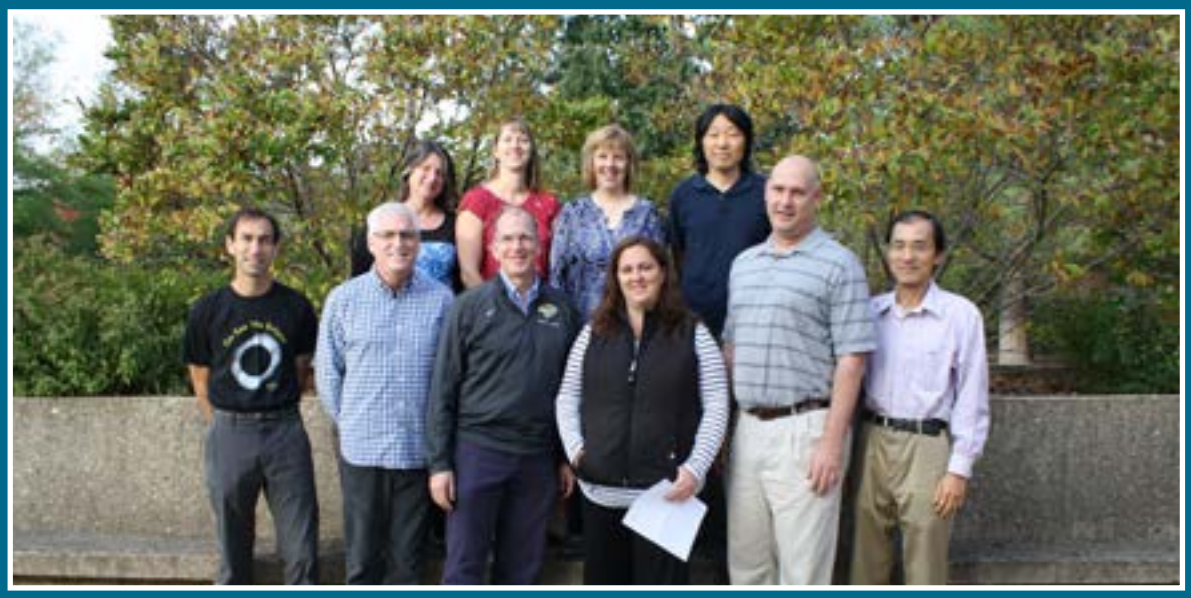
Biological Sciences



Annual Report 2016

Missouri S&T

Presented by:

biosci.mst.edu

Department Summary

2016 was a successful year in the Biological Sciences department. With 234 undergraduates and 8 graduate students, our numbers have grown 7% from the previous year. 32 students graduated in the spring and another 19 in the fall.

A large part of our success is due to our committed faculty, who have a combined 16 published works, 14 conference presentations, 10 research grants, all while teaching roughly 30 courses per semester and serving on various committees.

We greatly appreciate your continued support. Thank you for taking the time to catch up with our department!

Table of Contents

The Missouri S&T Department of Biological Sciences embodies an academic community focused on learning and discovery. The S&T BioSci community provides a supportive, collegial, challenging and rewarding environment for its faculty, students and staff.

MISSOURI S&T

Ronald L. Frank, Ph.D.

Associate Professor

Laboratory of Plant Molecular Genetics

RESEARCH INTERESTS

Identification of gene families and other functional sequences using computer algorithms

Evolution and expression of gene families in legumes

Characterization of insertion sequence families in bacteria

PRESENTATIONS

Biology Seminar Series; Missouri S&T; October 17, 2016; "Survey of Insertion Sequences in the Genome of Halanaerobium hydrogeniformans"

TEACHING

SP16: Plant Biology (BioSci 2383); General Genetics (2223); Free Radicals in Biochemistry (CHEM 6650)

FS16: Molecular Genetics (BioSci 4323); Evolution (2233)

ADVISING

33 academic advisees

Undergraduate researchers: Brandon Lile (CompSci), Kody Bassett, Brynn Shrom, Ivana Grimm

Masters students: Mike Sadler

Ph.D. committee: Jay Muchala (EE), Mohamed Milad (Math)

