcoming events.



They also represented OHI at Ag Day, the UT Institute of Agriculture's annual celebration of the university's land-grant mission, which attracts hundreds of attendees each fall. Visitors to the OHI table played One Health trivia for prizes and picked up One Health-themed activity booklets and bookmarks for children.



Coalition leaders are busy planning the second biennial One Health Student Leadership Summit, which will be held January 10-11, 2025. This intensive summit will bring together a diverse audience of students and professionals passionate about interdisciplinary collaboration in health.



One Health Student Leadership Summit

This summit is open to students of all levels who want to improve the health of all life on earth.

Attendees will learn about complex issues impacting human, animal, plant, and environment health, participate in hands-on activities simulating health crises, and gain experience working in interdisciplinary teams.

Interested? Leave your contact info at the link below and we'll be in touch!

tiny.utk.edu/OneHealthStudent



**January
10-11**

Ag & Natural
Resources Bldg.
Knoxville, TN 37996



**ONE HEALTH
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KNOXVILLE



A ONE HEALTH APPROACH TO PANDEMICS

NSF Awards UT Researchers \$18M to Study Factors that Lead to Pandemics

Nina Fefferman serves as the Associate Director of OHI, the Director of the National Institute for Modeling Biological Systems, and a Professor of Ecology and Evolution Biology. She has received \$18 million from the National Science Foundation (NSF) to unravel the complexities of pandemics. Fefferman has worked in pandemic preparedness for 20 years and is now tasked with answering where pandemics are more likely to begin, which pathogen characteristics contribute to an epidemic or pandemic, when a pandemic might occur, and how infection might spread through a population.

“That’s the point of bringing together a multidisciplinary team of researchers—to gain a globally better understanding of how to interrupt the spread of infection so we help people before they ever get sick...”

That’s the thing about public health: If you do it right, the public doesn’t know you’re there.”

Nina Fefferman

The NSF funding will be used over seven years to launch and support the NSF Center for Analysis and Prediction of Pandemic Expansion (NSF APPEX). This multidisciplinary center will focus on identifying the factors that contribute to as well as the factors that mitigate the threat of regional or global infection.

To answer these complex where, which, when, and how questions. The NSF APPEX team, composed of experts from various disciplines will use a One Health approach to analyze the built environment, economic resources, media, safety systems engineering, social networks and surveillance along with other fields such as ecology, health care, immunology, pharmaceuticals and virology. The recent funding will expand the multidisciplinary group of academic researchers to include members from government,

industry, and nongovernmental organizations.

Fefferman will stay on as both the principal investigator for NSF APPEX and director of the center. She is joined by co-principal investigators Lydia

Bourouiba, a fluid and mathematical physicist at Massachusetts Institute of Technology; K. Selcuk Candan, a computer scientist at Arizona State University; Sadie Ryan, a medical geographer at the University of Florida; and Shelby Wilson, a mathematician at the Johns Hopkins University Applied Physics Laboratory. The project also involves Clinical Associate Professor Elizabeth Strand of UT’s College of Veterinary Medicine, serving as consilience coordinator, and at least 80 other researchers in addition to postdoctoral staff and graduate students.

NSF APPEX exemplifies applying a comprehensive, One Health approach to a problem with profound complexity. Utilizing this approach will allow the team to consider unique perspectives, engage in transformative partnerships, and effectively tackle this global challenge.



CONTINUING OHI'S SEED

Through partnerships with the UT College of Veterinary Medicine Center of Excellence, UT Humanities Center, and the Tennessee RiverLine, OHI continued its seed grant program in 2023 with three \$40,000 seed awards. The goal of the program is to create transdisciplinary synergies among faculty, staff, students, and external collaborators that embrace a One Health approach to investigations. Two of the projects are underway, and the third has been postponed to summer 2025.

Modular Landscapes: Tackling Water Quality through Arts and Science

- *PI: Sarah Bolivar (College of Architecture and Design, School of Landscape Architecture)*
- *Co-PI: Mike Ross (Herbert College of Agriculture, Department of Plant Sciences; College of Architecture and Design, School of Landscape Architecture)*
- *Co-PI: Jason Brown (College of Arts and Sciences, School of Art)*

This project brings together science, design, and art to reimagine how we restore the riparian banks of Third Creek, a tributary of the Tennessee River. While traditional methods for stabilizing shorelines often use hardening structures like riprap and bulkheads, we propose working with live plant matter to foster stabilization and biodiversity. This approach will help improve water quality and encourage people to engage with the efforts needed to maintain healthy ecosystems.

