



THE UNIVERSITY OF
TENNESSEE



2020

Annual Report

Director's Update

Emerging pathogens. Food insecurity. Changing climate. Biodiversity loss. Antimicrobial resistance. These are just a few of the national and global health challenges we seek to combat through research, education, and outreach. Our home at the University of Tennessee is the ideal base for this initiative. With access to myriad, diverse expertise, 10 Research and Education Centers, and partners like ORNL and NIMBioS, we have the ability to train the future One Health workforce and facilitate research to address key issues in Tennessee, the region, and world.

Since our launch in March 2020, we have been hard at work. We've established a leadership team, built a community of One Health Scholars that represent every UT College and Unit, and formed an external Advisory Board of various stakeholders and partners. We've formed working groups, funded research projects through a seed grant program, established a One Health Minor program, and created a new undergraduate course, Introduction to One Health: from Antimicrobial Resistance to Zika with a side of Thousand Cankers. In addition, we helped bring in over \$9 million dollars to UT! All in all, we met or exceeded our first year goals, and in some cases, we have achieved goals that we estimated would take the entire three years! This is a testament to our amazing UT faculty and emphasizes that there is nothing we cannot achieve when we believe in something and work together to make it happen. Inspiration is best experienced as a two-way street, and it is clear that the UT One Health Initiative is inspiring faculty just as the faculty inspired its conception.

Our work has just begun, and the progress made thus far has inspired us to reach even higher. Many might argue that launching during a pandemic was unfortunate, while others argue it was fortuitous. But I would remind them that while One Health can be reflected within a pandemic, the essence of One Health lies deep within the nuances of all of the various human, plant, animal, and environmental factors that ultimately contribute to the pandemic. Our goal is to tackle these nuances at their earliest beginnings (sources) to prevent pandemics and other health crises from becoming even whispers, making Tennessee healthy for all: healthy environment, healthy plants, healthy animals, healthy people.



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

Year One Accomplishments

Research



One Health Research Seed Grant Program

Funded 6 projects across UT for a total of \$359,374 through inaugural seed grant program

Working Groups and Research Teams

Formed 7 working groups to foster collaboration across disciplines within a one health framework

Extramural Funds Generated

Of the 25 One Health-flagged proposals submitted, 13 were directly linked to OHI; 4 are already funded, totaling \$9M+.

Education



One Health Minor

*Available to undergraduate and graduate students
Fall 2021*

Introduction to One Health Course

New course taught by One Health Scholar available Fall 2021

K-12 Educator Materials

Developed educator materials to introduce K-12 communities in Tennessee to One Health

Outreach



Monthly Seminar Series

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

One Health Day Celebration

Full-day event with keynote speakers, UT research highlights, and discussion panels on International One Health Day (Nov 3)

One Health Podcast Series

Hosted by comedian and science-enthusiast Shane Mauss, currently in production

Deliverables by 2024

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



Increase in peer-reviewed publications

10-20 per year



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



Leadership



Dr. Deb Miller
Interim Director



Dr. Nina Fefferman
Associate Director



Dr. Carole Myers
Associate Director



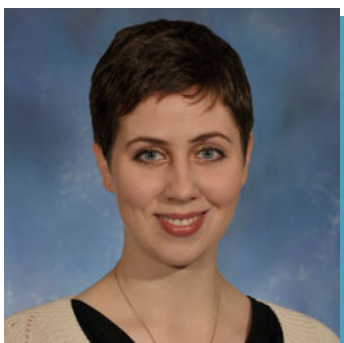
Dr. Rebecca Hardman
Post-Doctoral Researcher



Dr. Kimberlyn Roosa
Post-Doctoral Researcher



Alyssa Merka
Administrative Assistant



Jennifer Webster
Internal Advisor



Dr. David White
Internal Advisor

One Health Scholars



Isabella Baxter
Assistant Professor
University Libraries



Zack Buck
Associate Professor
College of Law



Brad Collett
Assistant Professor
Dept. of Plant Sciences
Associate Professor
School of Landscape
Architecture



Dr. Jennifer Debruyn
Associate Professor
Dept. of Biosystems
Engineering and Soil
Science



Dr. Shigetoshi Eda
Professor
Dept. of Forestry, Wildlife,
and Fisheries
Adjunct Professor
Dept. of Microbiology



Dr. Matt Gray
Professor
Dept. of Forestry, Wildlife,
and Fisheries



Dr. Daniel Grove
Extension Assistant
Professor
Dept. of Forestry, Wildlife,
and Fisheries



Dr. Denita Hadziabdic-Guerry
Assistant Professor
Dept. of Entomology and
Plant Pathology

One Health Scholars



Dr. Xueping Li
Professor
Dept. of Industrial and
Systems Engineering



Dr. Emily Martin
Associate Professor
Dept. of Medicine



Dr. Laurie Miller
Associate Professor
School of Communication
Studies



Dr. Mircea Podar
Associate Professor
Dept. of Microbiology
Distinguished Staff
Scientist
ORNL Biosciences Division