ACTIVITIES

Freshmen advisor

Primary Secondary Education advisor

Teacher Education Program Advisory Committee

Phi Sigma National Honor Society advisor and council representative to National Office

Departmental Graduate Committee

Departmental Undergraduate Committee

CSCMBC Director

Departmental Bylaws Drafting Committee Coordinator

Campus Tenure Policy Committee

OURE Departmental Coordinator

Pre-Med Committee

Transfer Advising

Institutional Biosafety Committee

Chen Hou, Ph.D

Assistant Professor
Laboratory of Animal Physiology

RESEARCH INTERESTS

Metabolic basis of aging; Eusocial insect physiology and social network; Energetic basis of animal growth and reproduction; Mammalian respiratory physiology.

PRESENTATIONS

Testing a general model of life history tradeoff between growth and longevity. Invited seminar talk at Department of Biology at Missouri State University, April, 2016.

Energy tradeoffs between metabolism, growth, and longevity: Comparing two invertebrate species. Invited seminar talk at Plant Division at University of Missouri-Columbia, Feb. 2016.

TEACHING

Spring: Human Anatomy and Physiology II (Bio 3343), Biology of Aging (Bio 3001); Evolutionary Medicine (Bio 3000)

Summer: Evolution (Bio2233)

ADVISING

30+ Undergradute academic advisees

7 undergraduate researchers: Nolan Ferral; Kyara Holloway; Haley Neeter; Darius Mann; Megan Fairfield; James Whittingham; Kent Gorday.

Graduate advisee: Nikki Gomez

PUBLICATIONS

- N. Ferral, K. Holloway, M. Li, Z. Yin, and C. Hou*. 2016. Heterogeneous activity causes a nonlinear increase in the group energy use of ant workers isolated from their social environment. Insect Science DOI: 10.1111/1744-7917.12433.
  (The first two authors are undergraduate students in Hou lab.)
- R. Fan, G. Olbricht, X. Baker, and C. Hou*. 2016. Birth mass is the key to understand the negative correlation between lifespan and body size in

dogs. Aging-U.S. Vol 8, Advance DOI 10.18632/aging.101081.
(The 1st and 3rd authors are a visiting scholar and an undergraduate student respectively in Hou lab.)
- K. Amunugama, L. Jiao, G. Olbricht, C. Walker, Y.-W. Huang, P. Nam, and C. Hou*. 2016. Cellular oxidative damage is more sensitive to biosynthetic rate than to metabolic rate: A test of the theoretical model on hornworms. Experimental Gerontology, 82:73-80.
  (The first two authors are graduate students in Hou lab.)

ACTIVITIES

Reviewer of peer-reviewed international journals: *Proceeding of National Academy of Science*; *Nature-Ecology and Evolution*; *Scientific Reports*; *Biology Letters*; *American Naturalist*; *Proceeding of Royal Society B-London*; *Oikos*; *PLoS One*;

FUNDING

University of Missouri System Research Board Grant 2016-2017 (PI, $51,463): Oxidative damage is more sensitive to growth than to metabolism

Yue-Wern Huang, Ph.D.

Professor

Laboratory of Nanomedicine & Molecular Toxicology

RESEARCH INTERESTS

Nanomedicine: using nanomaterials for targeted delivery to treat diseases

Nanomaterial toxicity: molecular mechanisms of cytotoxicity induced by exposure to nanomaterials

Pollutants and environmental health

PRESENTATIONS AND CONFERENCES

Invited Speeches:

- 2016, May 25. National Cheng Chi University. Title: A Journey of Environmental Protection: Putting it in Social and Education Context. Taipei, Taiwan.

Conference Presentations:

- 2016, Nov. 18-21. 23rd Annual Meeting of Society of Free Radical Biology and Medicine. Hsiu-Jen Wang, Yue-wern Huang, Daniel Hier, Shakila Tobwala, Robert Aronstam, Nuran Ercal. N-acetylcysteine amide, a thiol antioxidant, protects tBHP-induced oxidative stress in primary human retinal pigment epithelial cells. San Francisco, CA, USA.
- 2016, Aug. 14-16. 11th International Conference on the Environmental Effects of Nanoparticles and Nanomaterials (ICEENN). Yue-Wern Huang and Han-Jung Lee. Delineation of toxicity of transition metal oxide nanoparticles: what matters most? Golden, CO, USA.
- 2016, Aug. 14-16. 11th International Conference on the Environmental Effects of Nanoparticles and Nanomaterials (ICEENN). Melissa Cambre and Yue-Wern Huang. Differential cytotoxicity of NiO and NiOH nanoparticles in HepG2 and A549 cell lines. Golden, CO, USA.