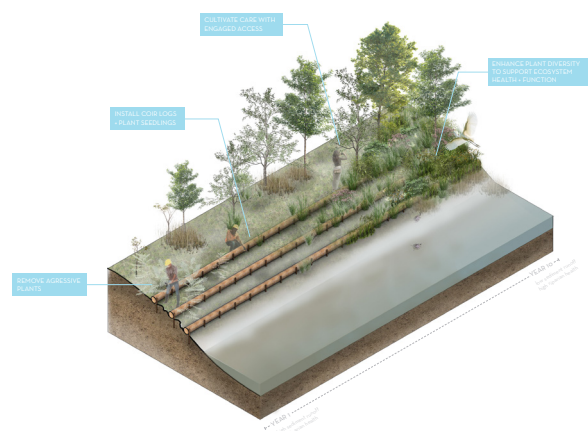
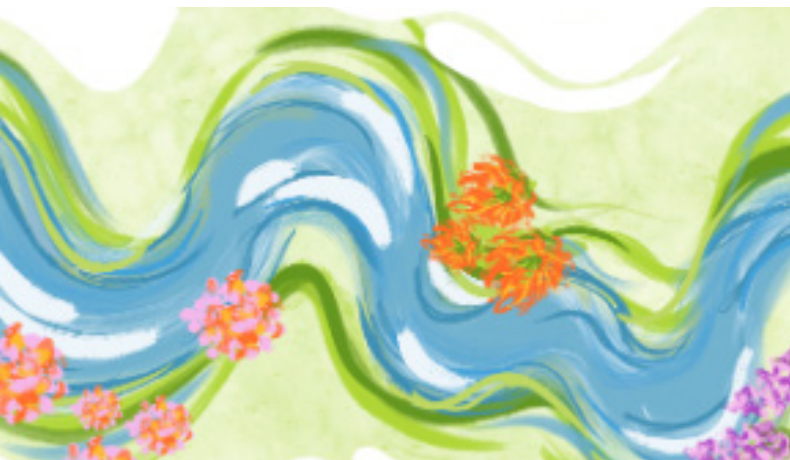
Our design includes earthworks along the shoreline to reduce stormwater runoff and erosion impacts, promote plant and insect biodiversity, as well as enhance the experience for visitors along the greenway. Both graduate and undergraduate students have conducted research to support the project, including:

- Creating educational coloring pamphlets and

seed paper, as well as posts cards to engage the public with Third Creek (this work was presented at UT's Discovery Day),

- Drawing existing shoreline stabilization methods and speculating on alternative models,
- Testing kudzu as stabilization mats, and
- Physically modeling the site to explore potential interventions

Building on the students' research, the team is now conceptualizing micro-topographies that can slow down stormwater runoff and showcase native riparian vegetation. In the spring, the team will partner with the university to host a Meet the Creek public event and viewing of the plein air installation.



AWARD PROGRAM IN 2023

Mycotoxins in Cannabis: Implications for One Health

- PI: Kimberly Gwinn (Herbert College of Agriculture, Department of Entomology and Plant Pathology)
- Co-PI: Julia Albright (College of Veterinary Medicine, Small Animal Clinical Sciences)

Cannabis sativa is cultivated worldwide for medicinal, therapeutic, and recreational properties, as well as for grain, seed, and fiber. Hemp-derived oils and tinctures have been used for treatment of epilepsy and other neurological disorders, for addressing behavioral problems, and for relieving pain in humans and companion animals. Additionally, hemp seed is touted as a potential superfood for both humans and pets. Recently, hemp has been approved for use in animal feeds in some states; studies suggest that FDA approvals may be on the horizon.

Many fungi that infect or infest hemp produce mycotoxins, chemicals that pose a potential hazard to humans and animals. *Contamination of food and feed by mycotoxins can affect the productivity of farm animals. It also represents a health hazard to humans and companion animals.* Emerging cannabis and hemp industries have created new challenges in managing health risks of these contaminants to humans and animals. This project seeks to optimize screening protocols for mycotoxins in commercial products derived from hemp and cannabis that are intended for human and/or animal foods and to determine their prevalence in products. Three types of hemp products have been tested: 1) commercial CBD (cannabidiol) oil and tinctures; 2) seed collected from hemp inflorescences infected with mycotoxin-producing fungi, and 3) commercial hemp seed.

Test kits from two vendors designed for detection of mycotoxin in grains have been evaluated for hemp seed and pet products. When pet products were tested using these kits, both gave false positive readings for three mycotoxins: fumonisin (FUM), deoxynivalenol (DON), and T-2 toxin. Methods were adjusted, and we can now obtain mycotoxin values equivalent to those obtained by standard laboratory methods; these have been validated by a commercial mycotoxin-testing laboratory.

Mycotoxin levels in CBD oils and tinctures did not exceed federal limits for animal foods. Mycotoxin levels in commercial seed designated for human or animal feed were below acceptable levels for DON and T-toxin, but levels of FUM exceeded established limits for horses and rabbits. Several seed lots designated for planting fiber hemp and seed from infected plants contained higher levels of mycotoxins. We have isolated fungi that produce mycotoxins from these seed. Studies are underway to evaluate the potential of these fungi to produce mycotoxins and to confirm levels in seed with standard procedures.

The OHI seed grant has supported research opportunities for two undergraduate students, and another will be hired for fall semester. Both PIs have been invited to speak on this and related topics at Arizona State University this fall.



Seed Grant Program

Since its launch in 2020, OHI and partnering campus organizations have awarded \$820,000 in seed funding to 16 interdisciplinary teams of UT researchers. *These projects have gone on to generate \$4.9M in extramural funding to UT so far, with more proposals planned that could not have been prepared without this critical support allowing the team to come together across disciplines.* More information about these projects, including abstracts and updates, is available on our website at www.onehealth.tennessee.edu/seed-grant-program/.