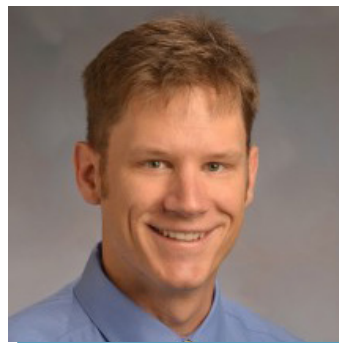
Dr. Hollie Raynor
Associate Dean of
Research
College of Education,
Health, and Human
Sciences
Professor
Dept. of Nutrition



Dr. Laura Russo
Assistant Professor
Dept. of Entomology and
Plant Pathology



Dr. Heather Sedges
Wallace
Assistant Professor
Dept. of Entomology and
Plant Pathology
Lecturer
Dept. of Child and Family
Studies

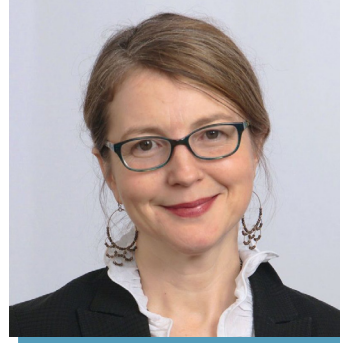


Dr. Charles Sims
Associate Professor
Dept. of Economics
Director of Energy and
Environment Program
Howard H. Baker Jr.
Center for Public Policy

One Health Scholars



Dr. Marcy Souza
*Professor
Biomedical and
Diagnostic Sciences Dept.
Director of Veterinary
Public Health
Dept. of Public Health*



Dr. Elizabeth Strand
*Clinical Associate
Professor
College of Veterinary
Medicine
Director of Veterinary
Social Work
College of Social Work*



Dr. Chunlei Su
*Associate Professor
Dept. of Microbiology*



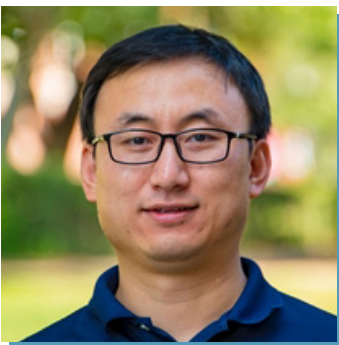
Dr. Becky Trout Fryxell
*Associate Professor
Dept. of Entomology and
Plant Pathology*



Dr. Brynn Voy
*Professor
Dept. of Animal Science
Associate Professor
Genome Science and
Technology*



Dr. Adam Willcox
*Research Associate
Professor
Dept. of Forestry, Wildlife,
and Fisheries
Coordinator
Smith Center for Intl.
Sustainable Agriculture*



Dr. Yang Zhao
*Assistant Professor
Dept. of Animal Science*

External Advisory Board Members



Dr. Cathie Woteki, Chair
Professor

*Dept. of Food Science and
Human Nutrition
Iowa State University*

*Visiting Distinguished
Institute Professor*

*Biocomplexity Institute;
University of Virginia*



**Dr. Samantha Beaty,
Vice-Chair**

*State Veterinarian;
Assistant Commissioner
for Animal Health*

*Tennessee Department of
Agriculture*

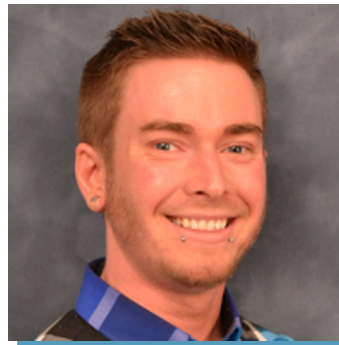


Dr. Mary-Margaret Fill

*Deputy State
Epidemiologist*

*Tennessee Department of
Health*

*Tennessee One Health
Initiative*



Dr. Brad Greening

*Health Scientist and
Mathematical Modeler*

*US Centers for Disease
Control and Prevention*



Dr. Marti Head

Director

*Joint Institute for
Biological Sciences*

*Oak Ridge National
Laboratory*



Dr. Tim Kurt

*Scientific Program
Director*

*Advanced Animal
Systems*

*Foundation for Food and
Agriculture Research*



Dr. Nick Patterson

Owner

Honest Abe Log Homes

Tennessee Farm Bureau



Chuck Yoest

*Chronic Wasting Disease
Coordinator*

*Tennessee Wildlife
Resources Agency*

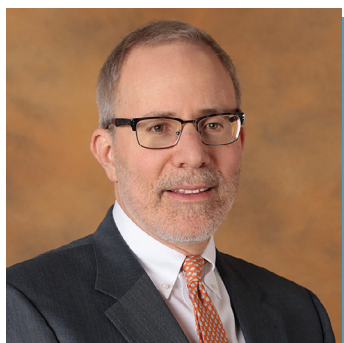
Ex Officio Advisory Board Members



Dr. Deb Crawford
*Vice Chancellor for
Research
UT Office of Research and
Engagement*



Jeff Eisenberg
*Principal
Rockspring Resource
Solutions*



Dr. Paul Hauptman
*Professor and Dean
Division of Cardiology
UT Graduate School of
Medicine*



Tom Hebert
*Managing Partner
Bayard Ridge Group*



Dr. Stacey Patterson
*Vice President for
Research, Outreach, and
Economic Development
Office of Research
President
UT Research Foundation*



Dr. Ashley Stokes
*Professor and Dean
UT Extension
UT Institute of Agriculture*



Dr. Jim Thompson
*Professor and Dean
UT College of Veterinary
Medicine
UT Institute of Agriculture*



Dr. Hongwei Xin
*Professor and Dean
UT AgResearch
UT Institute of Agriculture*

2020 Working Groups

Chronic Wasting Disease

Current Group Leaders: Dan Grove (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries), Shigetoshi Eda (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries). Collaboration between Tennessee Wildlife Resources Agency and UT (including UT Medical School; Dept. of Microbiology; and Dept. of Forestry, Wildlife, and Fisheries); evaluating environmental testing from field-collected samples is at beginning stages; efforts have been augmented by OHI seed funding to Dr. Shigetoshi Eda for development of prion sensor technology.