TEACHING

SS16: Toxicology (CET score = 3.4)

FS16: Ecology (CET score = 3.4)

ADVISING

30+ Undergraduate academic advisees

Graduate students: Melissa Cambre & Sahitya Injamuri

Undergraduate students: Ganan Hahn; Kaitlyn Oberkirsch; Brynn Shrom; Bolin Wang; Andrew Murphew; Lucas Harper

PUBLICATIONS

2016 Peer-reviewed Journal Publications

- 2016. Kaushalya Amunugama, Lihong Jiao, Kathryn Koerperich, Yue-wern Huang, Paul Nam, and Chen Hou. Cellular oxidative damage is more sensitive to biosynthetic rate than to metabolic rate: Test the theory on hornworm (*Manduca sexta* larva). Experimental Gerontology, 82:73-80.

Yue-Wern Huang, Ph.D.

Professor

Laboratory of Nanomedicine & Molecular Toxicology

PUBLICATIONS

- 2016. Betty R. Liu, Yue-Wern Huang, Robert S. Aronstam, and Han-Jung Lee. Identification of a short cell-penetrating peptide from bovine lactoferricin for intracellular delivery of DNA in human cells. PLOS ONE, 4:11(3):e0150439. doi: 10.1371/journal.pone.0150439.

2016 Book Chapters

- 2016. Yue-Wern Huang and Sutapa Barua. Oral Drug Delivery Systems for Gastrointestinal Cancer Therapy. Kaushal Rege (ed.); World Scientific Publishing. (Accepted)

ACTIVITIES

Interim Chair (till August 31, 2016)

Chair, S& T Institutional Animal Care and Use Committee

Chair, Department Promotion and Tenure Committee

Chair, S&T Science Area Promotion and Tenure Committee

Committee member, S&T Campus Promotion and Tenure Committee

Panelist, Missouri S&T NIH Proposal Development Workshop (2016)

S&T Schrenk Hall Renovation Steering Committee (2015 – 2016)

S&T Interdisciplinary PhD Program in Bioscience Development Committee (2015 – 2016)

S&T Radiation Safety Committee (2015 – present)

Editorial Board: Frontiers in Environmental Health (Review Editor); Austin Environmental Sciences

Reviewer of peer-reviewed international journals: Expert Opinion on Drug Delivery; Biomaterials, Langmuir; Advanced Materials Letters; Cell Biology and Toxicology; Toxicology; Journal of Applied Toxicology; Journal of Membrane Biology (BioMed Central); Journal of Agricultural and Food Chemistry

Reviewer of the e-book proposal "Cancer Therapy - A Potential Application of Nanotechnology", Bentham Science Publishers.

Reviewer of the e-book proposal "Recent Advances in Nanotechnology", Bentham Science Publishers.

FUNDING

- 2014 – 2017. Reduction of the BMP2 Dose Required for Bone Regeneration through the Use of a New Intrinsically Osteoinductive Hydroxyapatite Carrier. PI: Mohamed N. Rahaman; Co-PI: Yue-Wern Huang (25%). NIH. R15DE023987. $365,420.
- 2016 – 2017. Damage is more sensitive to growth than to metabolism. PI: Chen Hou; Co-PI: Yue-Wern Huang. The University of Missouri System Research Board. $51,463.
- 2016. Combination of Relaxin and Bone Morphogenetic Protein-2 to Induce Osteogenesis. PI: Yue-Wern Huang; Co-PI: Mohamed Rahaman. Missouri S&T Center for Biomedical Science and Engineering (CBSE). $12,550.
- 2015 – 2016. Delivering the Right Dose to the Tumor. PIs: Yue-Wern Huang & Sutapa Barua. Missouri S&T Miner Tank Innovation Grant. $23,000.

Melanie R. Mormile, Ph.D.