Detection of Chronic Wasting Disease Prion in the Environment (2020)

- PI: Shigetoshi Eda (Herbert College of Agriculture, School of Natural Resources)
- Co-PI: Jay Ramos (Herbert College of Agriculture, School of Natural Resources)
- Extramural funding generated: \$279,127

Developing a Model of Chronic Inflammation to Elucidate its Effects on Reproduction (2020)

- PI: Dr. Brian Whitlock (College of Veterinary Medicine, Large Animal Clinical Sciences)
- Co-PI: Bhavya Sharma (College of Arts and Sciences, Dept. of Chemistry)
- Co-PI: Allison Renwick (College of Veterinary Medicine, Comparative and Experimental Medicine Program)

Developing a System for Molecular Detection and Identification of Zoonotic Pathogens of Most Concern in the USA (2020)

- PI: Chunlei Su (College of Arts and Sciences, Dept. of Microbiology)
- Co-PI: Richard Gerhold (College of Veterinary Medicine, Biomedical and Diagnostic Sciences)
- Co-PI: Michelle Dennis (College of Veterinary Medicine, Biomedical and Diagnostic Sciences)
- Co-PI: Sree Rajeev (College of Veterinary Medicine, Biomedical and Diagnostic Sciences)

Impact Assessment of Climate Change on Cotton Production via Computational Simulation (2020)

- PI: Xinhua Yin (Herbert College of Agriculture, Dept. of Plant Sciences)
- Co-PI: Joshua Fu (Tickle College of Engineering, Dept. of Civil and Environmental Engineering)
- Co-PI: Sangeeta Bansal (Herbert College of Agriculture, Dept. of Plant Sciences)

One Health Approach to Controlling Escherichia albertii, the Emerging Human Pathogen (2020)

- PI: Jun Lin (Herbert College of Agriculture, Dept. of Animal Science)
- Co-PI: Qiang He (Tickle College of Engineering, Dept. of Civil and Environmental Engineering)

Socio-Economic Epidemiology of Disease Risk in Wildlife Trade Networks (2020)

- PI: Matthew Gray (Herbert College of Agriculture, School of Natural Resources)
- Co-PI: Neelam Poudyal (Herbert College of Agriculture, School of Natural Resources)
- Co-PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)
- Extramural funding generated: \$2,999,694

Transdisciplinary Diagnostic Investigation of Freshwater Mussel Mortality in the Clinch River (2020)

- PI: Michelle Dennis (College of Veterinary Medicine, Biomedical and Diagnostic Sciences)
- Co-PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)
- Co-PI: Gerald Dinkins (McClung Museum of Natural History and Culture)
- Extramural funding generated: \$14,000

Effectiveness of a “Living Shoreline” on Environmental and Human Health on the Tennessee River (2022)

- PI: Michael McKinney (College of Arts and Sciences, Dept. of Earth and Planetary Sciences)
- Co-PI: Andrea Ludwig (Herbert College of Agriculture, Dept. of Biosystems Engineering and Soil Sciences)
- Co-PI: John Schwartz (Tickle College of Engineering, Dept. of Civil and Environmental Engineering)
- Co-PI: Michael Ross (Herbert College of Agriculture, Dept. of Plant Sciences)
- Co-PI: Garrett Ferry (Facilities Services)

Integration of Molecular Biology, Electrochemistry, and Electrical Engineering for the Development of a Rapid On-site Detection Platform for Zoonotic RNA Viruses (2022)

- PI: Shigetoshi Eda (Herbert College of Agriculture, School of Natural Resources)
- Co-PI: Doris D’Souza (Herbert College of Agriculture, Dept. of Food Science)
- Co-PI: Jayne Wu (Tickle College of Engineering, Dept. of Electrical Engineering and Computer Science)
- Extramural funding generated: \$1,000,000

Multiscale, Poly-topographic Platforms for Complex, Multifunctional Tissue Regeneration Using Precision Engineering: A Prelude to Organogenesis (2022)

- PI: Madhu Dhar (College of Veterinary Medicine, Large Animal Clinical Sciences)
- Co-PI: Dayakar Penumadu (Tickle College of Engineering, Dept. of Civil and Environmental Engineering)

Physics-Based and Machine-Learning Models for Goat Tibia Fracture (2022)

- PI: Timothy Truster (Tickle College of Engineering, Dept. of Civil and Environmental Engineering)
- Co-PI: Pierre-Yves Mulon (College of Veterinary Medicine, Large Animal Clinical Sciences)
- Co-PI: David Anderson (College of Veterinary Medicine, Large Animal Clinical Sciences)

Towards a Biogeochemical Coupling of Machine Learning and Process-based Modeling for Improved Prediction of Soil’s Climate Mitigation Potential (2022)

- PI: Debasish Saha (Herbert College of Agriculture, Dept. of Biosystems Engineering and Soil Sciences)
- Co-PI: Subhadeep Chakraborty (Tickle College of Engineering, Dept. of Mechanical, Aerospace, and Biomedical Engineering)
- Extramural funding generated: \$650,000

Training the Next Global One Health Workforce: An Educational Pilot Program for Cross-Sectoral Engagement in Darien, Panamá (2022)