Green Spaces

Current Group Leaders: Carole Myers (College of Nursing), Sharon Jean-Philippe (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries). UT faculty from the Dept. of Forestry, Wildlife, and Fisheries (Urban Forestry) and College of Nursing and a broad complement of community scholars and practitioners are exploring opportunities to address inequities in the distribution and availability of parks and green spaces.

Mental Health

Current Group Leader: Carole Myers (College of Nursing). An exploratory meeting was held in late 2020. A follow-up meeting to explore opportunities will be held early Fall 2021.

Microbiome

Current Group Leader: Becky Hardman (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries). Connect microbiome researchers across UT (including College of Nursing; College of Veterinary Medicine; Dept. of Ecology and Evolutionary Biology; Dept. of Entomology and Plant Pathology; Dept. of Forestry, Wildlife, and Fisheries; and Oak Ridge National Laboratory) to foster collaboration and improve techniques across campus.

One Health in K-12

Current Group Leader: Keren Rozensher (USDA Animal and Plant Health Inspection Service). Partnership between USDA Veterinary Services, Tennessee Department of Health, and UT (including College of Veterinary Medicine; Dept. of Child and Family Studies; Dept. of Entomology and Plant Pathology; Dept. of Ecology and Evolutionary Biology; and Dept. of Biosystems Engineering and Soil Science) to introduce One Health to the next generation and spreading One Health messages to K-12 communities across the state. Materials for K-12 educators have been developed and distributed through the Tennessee 4-H Youth Development program.

Science of Team Science

Current Group Leader: Elizabeth Strand (College of Veterinary Medicine; College of Social Work). Multidisciplinary group of researchers at UT (including College of Social Work; College of Veterinary Medicine; Dept. of Ecology and Evolutionary Biology; Dept. of Child and Family Studies; College of Nursing; and Institute of Agriculture) interested in exploring effective collaborative teamwork and providing training and service to foster facilitative skills needed to promote synergy and productivity in One Health research.

Substance Misuse and Addiction Resources for Tennessee (SMART) Policy Group

Current Group Leader: Carole Myers (College of Nursing). UT Substance Misuse Community of Scholars are sharing resources, innovations, and opportunities with One Health Initiative members to create synergies in combating substance misuse across the state. The SMART Policy Group meets bi-weekly and the Community of Scholars meets monthly.

2020 Seed Grant Recipients

Transdisciplinary Diagnostic Investigation of Freshwater Mussel Mortality in the Clinch River

\$75,000

Drs. Michelle Dennis, Nina Fefferman, Gerald Dinkins, Rebecca Hardman

UTIA, College of Veterinary Medicine, Dept. of Biomedical and Diagnostic Sciences; College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology; McClung Museum of Natural History and Culture; UTIA, Dept. of Forestry, Wildlife, and Fisheries

Socio-Economic Epidemiology of Disease Risk in Wildlife Trade Networks

\$125,000

Drs. Matthew Gray, Neelam Poudyal, Nina Fefferman

UTIA, Dept. of Forestry, Wildlife, and Fisheries, Center for Wildlife Health; College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology and Dept. of Mathematics

One Health Approach to Controlling *Escherichia albertii*, the Emerging Human Pathogen

\$40,000

Drs. Jun Lin, Qiang He

UTIA, Dept. of Animal Science; Tickle College of Engineering, Dept. of Civil and Environmental Engineering
Collaborators: Erin Patrick (USDA, Animal and Plant Health Inspection Service, Wildlife Services); Rebecca Lindsey (CDC); Li Zhang (Mississippi State University, Dept. of Poultry Science); Shinji Yamasaki (Osaka Prefecture University, Japan)

Developing a System for Molecular Detection/Identification of Zoonotic Pathogens of Most Concern in the US

\$40,000

Drs. Chunlei Su, Richard Gerhold, Michelle Dennis, Sree Rajeev

College of Arts and Sciences, Dept. of Microbiology; UTIA, College of Veterinary Medicine, Biomedical and Diagnostic Services Dept.