Professor

Associate Provost of Faculty Affairs

RESEARCH INTERESTS

Extremophilic Bacteria, Astrobiology, Industrial Microbiology

PRESENTATIONS AND CONFERENCES

- Kalia, S., J. Trager, O.C. Sitton, and M.R. Mormile. 1,3-Propanediol Production from Glycerol by Halanaerobium hydrogeniformans. Halophiles 2016. San Juan, Puerto Rico, May 22-27. (International Level)
- Hughes, A.L., K.M. Lonergan, and M.R. Mormile. Isolation and Characterization of Novel Halo-Acidophilic Microorganisms Present in Hypersaline Lakes from Western Australia. (Platfom) Ann. Meet. Missouri Valley Branch and The Missouri Branch Am. Soc. Microbiology, March 4-5, Kansas City, KS. (Regional Level). *Ava and Katlyn won first place recognition for their presentation.*
- Johnson, S.S., D. Goerlitz, K.C. Benison, M.R. Mormile, and D.W. Ming. Early acidification of Mars and the potential implications for biology. (Platform) 47th Lunar and Planetary Science Conference, March 21-25, The Woodlands, TX. (International Level).

TEACHING

Spring 2016 - Experimental Course-Geomicrobiology-interdisciplinary upper level undergraduate and graduate course

Fall 2016 - Environmental Microbiology-interdisciplinary upper level undergraduate and graduate course

ADVISING

Graduate Students: Shivani Kalia

Undergraduate Research Students: Erica Blumhorst, Abagail Campbell, Ava Hughes, Katlyn Lonergan, Ashley Segobiano, Jordan Trager, Emma (Emy) Young

Melanie R. Mormile, Ph.D.

Professor

Associate Provost of Faculty Affairs

PUBLICATIONS AND PATENTS

- Paul, V.G., D.J. Wronkiewicz, M.R. Mormile, and J.S. Foster. Mineralogy and Microbial Diversity of the Microbialites in the Hypersaline Storr's Lake, The Bahamas. Astrobiology, 16: 282-300, DOI: 10.1089/ast.2015.1326.
- Donnell, M.L., A.J. Lyon, M.R. Mormile, and S. Barua. Endotoxin hitchhiking on polymer nanoparticles. Nanotechnology, 27. doi: 10.1088/0957-4484/27/28/285601.
- Kalia, S., J. Trager, O.C. Sitton, M.R. Mormile. The use of a fractional factorial design to determine the factors that impact 1,3-propanediol production from glycerol by Halanaerobium hydrogeniformans. Life, 6: 35. doi:10.3390/life6030035.
- Varun G. Paul, David J. Wronkiewicz, and Melanie R. Mormile. Characterization of microbialites and the ecosystem of Storr's Lake, San Salvador Island. In B. Glumac and M. Savarese, ed., The 16th Symposium on the Geology of the Bahamas and Other Carbonate Regions. Gerace Research Centre, San Salvador, Bahamas. ISBN 978-0-935909-15-9.
- Mormile, M.R. Diversity: Implicit bias in the workplace. SIMB News, Oct·Nov·Dec, 161-162.
- Melanie R. Mormile, Daniel W. Roush, Dwayne A. Elias, Oliver C. Sitton. "Conversion of glycerol to 1,3-propanediol under haloalkaline conditions", U.S. Patent No. US 9,328,360, Date of Patent: May 3rd.

ACTIVITIES

Review member for the NASA's Exobiology Peer Review Panel, Phoenix, Arizona

Associate Editor for SIMB News

Active member the Subcommittee on the Taxonomy of the Halomonadaceae of the International Committee on Systematics of Prokaryotes

Active member of the American Society for Microbiology's Committee on the Status of Women in Microbiology of the Public and Scientific Affairs Board

Active member of the EMD Millipore Alice C. Evans Award Selection Committee

Main Faculty Advisor for the Missouri University of Science and Technology Mars Rover Design Team

Halophiles 2016. May 22-27, San Juan, Puerto Rico. Served on the International Organizing Committee. (International level)

Featured on an episode of BBC's Horizon (Horizon: Oceans of the Solar System), aired on April 6, 2016 on BBC2 in the United Kingdom. Trailer: http://www.bbc.co.uk/programmes/p03q60nthttp://www.bbc.co.uk/programmes/p03q60nt

AWARDS

Waksman Foundation Lecturer in the American Society for Microbiology Distinguished Lecturer Program. Will serve a two-year term (July 1, 2016-June 20, 2018).