- PI: Jennifer Retherford (Tickle College of Engineering, Dept. of Civil and Environmental Engineering)
- Co-PI: Nan Gaylord (College of Nursing)
- Co-PI: Sara Mulville (Smith Center for International Sustainable Agriculture)
- Co-PI: David Ader (Smith Center for International Sustainable Agriculture)

Lixus, City and Country: Environment and Sustainability in an Ancient Landscape (Larache, Morocco) (2023)

- PI: Stephen Collins-Elliott (College of Arts and Sciences, Dept. of Classics)
- Co-PI: Alison Damick (McClung Museum of Natural History and Culture)

Modular Landscapes: Tackling Water Quality through Arts and Science (2023)

- PI: Sarah Bolivar (College of Architecture and Design, School of Landscape Architecture)
- Co-PI: Michael Ross (Herbert College of Agriculture, Dept. of Plant Sciences; College of Architecture and Design, School of Landscape Architecture)
- Co-PI: Jason Brown (College of Arts and Sciences, School of Art)

Mycotoxins in Cannabis: Implications for One Health (2023)

- PI: Kimberly Gwinn (Herbert College of Agriculture, Dept. of Entomology and Plant Pathology)
- Co-PI: Julia Albright (College of Veterinary Medicine, Small Animal Clinical Sciences)

Proposals awarded or submitted by UT's One Health community of One Health Scholars and leadership; alphabetical by funding organization.

FUNDED

CDC Regional Training and Evaluation Centers

Leveraging education networks to expand targeted vector-borne disease training, evaluation, and partnerships

Awarded: \$930,000

Co-PI: Becky Trout Fryxell

Cobb Research Initiative

A vision-based precision livestock farming system for real-time detection of mating behaviors in broiler breeders

Awarded: \$254,403

PI: Yang Zhao

Foundation for Food and Agriculture Research

A holistic approach to improving keel bone health of breeders and commercial layer hens

Awarded: \$3,000,000

Co-PI: Yang Zhao

Mississippi Department of Fish, Wildlife, and Parks

Effects of timing on prescribed fire on ticks and associated pathogens

Awarded \$85,579

Co-PI: Becky Trout Fryxell

National Science Foundation

PIPP Phase II: Theme 4: Human Systems - The Center for Analysis and Prediction of Pandemic Expansion (APPEX)

Awarded: \$18,000,000

PI: Nina Fefferman

US Army Corp of Engineers

Arthropod Study at Arnold Air Force Base

Awarded \$220,000

Co-PI: Becky Trout Fryxell

USDA Animal and Plant Health Inspection Service

Education and training for preventing tickborne disease in animal agriculture: a focus to preventing *Theileria orientalis* Ikeda in cow-calf herds in the Tennessee Valley

Awarded: \$246,884

PI: Becky Trout Fryxell

USDA National Institute of Food and Agriculture

BiGG FACTS: research experiences in plant health and production to increase numbers of women in bioinformatics, genetics, and genomics sciences

Awarded \$499,892

Co-PI: Becky Trout Fryxell



USDA National Institute of Food and Agriculture

Development, validation, and evaluation of computer imaging for tick detection on cattle

Awarded: \$293,834

PI: Becky Trout Fryxell

USDA National Institute of Food and Agriculture

REEVES: Research and Extension Experience in Veterinary Entomology for students

Awarded: \$600,000

PI: Becky Trout Fryxell

USDA Small Business Innovation Research

Advancing environmental footprint assessment and safeguarding animal production: Developing low-cost diode-laser-based absorption sensors

Awarded: \$80,000

Co-PI: Yang Zhao

UT AI TENNessee Initiative

Integration of artificial intelligence in poultry production: Road to advance poultry automation and leadership in Tennessee

Awarded: \$75,000

PI: Yang Zhao

UT Genomics Center for the Advancement of Agriculture

Advancing molecular tools for soil nematode community characterization

Awarded: \$5,000

PI: Jennifer DeBruyn

UT Global Energy Ecosystem

Bacterial motility as a novel indicator of soil health

Awarded: \$49,980

PI: Jennifer DeBruyn

UT Oak Ridge Innovation Institute

Microbial cascades from animal decomposition hotspots in Sphagnum bogs

Awarded: \$100,825

PI: Jennifer DeBruyn

UTIA AgResearch

Optimization and validation of a new on-site pathogen detection system for Shiga toxin-producing E. coli and mastitis-causing pathogens

Awarded: \$30,000

PI: Shigetoshi Eda



PENDING

USDA Agriculture and Food Research Initiative

Development of a new on-farm test for the differentiation of Gram-positive and Gram-negative bacteria in milk samples

Amount: \$300,000

PI: Shigetoshi Eda

National Science Foundation

Collaborative Research: Advancing theory for disease dynamics in marine protected areas

Requested: \$231,234

PI: Nina Fefferman

National Science Foundation

Defining an information landscape paradigm for cohesion in population dynamics

Requested: \$889,278

PI: Nina Fefferman

National Science Foundation

IHBEM: Modeling the Coupled Spatial-Temporal Dynamics of Socio- Economics, Health Understanding and Behavior, and Infectious Outbreaks among Neighborhoods in US Cities