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

\$39,374

Drs. Brian Whitlock, Bhavya Sharma; Allison Renwick (graduate student)

UTIA, College of Veterinary Medicine, Large Animal Clinical Sciences; College of Arts and Sciences, Dept. of Chemistry; UTIA, College of Veterinary Medicine, Comparative and Experimental Medicine Program

Collaborator: Dr. Joseph Daniel (Berry College, Dept. of Animal Science)

Impact Assessment of Climate Change on Cotton Production via Computational Simulation

\$40,000

Drs. Xinhua Yin, Joshua Fu, Sangeeta Bansal

UTIA, Dept. of Plant Sciences; UT-ORNL Bredesen Center for Interdisciplinary Research and Graduate Education; UTIA, Dept. of Plant Sciences

Other OHI-Funded Research

Detection of Chronic Wasting Disease Prion in the Environment

\$100,000

Dr. Shigetoshi Eda

UTIA, Dept. of Forestry, Wildlife, and Fisheries, Center for Wildlife Health; College of Arts and Sciences, Dept. of Microbiology

Proposals: OHI-Supported

FUNDED

Intelligence Advanced Research Projects Activity

Bio-inspired Robustness and Resilience in Dynamic Supply Chain Distribution Networks

Status: Recommended

Awarded: \$581,563

PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

National Science Foundation (NSF)

CPS: Medium: Bio-socially Adaptive Control of Robotics-Augmented Building-Human Systems for Infection Prevention by Cybernation of Pathogen Transmission

Status: Funded

Awarded: \$1,199,129

PI: Shuai Li (Tickle College of Engineering, Dept. of Civil and Environmental Engineering)

OHI Contributor: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

Scientific Exchange Initiative

USDA FAS

Status: Funded

Awarded: \$224,293

PI: *Marcy Souza (College of Education, Health, and Human Sciences, Dept. of Public Health; College of Veterinary Medicine, Biomedical and Diagnostic Sciences Department)

OHI Contributor: Deb Miller (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries; College of Veterinary Medicine, Biomedical and Diagnostic Sciences Department)

USDA National Institute of Food and Agriculture (NIFA)

Farm and Ranch Stress Assistance Network: Southern Region

Status: Funded

Awarded: \$7,187,000

PI: *Heather Sedges (UT Institute of Agriculture, Dept. of Entomology and Plant Pathology; College of Education, Health, and Human Sciences, Dept. of Child and Family Studies)

Proposals: OHI-Supported

PENDING

Danone Foundation

Youth Can! Grow and Develop Relationships through Outreach with Senior Adults

Status: In Review

Requested: \$20,000

PI: Marsha Spence (College of Education, Health, and Human Sciences, Dept. of Nutrition)

Co-PI: Carole Myers (College of Nursing)

National Institutes of Health

Developing Healthy Behavioral Choices to Promote Illness Prevention in Preschool Children

Status: Pending

Requested: \$53,516

PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

NSF

HDR Institute: Geometric Data Analytics and Computation for Decoding the Convergence of Health, Aging and the Environment

Status: Pending

Requested: \$2,831,282

PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

Co-PI: *Shigetoshi Eda (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries; College of Arts and Sciences, Dept. of Microbiology)

NSF

NRT-HDR: Predictive Biology Knowledge Enterprise (PBKE) in One Health

Status: Pending

Requested: \$689,332

PI: *Shigetoshi Eda (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries; College of Arts and Sciences, Dept. of Microbiology)

Co-PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

NSF

Socio-Economic Epidemiology of Disease Risk in Wildlife Trade Networks

Status: Pending

Requested: \$2,499,876

PI: *Matt Gray (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries)

OHI Contributor: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

US Department of Agriculture (USDA)

Enhanced Crop Pollination through Sustainable Management of Honey Bee Queens in Apiculture

Status: Pending

Requested: \$582,055

PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

**One Health Scholar*

Proposals: OHI-Supported

NOT FUNDED

Blue Cross Blue Shield Foundation

Using a Dynamic Messaging Model Informed by Social Listening to Increase COVID-19 Vaccine Uptake in a Hispanic Population

Status: Lack of Funds

Requested: \$68,189

PI: Elizabeth Foster (College of Communication and Information, School of Advertising and Public Relations)

Co-PI: Nicholas Geidner (College of Communication and Information, School of Journalism and Electronic Media); Carole Myers (College of Nursing)

John's Hopkins School of Nursing

Smart Isolation and Return to Work: Optimized Sequential Testing for COVID-19

Status: Not Funded

Requested: \$10,775

PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

USDA NIFA

Strengthening Advanced One Health Skills

Status: Not Funded

Requested: \$749,914

PI: Sharon Thompson (College of Veterinary Medicine, Biomedical and Diagnostic Sciences Department)

OHI Contributor: Deb Miller (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries; College of Veterinary Medicine, Biomedical and Diagnostic Sciences Department)

Proposals: Others Involving OHI

FUNDED

NSF

A Workshop on Pre-emergence and the Predictions of Rare Events in Multiscale, Complex, Dynamical Systems

Status: Funded

Awarded: \$81,834

PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

NSF

RAPID: Modeling the Coupled Social and Epidemiological Networks

Status: Funded

Awarded: \$198,932

PI: Nina Fefferman (College of Arts and Sciences, Dept. of Ecology and Evolutionary Biology, Dept. of Mathematics)

Oak Ridge Associated Universities Directed Research & Development

Application of multi-method modeling & machine learning support planning for public health & emergency preparedness in rural communities.