Dev Niyogi, Ph.D

Associate Professor

Laboratory of Freshwater Ecology

RESEARCH INTERESTS

Freshwater ecology, aquatic biogeochemistry, microbial ecology of streams and lakes

TEACHING

Spring: Ecology (BioSci 2263), Advanced Fish Ecology (BioSci 3000, 6202)

Summer: Field Ecology (BioSci 2264), Field class in freshwater ecology (through University of Colorado)

Fall: Introduction to Environmental Science (BioSci 1173), Freshwater Ecology (BioSci 4363), Advanced Freshwater Ecology (BioSci 6363)

ADVISING

30+ Undergraduate academic advisees

Graduate research advisees: 1

Undergraduate research advisees: 8

ACTIVITIES

At Missouri S&T, I am continuing my research on ecosystem processes in streams, and the use of molecular tools to describe microbial communities of streams. One main focus is on the effects of stream drying on communities of microbes, algae, and animals. I am also collaborating with local scientists and conservationists with the Mill Creek Watershed Coalition and their efforts to study and conserve a unique watershed near Rolla. Several undergraduate students are examining water quality in the Mill Creek watershed as part of the OURE program on campus. Ron Metts, Jonah Heitman, and Veronica Lee are examining the survival and transport of E. coli in streams. Kaleb Bassett is a M.S. student in my lab studying the dynamics and sources of E. coli in Mill Creek.

PUBLICATIONS

- Ferreira, V., J. Koricheva, S. Duarte, D.K. Niyogi, and F. Guérold. 2016. Effects of heavy metal contamination on litter decomposition in streams – a meta-analysis. Environmental Pollution.

Julie Semon, Ph.D

Assistant Professor
Laboratory of Regenative Medicine

RESEARCH INTERESTS
Adult stem cells

TEACHING
Tissue Engineering (BioSci 5240, 6240), Biomedical Engineering (CerEng 3110)

ADVISING
Masters student: Caroline Murphy
OURE researchers: Lisa Gutgesell, Bonnie Koestal, Jakeb Baldridge, Daniel Park
Undergraduate researchers: Gorgina Barsoum, Lauren Flowers
High School researcher: Codi Wilson, Eldon High School, Eldon, MO
Graduate committee: Sahitya Injamuri, Master's student, Department of Biological Sciences
Casey Burton, PhD student, Department of Chemistry
Yuan Gao, PhD student, Department of Electrical Engineering

ACTIVITIES
Chair of Institutional Biosafety Committee
Chair of Graduate Studies Committee
Career Opportunities & Employer Relations Advisory Council member
Research Support Task Force member
Institutional Animal Care and Use Committee member
Academic Advisor of Missouri S&T Optimist International

PUBLICATIONS
- C. Murphy, K.C.R. Kolan, M. Long, W. Li, M.C. Leu, J.A. Semon, D.E. Day. 3D Printing of a Polymer Bioactive Glass Composite for Bone Repair. Solid Freeform Fabrication Proceedings, 1718-1731 (2016)

PRESENTATIONS AND CONFERENCES
- "Characterization of Mesenchymal Stem Cells" Ozark Biomedical Initiative Symposium, PCRMC, Rolla, MO
- "Mesenchymal Stem Cells: Engineered for Fun" Biological Sciences Seminar Series, Missouri S&T, Rolla, MO
- "3D Printing of a Cellularized Composite for Bone Repair" Biomedical Engineering Society (BMES) Annual Meeting, Oct 5-8, Minneapolis, MN
- "3D Printing of a Cellularized Polymer-Bioglass Composite for Bone Repair" Annual International Solid Freeform Fabrication Symposium, Austin, TX

FUNDING
- "Borate Bioglass and Mesenchymal Stem Cells" Missouri S&T Innovation Shark Tank Program, Rolla, MO (P.I.)
- "Bioactive Glass and Adipose Stem Cells in Wound Healing" University of Missouri Research Board, Columbia, MO (P.I.)