Requested: \$973,340

PI: Nina Fefferman

NOT FUNDED

Burroughs Wellcome Fund

Understanding impacts of climate change on transmission of zoonotic protozoa

Co-PI: Nina Fefferman

Department of Defense

A Tale of Two Pretties: Using genomic analyses in Trans-Pacific populations of *Melia azedarach* and *Pyrus calleryana* to predict changing climate threats to enhanced invasive capabilities of non-native tree species

Co-PI: Nina Fefferman

Morris Animal Foundation

Assessing Risk of Iatrogenic Transfer of FIV via Artificial Insemination in Ocelots

Amount: \$168,952

PI: Deb Miller

National Science Foundation

Decomposing the drivers of pathogen persistence across ecological scales

Requested: \$608,188

Co-PI: Nina Fefferman

National Science Foundation

Enhancing Nutrition Security in Appalachia and Around the Globe

Amount: \$639,423

PI: Deb Miller



National Science Foundation

IGE: Track 2: Providing Underrepresented Mathematical Modelers with Mentored Professional Development
Requested: \$999,862
PI: Nina Fefferman

National Science Foundation

NRT-HDR: Social Complexity of Science: Navigating Information Ecosystems through Data Analytics
Requested: \$2,980,355
Co-PI: Nina Fefferman

National Science Foundation

NSF-JST: Efficient, Fair, and Robust Mechanisms for Placing and Stocking Disaster-Resilient Shelters
Requested: \$142,472
PI: Nina Fefferman

USDA Specialty Crop Research Initiative

HydroPath: Water Treatment as a Risk Mitigation Strategy for Pcap, Salmonella, and STEC in the Southeast
Amount: \$1,660,000
Co-PI: Jennifer DeBruyn

USDA Agriculture and Food Research Initiative

Optimization and validation of a novel platform for rapid on-site detection of pathogens in foods
Amount: \$650,000
PI: Shigetoshi Eda

USDA Animal and Plant Health Inspection Service

Development and validation of highly sensitive lateral flow tests for SRAS-CoV-2 detection in animal samples
Amount: \$1,043,362
PI: Shigetoshi Eda

UT - AI TENNessee Initiative

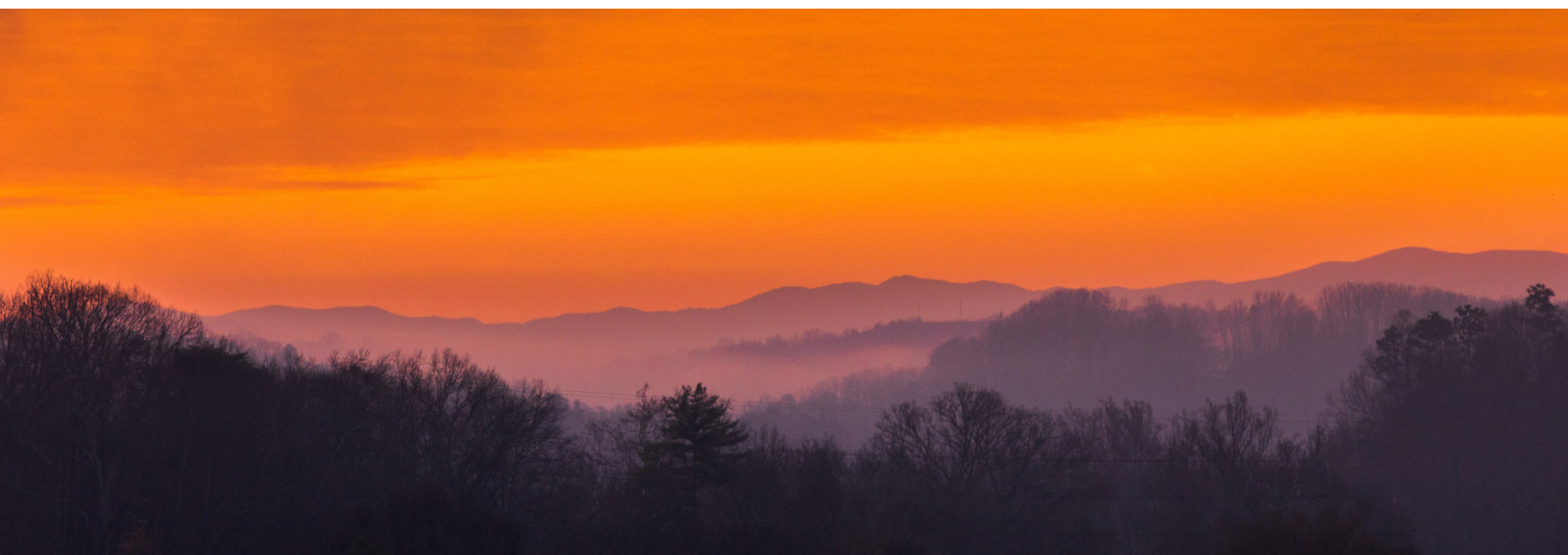
AI4PrecisionFarming: Interdisciplinary and Collaborative AI-assisted Smart Farm Infrastructure and Automation
Amount: \$100,000
Co-PI: Shigetoshi Eda

UT - Grand Challenge

Mountain Minded Initiative: Creating a Comprehensive Appalachia Region Microbiome (ChARM) Center
Amount: \$493,000
PI: Deb Miller

Wellcome Trust

Multidisciplinary South to South Disease Modeling Network: Strengthening policy decision making in animal, human and environmental sectors
Co-PI: Nina Fefferman



The One Health community at UT submitted 79 publications in 2023–34; listed alphabetically by author.