Status: Funded

Awarded: \$147,818

Co-PI: Thomas Berg (College of Nursing); Carole Myers (College of Nursing)

PENDING

NSF

Breaking Down Cell Walls: Dissecting the Functional Role of Cell Walls in Root Growth Regulation Under Drought

Status: In Review

Requested: \$825,364

PI: Priya Voothuluru (UT Institute of Agriculture, Center for Renewable Carbon)

Co-PI: Niki Labbe (UT Institute of Agriculture, Center for Renewable Carbon); Carole Myers (College of Nursing)

Oak Ridge Institute

Rooted in Science: Training Scientists to Effectively Communicate Scientific Research and Productively Engage with Tennessee Communities

Status: In Review

Requested: \$45,531

PI: Priya Voothuluru (UT Institute of Agriculture, Center for Renewable Carbon)

Co-PI: Niki Labbe (UT Institute of Agriculture, Center for Renewable Carbon); Mark Littman (College of Communication and Information, School of Journalism and Electronic Media); Carole Myers (College of Nursing)

Tennessee Wildlife Resources Agency

Using Communications to Fight CWD

Status: Proposal Approved

Requested: \$25,619

PI: Neelam Poudyal (UT Institute of Agriculture, Dept. of Forestry, Wildlife, and Fisheries)

**One Health Scholar*

Proposals: Others Involving OHI

US Department of Justice

Assistance for Tennessee Domestic Violence Victims with Pets

Status: Proposal Approved

Requested: \$396,756

PI: *Marcy Souza (College of Education, Health, and Human Sciences, Dept. of Public Health; College of Veterinary Medicine, Biomedical and Diagnostic Sciences Department)

UT Medical Center Cancer Research Endowment Gift Fund

Health Assessment via Mobile Outreach

Status: In Review

Requested: \$40,000

PI: Carole Myers (College of Nursing)

Proposals: Others Involving OHI

NOT FUNDED

National Council of State Boards of Nursing, Center for Regulatory Excellence National APRN Practice and Pandemic Study

Status: Not Funded

Requested: \$200,000

PI: Wendy Likes (UT Health Science Center, College of Nursing; College of Medicine, Dept. of Obstetrics and Gynecology), Carole Myers (College of Nursing)

National Institute for Health Care Management Foundation Reducing Stigma to Improve OUD Treatment and Recovery Outcomes

Status: Submitted

Requested: \$60,000

PI: Carole Myers (College of Nursing)

Co-PI: Jenny Crowley (College of Communication and Information, School of Communication Studies); Lara Miller (College of Communication and Information, School of Communication Studies); Jennifer Tourville (College of Nursing)

NSF

Using a Dynamic Messaging Model Informed by Social Listening to Increase COVID-19 Vaccine Uptake in a Hispanic Population

Status: Concept paper submitted to NSF; deemed not a good fit with funding mechanism

PI: Elizabeth Foster (College of Communication and Information, School of Advertising and Public Relations)

Co-PI: Nicholas Geidner (College of Communication and Information, School of Journalism and Electronic Media); Carole Myers (College of Nursing)

NSF

Engineering Analysis Framework for Hierarchal Response Strategy and Control of Epidemic Outbreaks

Status: Not Funded

Requested: \$1,999,566

PI: Mingzhou Jin (Tickle College of Engineering, Institute for a Secure & Sustainable Environment);

Co-PI: Kristina Kintziger (College of Education, Health, and Human Sciences, Dept. of Public Health); Carole Myers (College of Nursing);

One UT Collaboration and Innovation

Connecting with Communities to Facilitate Assimilation and Adoption of Research Discoveries

Status: Not Funded

Requested: \$49,689

PI: Niki Labbe (UT Institute of Agriculture, Center for Renewable Carbon)

Co-PI: Carole Myers (College of Nursing); Scott Senseman (UT Institute of Agriculture, Dept. of Plant Sciences); Priya Voothuluru (UT Institute of Agriculture, Center for Renewable Carbon)

Publications: One Health

PUBLISHED

How Resource Limitations and Household Economics May Compromise Efforts to Safeguard Children During Outbreaks.

BMC Public Health. 2020. Published.

Myers, K., A. Redere, and N.H. Fefferman

The Impact of Host Metapopulation Structure on Short-term Evolutionary Rescue in the Face of a Novel Pathogenic Threat.

Global Ecology and Conservation. 2020. Published

Jiao, J., M. Gilchrist, and N.H. Fefferman.

Pathologic Findings in Stranded Marine Mammals: A Global Perspective.

Frontiers in Marine Science (e-book). 2021. In Press.

Bossart, G.D., A.C. Camus, D.L. Miller, S. J. Raverty (editors)

The Potential Role of Asymptomatic Infection in Outbreaks of Some Emerging Pathogens.

Tropical Medicine and Infectious Disease. 2020. Published.

Siewe, N., B. Greening, and N.H. Fefferman

SUBMITTED

The Epidemiological Implications of Jails for Community, Corrections Officer, and Incarcerated Population Risks from COVID-19.

Submitted/In Review.

Lofgren, E., K. Lum, A. Horowitz, B. Madubonwu, K. Myers, and N.H. Fefferman

Homophily in Risk and Behavior Complicate Understanding the COVID-19 Epidemic Curve.

Submitted/In Review.

Fefferman, N.H., M.J. Silk, D.K. Pasquale, and J. Moody

How Limitations in Energy Burdens Compromise Health Interventions for COVID Outbreaks in Urban Settings.

Submitted/In Review.