Katie Shannon, Ph.D

Associate Teaching Professor, Chair of Pre-Med Committee
Laboratory of Cytokinesis & Director of Celluar Imaging Facility

RESEARCH INTERESTS

Regulation of actomyosin ring assembly and contraction

Cytokinesis is the physical separation of cells, accomplished by contraction of a ring containing actin and the molecular motor myosin. Regulation of cytokinesis is essential to ensure that cell division occurs between chromosomes segregated by mitosis. If cytokinesis fails, aneuploidy results, leading to cell death or initiation of tumors. The current focus is on a protein essential for cytokinesis in the budding yeast Saccharomyces cerevisiae called IQG1. This protein interacts with many other proteins, including actin, a small GTPase, a kinase, a phosphatase, and formins, a class of actin nucleating proteins. Regulation of these interactions during the cell cycle is an area of active research.

TEACHING

SS16: Cell Biology (Bio2213), Developmental Biology (Bio5353), Research Proposal Writing (Bio6223)

FS16: Senior Seminar (Bio4010), Cancer Cell Biology (Bio4353/6353), Cell Biology (Bio2213), Introduction to Biological Sciences (Bio1201)

ADVISING

OURE students: Madison Mara, Caitlin Siehr, Alex Ayers, Mason Donnell

Undergraduate Research Conference Mason Donnel 1st place, Research Proposal Poster, Madison Mara, 1st place Oral Presentation Natural Sciences

30+ Undergraduate Academic Advisees

ACTIVITIES

Co-advisor, iGEM student synthetic biology team

Reviewer, Journal of Microbiology & Biology Education

Reviewer, FEMS Yeast Research

Advisory Board member, Student Design and Experiential Learning Center (SDELC)

Member, Experiential Learning Committee

Member, Discipline Specific Curriculum Committee

Member, Missouri S&T IRB

Mentor, Mentoring in Active Learning and Teaching, ASCB program

PRESENTATIONS AND CONFERENCES

- Shannon, K. Measuring student course preparation and the effect on exam performance in a partially flipped class, American Society for Cell Biology (ASCB) mini symposium - Evidence-Based Education: Innovations in Cell Biology December 4, San Francisco, CA
- Shannon, K. Regulation of budding yeast cytokinesis by Iqg1 phosphorylation. Midwest Yeast Meeting, October 8, Northwestern University, Evanston IL
- Shannon, K. How do Online Videos and Textbook Reading Engage Students and Affect Exam Performance? Teaching and Learning Technology Conference, March 17-18, Missouri S&T, Rolla, MO
- Poster: Shannon, K.B. What is the impact of student reading and video watching on exam performance? July 15, 2015 Society for the Advancement of Biology Education Research (SABER) Annual Meeting, Minneapolis, MN

Ning Sui, Ph.D

Assistant Teaching Professor

RESEARCH INTERESTS

Plant hormone Gibberellins (GAs) regulate various processes in plant growth and development, from seed germination to fruit development. The key repressors in the GA signaling pathway, DELLA proteins, serve as the central coordinator of multiple signaling networks through protein-protein interaction. SPINDLY (SPY), another negative regulator in the GA pathway, is a putative O-GlcNAc transferase (OGT) identified 20 years ago.

I am interested in the structure and function of DELLA and SPY proteins. Our recent study revealed SPY to be an *O*-fucosyltransferase rather than an OGT, and it *O*-fucosylates DELLA to activate it through promoting its interaction with binding partners. This is the first work to identify *O*-fucosylation of nuclear proteins in any organism.

TEACHING

SP17: General Biology lab (Bio Sci 1219)
Plant Biology (Bio Sci 2383)

ADVISING

10 academic advisees

PUBLICATIONS

- Zentella R*, **Sui N***, Barnhill B, Hsieh W, Hu J, Shabanowitz J, Boyce M, Olszewski N, Zhou P, Hunt D and Sun T. (2017) The *Arabidopsis* *O*-fucosyltransferase SPINDLY activates nuclear growth repressor DELLA. Nature Chemical Biology, Advanced Online Publication. * Equal contribution

Matthew S. Thimgan, Ph.D

Assistant Professor

Laboratory of Genetic & Behavioral Sleep Research

RESEARCH INTERESTS

Genes and metabolic pathways that regulate sleep and wakefulness

Relating sleep and wake transitions to aging and lifespan using mathematical modeling