Ahmed, Md Sohel, Brenda J. Hanley, Corey I. Mitchell, Rachel C. Abbott, Nicholas A. Hollingshead, James G. Booth, Joe Guinness, Christopher S. Jennelle, Florian H. Hodel, Carlos Gonzalez-Crespo, Christopher R. Middaugh, Jennifer R. Ballard, Bambi Clemons, Charlie H. Killmaster, Tyler M. Harms, Joe N. Caudell, Kathryn M. Benavidez Westrich, Emily McCallen, Christine Casey, Lindsey M. O'Brien, Jonathan K. Trudeau, Chad Stewart, Michelle Carstensen, William T. McKinley, Kevin P. Hynes, Ashley E. Stevens, Landon A. Miller, Merrill Cook, Ryan T. Myers, Jonathan Shaw, Michael J. Tonkovich, James D. Kelly, **Daniel M. Grove**, Daniel J. Storm, and Krysten L. Schuler. 2024. "Predicting Chronic Wasting Disease in White-Tailed Deer at the County Scale Using Machine Learning." *Scientific Reports* 14(1):14373. doi: [10.1038/s41598-024-65002-7](https://doi.org/10.1038/s41598-024-65002-7).

Amirivojdan, Ahmad, Amin Nasiri, Shengyu Zhou, **Yang Zhao**, and Hao Gan. 2024. "ChickenSense: A Low-Cost Deep Learning-Based Solution for Poultry Feed Consumption Monitoring Using Sound Technology." *AgriEngineering* 6(3):2115–29. doi: [10.3390/agriengineering6030124](https://doi.org/10.3390/agriengineering6030124).

Baker, Eliza, Rebecca H. Hardman, William B. Sutton, Sherri Reinsch, Michael Freake, Emily Holder, Carlin Frost, Bradley Nissen, Emilly Nolan, Richard Gerhold, and **Debra L. Miller**. 2023. "Prevalence and Molecular Analysis of Hellbender (*Cryptobranchus Alleganiensis*) Trypanosomes in Tennessee." *Journal of Wildlife Diseases* 59(1). doi: [10.7589/JWD-D-22-00029](https://doi.org/10.7589/JWD-D-22-00029).

Baker, Eliza, Alex Jensen, **Debra L. Miller**, Kayla Buck Garrett, Christopher A. Cleveland, Justin Brown, Kyle Van Why, and Richard Gerhold. 2023. "Hepatozoon Spp. Infection in Wild Canids in the Eastern United States." *Parasites & Vectors* 16(1):372. doi: [10.1186/s13071-023-05968-x](https://doi.org/10.1186/s13071-023-05968-x).

Beattie, Ursula K., **Nina H. Fefferman**, and L. Michael Romero. 2023. "Varying Intensities of Chronic Stress Induce Inconsistent Responses in Weight and Plasma Metabolites in House Sparrows (*Passer Domesticus*)." *PeerJ* 11:e15661. doi: [10.7717/peerj.15661](https://doi.org/10.7717/peerj.15661).

Beattie, Ursula K., Lily Mikolajczak, **Nina H. Fefferman**, and L. Michael Romero. 2023. "Neophobia, but Not Perch Hopping, Is Sensitive to Long-term Chronic Stress Intensity." *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology* 339(10):1036–43. doi: [10.1002/jez.2752](https://doi.org/10.1002/jez.2752).

Butler, R. A., K. C. Randolph, J. T. Vogt, D. J. Paulsen, and **Rebecca T. Trout Fryxell**. 2023. "Forest-Associated Habitat Variables Influence Human–Tick Encounters in the Southeastern United States" edited by R. Redak. *Envi-*

ronmental Entomology 52(6):1033–41. doi: [10.1093/ee/nvad097](https://doi.org/10.1093/ee/nvad097).

Butler, R. A., and **Rebecca T. Trout Fryxell**. 2023. "Management of *Haemaphysalis Longicornis* (Acari: Ixodidae) on a Cow–Calf Farm in East Tennessee, USA" edited by H. Gaff. *Journal of Medical Entomology* 60(6):1374–79. doi: [10.1093/jme/tjad121](https://doi.org/10.1093/jme/tjad121).

Butler, Rebecca A., Mona Papeş, James T. Vogt, Dave J. Paulsen, Christopher Crowe, and **Rebecca T. Trout Fryxell**. 2024. "Human Risk to Tick Encounters in the South-eastern United States Estimated with Spatial Distribution Modeling" edited by Á. Acosta-Serrano. *PLOS Neglected Tropical Diseases* 18(2):e0011919. doi: [10.1371/journal.pntd.0011919](https://doi.org/10.1371/journal.pntd.0011919).