N.H. Fefferman , C-F. Chen, G. Bonilla, H. Nelson, and C-P. Kuo

How Public Reaction to Disease Information Across Scales and the Impacts of Vector Control Methods Influences Disease Prevalence and Control Efficacy.

Submitted/In Review.

J. Jiao, and N.H. Fefferman

How Social Learning Shapes Preventative Health Behaviors in an Outbreak.

Submitted/In Review.

Carrignon, S., R.A. Bentley, M.J. Silk, and N.H. Fefferman

Improving Pandemic Mitigation Policies Across Communities Through Coupled Dynamics of Risk Perception and Infection.

Submitted/In Review.

Silk, M.J., S. Carrignon, R.A. Bentley, and N.H. Fefferman

Where to Learn to Flatten the Curve.

Submitted/In Review.

Silk, M.J., S. Carrignon, R.A. Bentley, and N.H. Fefferman

Publications: Others Involving OHI

PUBLISHED

Assessing δ 13C, δ 15N, and Total Mercury Measures in Epidermal Biopsies from Gray Whales.

Frontiers in Marine Science. 2020. Published.

Lian M, Castellini JM, Miller D, Griff B, Vertyankin VV, Dupont J, Broker K, Godard-Coding CAJ and O'Hara TM

The Earth Has Humans, So Why Don't Our Climate Models?

Climatic Change. 2020. Published.

Beckage, B., K. Lacasse, J.M. Winter, N.H. Fefferman, F.M. Hoffman, L.J. Gross, S.S. Metcalf, T. Franck, E. Carr, A. Zia, and A. Kinzig.

Efficacy of Subcutaneous Implants to Provide Continuous Plasma Terbinafine in Hellbenders (*Cryptobranchus alleganiensis*) for Future Prophylactic Use Against Chytridiomycosis.

Journal of Zoo and Wildlife Medicine. 2020. Accepted.

Hardman RH, Cox S, Reinsch SD, Schwartz HC, Skeba S, McGinnity D, Souza MJ, Miller DL

Evaluation of Severity and Factors Contributing to Foot Lesions in Endangered Ozark Hellbenders, *Cryptobranchus alleganiensis bishopi*.

Frontiers in Veterinary Science. 2020. Published.

Hardman R, Irwin K, Sutton W, and Miller DL

Experimental Methodologies Can Affect Host Tolerance to *Batrachochytrium* Salamandrivorans Infection

PLOS ONE. 2020. In Press.

Kumar R, Malagon DA, Carter ED, Bohanon ML, Cusaac JPW, Peterson AC, Miller DL, Gray MJ

Genomic Signatures of Evolutionary Rescue in Bats Surviving White-Nose Syndrome.

Molecular Ecology. 2021. Published.

Gignoux-Wolfsohn, S.A., Pinsky, M.L., Kerwin, K., Herzog, C., Hall, M., Bennett, A.B., Fefferman, N.H. and Maslo, B.

Geographic and Individual Determinants of Important Amphibian Pathogens in Ozark and Eastern Hellbenders.

Journal of Wildlife Diseases. 2020. In Press.

Hardman R, Sutton W, Irwin K, McGinnity D, Reinsch S, Freake M, Colclough P, Miller B, Da Silva Neto J, Souza M, Fitzpatrick B, and Miller DL

Host Density and Habitat Structure Influence Host Contact Rates and *Batrachochytrium* Salamandrivorans Transmission.

Scientific Reports. 2020. Published.

Malagon DA, Melara LA, Prosper OF, Lenhart S, Carter ED, Fordyce JA, Peterson AC, Miller DL, and Gray MJ

How Disease Risk Constrains the Evolution of Social Systems.

Proceedings of the Royal Society, B. 2020. Published.

Udiani, O. and N.H. Fefferman

How Emergent Social Patterns in Allogrooming Combat Parasitic Infections.

Frontiers in Ecology and Evolution. 2020. Published.

Wilson, S., S. Sindi, H. Brooks, M. Hohn, C. Price, A. Radunskaya, N. Williams, and N.H. Fefferman

Impact of Strain Competition on Bacterial Resistance in Immunocompromised Populations.

Antibiotics. 2020. Published.

DeNegre, A., Myers, K., and N.H. Fefferman

Publications: Others Involving OHI

Interactive Effects of a Pesticide and Emerging Amphibian Pathogens in Eastern Hellbenders.

Journal of Aquatic Animal Health. 2020. *In Press.*

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Linking Immuno-Epidemiology Principles to Violence.

Submitted/In Review.

Sisk, A., P. Bamwine, J. Day, and N.H. Fefferman

Education

ONE HEALTH COURSE

A new course will be available in the 2021-22 course catalog that will allow students to explore the interconnectedness of human, animal, plant, and environment health, develop an understanding of the One Health approach, and serve as an introductory experience for students considering One Health careers. The course, Introduction to One Health: From Antimicrobial Resistance to Zika with a side of Thousand Cankers, is taught by Dr. Adam Willcox, a One Health Scholar.

ONE HEALTH MINOR PROGRAM

Also new to the 2021-22 catalog is the One Health Minor, available to undergraduate and graduate students wishing to develop skills to prepare themselves for careers in agricultural, environmental, and human sciences, in addition to scientific policy and communication. The required courses are interdisciplinary and will provide training that is relevant for all majors.