Physiologic and molecular biomarkers of sleepiness

TEACHING

FS 2015: Bio 3333: Anatomy & Physiology I

SS 2016: Bio 2001: Sleep: Function and Dysfunction

SS 2016: Bio 2344: Neurobiology

ADVISING

30+ Academic Advisees

Graduate researchers: Joshua Lisse

Undergraduate researchers: Robert Block (OURE, OURE Fellows), Sarah Buckley (OURE), Rachel Craft, Isaac Digennaro, Gregory Evans, Sami Friederich, Colleen Hatley, Andrea Huber, James Betz, Kelsi James, Dani Jones, Lisa Kinder, Maddie Kruper, Aaron Latal, Harriet Lumila, Molly Maloney, Madi Morris, Zachary Paul, Torria Slagle (OURE), Nicholas Statesel, Neil Vessely, Leah Whelan

Junior High: Kathleen Beetner

PUBLICATIONS

- Murray, Susan L. & Thimgan, Matthew S. (2016) *Human fatigue risk management.* London, England: Elsevier Academic Press.

ACTIVITIES

Missouri University of Science and Technology College of Arts, Science and Business Pilot Study Program "Objective Detection of Sleepiness Using Physiologic Measures"

National Institute of General Medical Sciences

"Mathematical modeling sleep in a model system"

PRESENTATIONS AND CONFERENCES

- ESPCI Paris Tech (Paris, France) "Correlating lifespan with sleep architecture in Drosophila"
- Université Claude Bernard Lyon 1 (Lyon, France) "Correlating lifespan with sleep architecture in Drosophila"
- Ignite Rolla Missouri, S&T (Rolla, MO) "Why "Hitting the Hay" is so important"
- CASB Dean's Leadership Council
- Gordon Conference on Sleep Regulation and Function (Poster presentation) "Sleep-wake transitions predicts lifespan and biological differences in Drosophila
- American Professional Sleep Societies – Oral presentation "Correlating lifespan with sleep architecture in Drosophila"
- American Professional Sleep Societies – Poster presentation "Sleep-wake transitions predicts lifespan and biological differences in Drosophila"

David J. Westenberg, Ph.D

Associate Professor, Interim Department Chair
Faculty Athletics Representative & Pre-Medicine Advisory Committee

RESEARCH INTERESTS
Rhizosphere microbiology. legume symbiosis, quorum sensing, antibacterial materials, microbiology education.

TEACHING
SP16: Microbiology (BioSci 3313); Microbiology Lab (BioSci 3319); Communication Workshop for Pre-Health Professions (Pre-Med 3010), Biological Design and Innovation (BioSci 3783)

FS16: Microbiology (BioSci 3313), Microbiology Lab (BioSci 3319)

ADVISING
40+ Undergraduate academic advisees

Graduate Students: Matt Liberson

Undergraduate Students: Claire Brewer, Elsie Greenwood, Abigail Haler, Natalie Holste, Kim Huskey, Dane Meyer, Mark McFerren

High School Students: Emelia Gautier, Grace Hall, Olivia Kline, Emily Zaretzky,

ACTIVITIES
HHMI Teaching Ambassador

Chair, ASM Committee on K-12 Education

Faculty Athletics Representative

DAAD Research Ambassador

Missouri S&T Faculty Teaching Partner

Advisor for Scrubs and Humans vs. Zombies student organizations and Co-Advisor for the Missouri S&T iGEM team

Summer SEQL Workshop for K-12 teachers and BioBuilder Workshop

Hosted iGEM Meet-up

Building with Biology Forums at Missouri S&T,

Missouri State and Lincoln University

Hosted Science Olympiad event - Disease Detective

Presentations to visiting students through SHPE, MITE and Expanding Your Horizons programs, presentations to visiting school groups and visits to school classrooms.