Cañizares, Jessica R., J. Michael Reed, and **Nina H. Fefferman**. 2024. "Network Theory and Migration: Avoiding Misapplications and Misinterpretations." *Ecological Modelling* 496:110849. doi: [10.1016/j.ecolmodel.2024.110849](https://doi.org/10.1016/j.ecolmodel.2024.110849).

Carter, E. Davis, Joseph A. DeMarchi, Mark Q. Wilber, **Debra L. Miller**, and **Matthew J. Gray**. 2024. "*Batrachochytrium Salamandrivorans* Is Necronotic: Carcasses Could Play a Role in Bsal Transmission." *Frontiers in Amphibian and Reptile Science* 2:1284608. doi: [10.3389/famrs.2024.1284608](https://doi.org/10.3389/famrs.2024.1284608).

Carter, Edward, Rebecca Hardman, **Debra L. Miller**, and **Matthew J. Gray**. 2023. "Ranaviruses and Chytridiomycosis: The Impact on Amphibian Species." Pp. 53–68 in.

Catron, Spencer, Sarah Roth, Francesca Zumpano, Jason Bintz, James A. Fordyce, Suzanne Lenhart, **Debra L. Miller**, and Jeanette Wyneken. 2023. "Modeling the Impacts of Temperature during Nesting Seasons on Loggerhead (*Caretta Caretta*) Sea Turtle Populations in South Florida." *Ecological Modelling* 481:110363. doi: [10.1016/j.ecolmodel.2023.110363](https://doi.org/10.1016/j.ecolmodel.2023.110363).

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Cavasos, Kevin, Neelam C. Poudyal, Jesse L. Brunner,

Alexa R. Warwick, Joshua Jones, Neil Moherman, Mark George, Joshua D. Willard, Zachary T. Brinks, and **Matthew J. Gray**. 2023a. "Attitudes and Behavioral Intentions of Pet Amphibian Owners about Biosecurity Practices." *EcoHealth* 20(2):194–207. doi: [10.1007/s10393-023-01645-8](https://doi.org/10.1007/s10393-023-01645-8).

Cavazos, Kevin, Neelam C. Poudyal, Jesse L. Brunner, Alexa R. Warwick, Joshua Jones, Neil Moherman, Mark George, Joshua D. Willard, Zachary T. Brinks, and **Matthew J. Gray**. 2023b. "Exploring Business Stakeholder Engagement in Sustainable Business Practices: Evidence from the US Pet Amphibian Industry." *Business Strategy and the Environment* 32(8):5909–21. doi: [10.1002/bse.3455](https://doi.org/10.1002/bse.3455).

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Day, Corey A., Agrícola O. Odoi, Abelardo Moncayo, Michael S. Doyle, Carl J. Williams, Brian D. Byrd, and **Rebecca T. Trout Fryxell**. 2024. "Persistent Spatial Clustering and Predictors of Pediatric La Crosse Virus Neuroinvasive Disease Risk in Eastern Tennessee and Western North Carolina, 2003–2020" edited by J. V. Camp. *PLOS Neglected Tropical Diseases* 18(6):e0012186. doi: [10.1371/journal.pntd.0012186](https://doi.org/10.1371/journal.pntd.0012186).

Day, Corey A., and **Rebecca T. Trout Fryxell**. 2024. "Fine-Scale Associations between Land Cover Composition and the Oviposition Activity of Native and Invasive *Aedes* (Diptera: Culicidae) Vectors of La Crosse Virus." *Journal of Vector Ecology* 49(2). doi: [10.52707/1081-1710-49.2.R27](https://doi.org/10.52707/1081-1710-49.2.R27).

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Fernandez, David Finnoff, D. T. Flaherty, Nathaniel L. Gibson, Natalie Harris, Qiang He, Eric T. Lofgren, Debra L. Miller, James Moody, Kaitlin Muccio, Charles L. Nunn, Monica Papeş, Ioannis Ch. Paschalidis, Dana K. Pasquale, J. Michael Reed, Matthew B. Rogers, Courtney L. Schreiner, Elizabeth B. Strand, Clifford S. Swanson, Heather L. Szabo-Rogers, and Sadie J. Ryan. 2023. "A New Paradigm for Pandemic Preparedness." *Current Epidemiology Reports* 10(4):240–51. doi: [10.1007/s40471-023-00336-w](https://doi.org/10.1007/s40471-023-00336-w).

Golden, Glen J., Elizabeth A. Ramirez, Hayley N. Stevens, Jennifer Bourbois, **Daniel M. Grove**, Richard A. Bowen, Thomas J. DeLiberto, and Bruce A. Kimball. 2024. "Biodegradation of an Odor Signature in White-Tailed Deer Associated with Infection by Chronic Wasting Disease Prions" edited by R. Morales. *PLOS ONE* 19(8):e0303225. doi: [10.1371/journal.pone.0303225](https://doi.org/10.1371/journal.pone.0303225).

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One Health Minor

Since its launch in 2021, the One Health minor program has continued to attract students from across the UT system. Twenty-three students declared the One Health minor in the 2023-24 academic year from a wide range of disciplines (noted below).