Undergraduate Minor

The undergraduate minor consists of 18 hours, including at least one course from each of the six categories below. (Introduction to One Health is required.)

- Introduction
- Communication and Leadership
- Policy
- Global Issues
- Science
- One Health Capstone

Graduate Minor

The graduate minor consists of 10 hours (four courses) in the three areas of focus below.

- Communication and Leadership
- Translation of Science to Policy
- One Health Focus

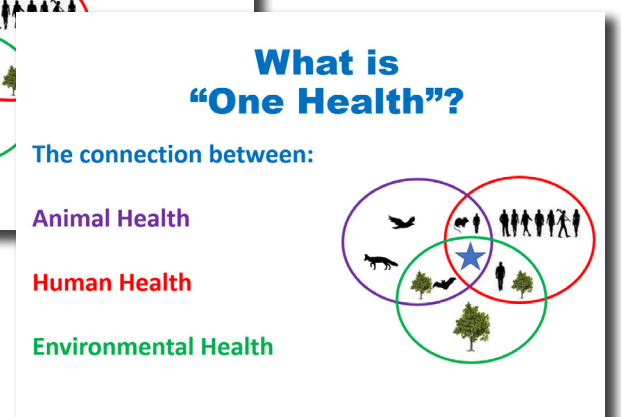
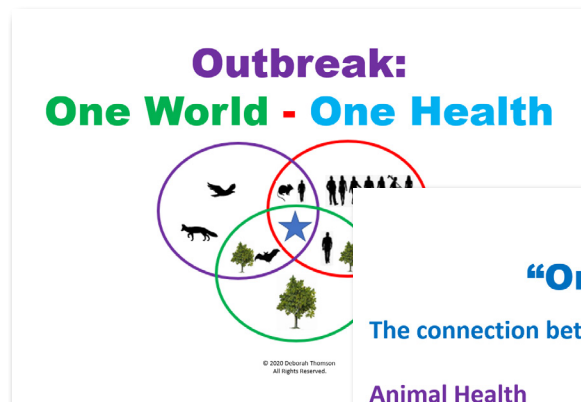
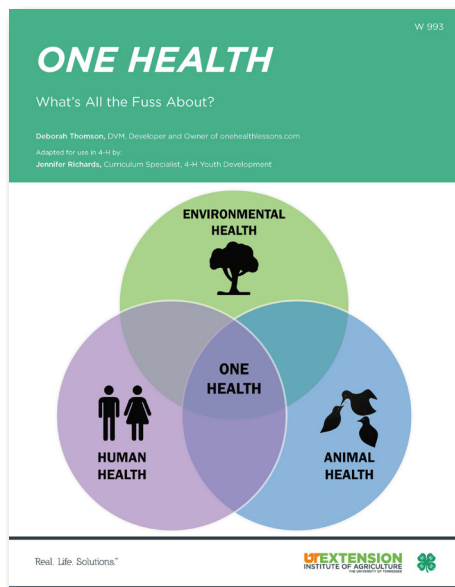
Education

SCIENCE OF TEAM SCIENCE WORKSHOPS

In the spring of 2021, members of the Science of Team Science working group and other interested staff and faculty participated in the INTEREACH Spring Webinar Series on tools for excellence in consilience and team science through Duke University. On May 21, 2021, the spring webinar series will culminate with a three-hour online, experiential workshop that gives participants the opportunity to practice the skills covered in the spring webinar series. This workshop will target One Health Scholars and those whom each scholar invites. Additionally, the working groups aims to host an in-person event in the UT Gardens that includes applying skills learned in the spring webinar series to a wicked problem chosen by the initiative. This event would potentially be open to the entire UT community.

K-12 EDUCATOR MATERIALS

The One Health in K-12 working group adapted a One Health Lesson (onehealthlessons.com) for use in 4-H to introduce students to the topic of outbreaks from the lens of One Health. Students will learn about outbreaks and connect the dots between the provided background information and the current global SARS-CoV-2 pandemic. This lesson is designed to be taught in either a traditional classroom setting or online-learning environment.



Presentations (*scientific*)

Intelligent Systems for Molecular Biology 2020, COVID-19 Session (virtual)

Date: July 2020

Staff: Fefferman

Research Day Comparative and Experimental Medicine, UT College of Veterinary Medicine

Date: September 2020

Staff: Miller (Ashley Reeves)

Mathematical Biology Seminar, ASU (virtual)

Date: October 2020

Staff: Fefferman

League of Women Voters (Oak Ridge, TN)

Date: October 2020

Staff: Fefferman

Banff International Research Station Workshop: Mathematics of Human Environmental Systems (virtual)

Date: October 2020

Staff: Fefferman

Society for Industrial and Applied Mathematics: Minisymposium on Using Mathematical Models in Epidemiology and Medicine to Outwit Diseases, Joint Mathematics Meetings (virtual)

Date: January 2012

Staff: Fefferman

UT Science Forum (virtual)

Date: March 2021

Staff: Fefferman

Southeastern Partners in Amphibian and Reptilian Conservation (virtual)

Date: February 2021

Staff: Miller

Texas Chapter of The Wildlife Society Annual Conference (virtual)

Date: February 2021

Staff: Miller (Ashley Reeves)

3-Minute Thesis Competition University of Tennessee Graduate School

Date: March 2021

Staff: Miller (Ashley Reeves)

9th World Congress of Herpetology (New Zealand, virtual)

Date: January 2021

Staff: Miller

Community Engagement

MONTHLY SEMINAR SERIES

The first installment of the monthly One Health Lunch & Learn Seminar Series was held on February 25, 2021. The series allows 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.