Member of the Missouri S&T Performing Arts Series, Conflict of Interest, CERTI, Title IX equity hearing panel and Athletics Advisory Committees

FUNDING
- Missouri Dept. of Higher Ed. Grant, $215,867.72 Science Ed. & Quantitative Literacy: An Inquiry-based Approach (10%)
- Teaching Innovation award. $5,000. S&T Innovation committee (100%)

AWARDS
Outstanding Teaching Award

Natalie Holste earned S&T OURE Fellows Award, Elsie Greenwood, Abigail Haler, Dane Meyer and Mark McFerren earned S&T OURE awards

David J. Westenberg, Ph.D

Associate Professor, Interim Department Chair
Faculty Athletics Representative & Pre-Medicine Advisory Committee

PRESENTATIONS AND CONFERENCES

- You're not alone, Missouri S&T Trailblazers program, Rolla, MO November 9, 2016
- Me and My'Crobes. Missouri S&T Honors Academy, Rolla, MO November 8, 2016
- Me and My'Crobes. Missouri S&T Kappa Mu Epsilon Rolla, MO October 26, 2016
- Me and My'Crobes. Missouri S&T W.T Schrenk Society Rolla, MO September 12, 2016
- Human Electron Transport Chain Activity. American Society for Microbiology Conference for Undergraduate Educators, Bethesda, MD July 23, 2016
- Wildcam Gorongosa (HHMI BioInteractive): A Citizen Science Project and Online Data Lab. American Society for Microbiology Conference for Undergraduate Educators, Bethesda, MD July 22, 2016
- Teaching Innovation at Missouri S&T. Missouri College of Arts and Sciences Deans Association Annual Conference, Rolla, MO April 8, 2016 (Along with Katie Shannon)
- Zombies All Aglow. Missouri S&T ZED Talks. Rolla, MO April 8, 2016
- Symposia Organized: The American Society for Microbiology Presents: Vectors of Disease. 2016. National Association of Biology Teachers Annual meeting, Denver, CO

PUBLICATIONS AND ABSTRACTS

- Ottomeyer, M., Mohammadkah, A., Day, D., and D.J. Westenberg. 2016. Broad-Spectrum Antibacterial Characteristics of Four Novel Borate-Based Bioactive Glasses. Adv. Microbiol. 6:776-787
- Westenberg, D.J. 2016 "The Engaged Microbiologist: Bringing the Microbiological Sciences to the K-12 Community" Journal of Microbiology and Biology Education. (J Microbiol Biol Educ. 2016 Mar; 17(1): 29–31
- Gheni, N. and D.J. Westenberg. Quantitative Real-Time PCR Assay with Immunohistochemical evaluation of HER2/neu Oncogene in Breast Cancer Patients and Correlation to Clinicopathological Findings. (submitted)
- Limmer, M.A., Wilson, J., Westenberg, D.J., Lee, A., Siegman, M. and J.G. Burken. Estimation of Benzene, Toluene and Chlorobenzene Removal Rates by a Phytoremediation System (submitted)
- Abstracts:
- Westenberg, D.J. 2016 Teaching Partners. American Society for Microbiology Conference for Undergraduate Educators, Bethesda, MD July 23, 2016
- Westenberg, D.J. 2016. Using Available Online Resources to Facilitate the Flipped Classroom and Increase Student Engagement. Teaching and Learning Technology Conf., Rolla, MO

Terry Wilson, M.S.

Associate Teaching Professor
Assistant Affiliate Director, PLTW Biomedical

TEACHING

SP16: Biodiversity lecture (Bio 1223)
SP16: Biodiversity lab (Bio 1229, 3 sections)
SP16: Cellular Biology Lab (Bio 2219, 2 sections)
FS16: Principles of Biology lecture (Bio 1213)
FS16: General Biology Lab (Bio 1219, 3 sections)
FS16: Cellular Biology Lab (Bio 2219, 3 sections)

ADVISING

30+ freshman advisees (PRO advisor)

ACTIVITIES

Member, Committee for Effective Teaching (CET)

Member, Graduate Committee

Member, Undergraduate Committee

Member, National Association of Biology Teachers (NABT)

Campus GTA Assessor

Hosted Project Lead the Way summer training institute for secondary science teachers

- 8 sessions
- 96 teachers trained
- Session I & III: Principles of Biomedical Sciences - 27
- Session I & III: Human Body Systems - 14
- Session II: Medical Interventions-18
- Session II: Biomedical Innovations -9
- Session II: Environmental Sustainability - 4
- Session III: Medical Detectives- 24

AWARDS

Faculty Achievement Award