AGNR 101, the Introduction to One Health class taught by One Health Scholar Adam Willcox, continues to be popular and has outgrown its classroom size each year. The syllabus features guest lectures on a wide variety of topics like antimicrobial resistance, zoonoses, globalization, biodiversity, and many more.



Graduate Student One Health Research

With increased awareness about One Health and thanks to the diligence of our One Health Scholars, who promote comprehensive, systems-based research in the work of their students, we saw a rise in the number of graduate students incorporating a One Health approach into their dissertations.

Below are just a few of the students who successfully defended their theses in 2023-24 from the One Health community.

Applying a One Health approach to expand disease surveillance in eastern wildlife

Eliza Baker
Doctor of Philosophy, Comparative and Experimental Medicine

Health parameters in the leatherback sea turtle (*dermochelys coriacea*) and the impact of climate change on them

Samantha Kuschke
Doctor of Philosophy, Comparative and Experimental Medicine

Toxoplasma gondii: the dynamics between free-roaming cats and wildlife

Tania Dawant
Doctor of Philosophy, Comparative and Experimental Medicine

One Health Lunch & Learn Series

Chief among OHI's outreach efforts is its monthly seminar series. The series has attracted excellent speakers from across UT, the nation, and world to discuss their work, how they tackle current global challenges, and how solutions can be achieved with a One Health approach.

Seminars are held on the last Thursday of each month, and all past seminars are available on demand on the OHI website and YouTube channel.

Thursday, June 29, 2023

Building Community Resilience through Urban Food Forestry



Jaq Payne

Student Director
Tennessee Champion
Tree Program

Thursday, July 27, 2023

Nashville Zoo Conservation Programs



Heather Schwartz

Director of Veterinary
Services
Nashville Zoo

Thursday, August 31, 2023

Extended Reality for Personalized Learning in Clinical Skills

Shalanda Reeves

Assistant
Professor
UT Dept. of Theory
and Practice in
Teacher Education

Jared Porter

Professor
UT Dept. of
Kinesiology,
Recreation, and
Sport Studies

Thursday, September 28, 2023

Impact of Rising Incubation Temps on Sea Turtle Health



Samantha Kuschke

Veterinarian
Upwell

Thursday, January 25, 2024

Preventing Pandemics by Reducing Risk of Spillovers



Neil Vora

Pandemic Prevention
Fellow
Conservation
International

Thursday, February 29, 2024

Urban Climate and Health: Challenges and Opportunities



Carolyn Daher

Urban Planning,
Environment, and Health
Coordinator
Barcelona Institute for
Global Health

Thursday, March 28, 2024

Florida Wild Avian and Reptile Health



Becky Hardman

Wildlife Veterinarian
Florida Fish and
Wildlife Conservation
Commission

Thursday, April 25, 2024

Connecting Soils, Grasslands, Cattle, and Biodiversity



Pat Keyser

Director
UT Center for
Grasslands
Management

Thursday, May 30, 2024

Lyme Disease Update: A Southeastern Perspective



Nicole Szafranski

Parasitology Resident
UT College of Veterinary
Medicine

Academic Presentations and Workshops

Capturing Complex Contagion Processes on Higher Order Networks

SIAM Conference on Applications of Dynamical Systems
May 2023 Nina Fefferman

Finding an efficient balance between risk and mitigation effort in combating invasive species across sociopolitical landscapes

Invasive species control Environmental Conflicts, Social Structures and Invasive Species Control
June 2023 Nina Fefferman

A seat at the table: Why wildlife needs to be represented in One Health teams addressing global food/nutrition insecurity

71st International Wildlife Disease Association Conference
August 2023 Deb Miller

Health for all: Inclusion of Herps in One Health Approaches

71st International Wildlife Disease Association Conference
August 2023 Deb Miller

Food-energy-water nexus for One-health ecosystems

2024 FEWSUS Annual Symposium
March 2024 Deb Miller

Integrated Multi-Trophic Aquaculture- Low-Waste, Energy-Efficient, Nutrient-Dense Seafood Production

2024 FEWSUS Annual Symposium
March 2024 Ashley Morgan

Mathematical Frontiers in Social Behavior and Epidemics

American Physical Society
March 2024 Nina Fefferman

Conservation Crossroads: Exploring One Health Approaches in Forestry, Wildlife, and Fisheries

TSU-UTIA Joint Research Summit
March 2024 Ashley Morgan

The Evolution and Persistence of Self-Organizing Social Systems Under Disease Constraints

Emory University, Dept. of Biology
February 2024 Nina Fefferman

Behavior, Infection, and Math: Understanding how disease shapes the success of social systems

Arizona State University
February 2024 Nina Fefferman

Fusarium an emerging fungal threat to leatherbacks (Dermochelys coriacea)

10th World Congress of Herpatology
August 2024 Deb Miller

Histopathology of amphibians treated with select natural fungicidal remedies?

10th World Congress of Herpatology
August 2024 Deb Miller

Health for all: Inclusion of Herps in One Health Approaches

10th World Congress of Herpatology
August 2024 Deb Miller



Opening ceremonies at the 10th World Congress of Herpatology in Borneo

Community Partners





**ONE HEALTH
INITIATIVE**

UNIVERSITY OF TENNESSEE

*Uniting disciplines to protect and
promote the health of all life on earth.*