The seminars regularly attract 60+ attendees and have received very positive feedback thus far. Past seminars are available on our website and YouTube channel.

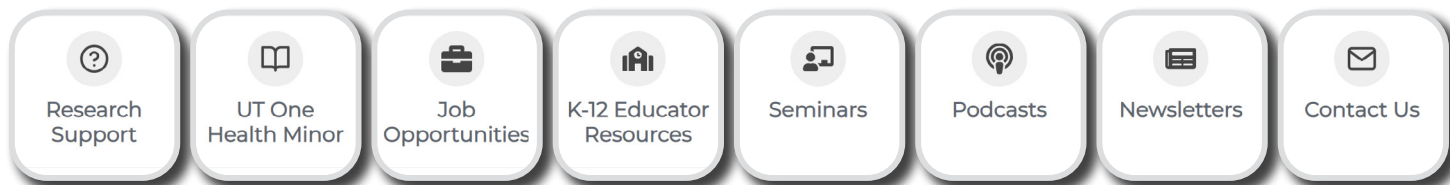


COMMUNICATIONS

An initial communications plan has been developed to promote the initiative. The main features of the plan are: a quarterly electronic newsletter, beginning April 2021, focused on periodic news and updates; a website with general and more enduring content about the One Health Initiative along with posting of timely content; and a social media presence, beginning with Twitter, to further develop the One Health brand and spread awareness. Initially, social media efforts will be focused on curating information and connecting people with people, as well as people with information. Efforts also include building a follower base and defining One Health to the general population. A well-established social media account will allow us to disseminate and amplify One Health messages to the community, promote One Health events, and collaborate with various stakeholders; the Tennessee Department of Health has expressed interest in partnering with us in these efforts.

OHI WEBSITE AND BRANDING

As of March 2021, the initiative has an official logo and is working on brand development and awareness. We have a public-facing website under the UT Institute of Agriculture, and we are continually making updates and improvements to increase its functionality. Currently, visitors can learn about One Health and the short- and long-term vision of the initiative, read about current One Health-related research at UT (including abstracts and video presentations by the seed grant recipients), and access a growing number of resources (below).



Interviews and PR

Print/Online

<i>ABC News</i>	Fefferman
<i>The Guardian</i>	Fefferman
<i>Health Feedback</i>	Fefferman
i-24	Myers
Knox News Sentinel	Myers
The Marshall Project	Fefferman
Mother Jones	Myers
Newsweek	Fefferman
Politico	Fefferman
Scientific American	Fefferman
Southerly	Fefferman
The Telegraph	Fefferman
The Tennessean	Myers
UNILAD	Fefferman
YAHOO Entertainment	Fefferman

Podcasts/Radio

<i>Health Connections (weekly)</i>	Myers
<i>Slate.com: The Gist</i>	Fefferman
<i>Stand Up Science (four episodes)</i>	Fefferman, Miller
<i>You Made It Weird</i>	Fefferman

TV/Web

<i>CGTN</i>	Fefferman
<i>The Washington Post</i>	Fefferman
WBIR	Fefferman
WVLT	Fefferman

Webinars

<i>Ecological Society of America</i>	Fefferman
<i>NIMBioS</i>	Fefferman

Presentations (organizational)

Conservation Science Lab		Miller
UT College of Veterinary Medicine, Dept. of Biomedical and Diagnostic Services Meeting	Monthly	Miller
Opioid Group	January 2020	Miller
COD	February 2020	Miller
Oak Ridge National Laboratory	February 2020	Miller
Directors, Deans, Department Heads	May 2020	Miller
One Health Scholars Meeting	May, December 2020	All
Remote Area Medical	July 2020	Miller
UT Lunch and Learn: Intro to OHI	July 2020	Miller
FWF Alumni	August 2020	Miller
Herbert College of Agriculture, Fall Kick Off	August 2020	Miller
Faculty Senate Research Council	November 2020	Miller
UT Mic Nite	November 2020	Miller
Office of Research and Engagement	November 2020	Miller
Advisory Board Meeting (Quarterly)	November 2020, March 2021	All
Tennessee One Health	March 2021	Miller
Seed Grant Recipient Meeting	March 2021	All
OHI and Rural Health (Congressman Burchett)	March 2021	Miller, Sedges



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

“One Health is a great theme to build synergies among UT’s research, education, and extension programs and deliver on its mission to enhance wellbeing throughout the state and across the nation.”

Dr. Cathie Woteki

UTOHI Advisory Board Chair

“More than ever, society appreciates the impact of the whole human-animal-ecosystem interface. The One Health Initiative is vital to addressing the future health of people, animals, and the environment in our world.

It is wonderful that UT has an established program to pioneer addressing these needs—locally, nationally, and beyond—beginning in our communities.”

Dr. Samantha Beaty

UTOHI Advisory Board Vice-Chair



THE UNIVERSITY OF
TENNESSEE



ONE HEALTH
INITIATIVE