# THE WRIGHT STATE – LAKE CAMPUS 2019 – 2020 Scholarly Review



\* ANNUAL RESEARCH REPORT (2019)

\* RESEARCH SYMPOSIUM PROGRAM (2020)

# Lake Campus Research Report - 2019

#### **Research Initiative Program Overview**

The Lake Campus is home to numerous technical, associates, bachelors, and graduate programs. These programs are run across a student population of approximately 1,600 students and facilitated by approximately 40 full time faculty. The scholarly achievements contained in this report represent the Faculty's commitment to pedagogy and their areas of study as they contribute to their classrooms, disciplines, and community.

The Lake Campus Research Initiative provides a campus-wide framework to encourage scholarly activities by faculty and students. The program is designed to support scholarship by providing funding for research infrastructure, supplies, travel, and publishing costs as well as by sponsoring events that contribute to the campus's research mission.

The Lake Campus Research Coordinator is pleased to present the fifth annual Lake Campus Scholarly Review. This report provides a listing of scholarly endeavors from Lake Campus over the 2019 calendar year and spans across all Lake Campus disciplines. Congratulations to Lake Campus for their research success and much encouragement for the future.



### **Strategic Highlights from 2019**

- In 2019, the fourth annual Lake Campus Research Symposium was held in Dicke Hall. The event grew to be centered around 40+ research projects presented by over 80 faculty and students and was attended by over 275 people from the campus community.

- The internal grants program that was launched in 2015 continued to provide support to both faculty and students. In 2019, the program facilitated funding for around a dozen projects. To date, this support facilitated over 100 examples of scholarship from the campus, ranging from publications to presentations to external proposals.

- Research and teaching related workshops that specifically aimed to involve students in projects, building proposals, writing research papers, and identifying grant support were also held again this year.

- For the fourth year in a row, faculty and faculty mentored students produced over 100 units of scholarship - spanning peer reviewed journal articles, contracts and grants, books, book chapters, book reviews, novelettes, reference works, short fiction works, plays, and scholarly presentations at local and national conferences.



#### **Mission of the Lake Campus Research Initiative:**

To advance scholarship and encourage lifelong learning of students and faculty by providing access to project funding, facilitating project resources and support, and hosting the Annual Research Symposium.

### **Research Articles**

- Attariani H, Rezaei SE, Momeni K. 2019. Mechanical Property Enhancement of Onedimensional Nanostructures through Defect Mediated Strain Engineering. *Extreme Mechanic Letters* 27: 66-75.
- Catalano D, Hathaway M, Martinson K, Mottet R, Jaqueth A. 2019. Using Survey Results to Enhance Research: A Case Study of 3 Web-Based Surveys Addressing Industry Needs and Practices. *Journal of Equine Veterinary Science* 76: 109-110.
- Cavanaugh J, Huelskamp D. 2019. College Grad Seeking Employment: How to Help Students Succeed with a Job Fair. *Association of University Regional Campuses of Ohio (AURCO) Journal* 25: 68-75.
- Daniel D. 2019. The Authenticity of Paracelsus's *Astronomia Magna* and *Brief an die Wittenberger Theologen:* Toward a Diagnostic Rubric Clarifying Authentic and Spurious Elements in Paracelsus's Oeuvre on the Basis of Theological Motifs. *Early Science and Medicine* 24: 419-438.
- Doll JC, Jacquemin SJ. 2019. Bayesian Model Selection in Fisheries Management and Ecology. *Journal of Fish and Wildlife Management* 10(2): 691-707.
- Hochstein DD. 2019. Student Attitudes and (Lack of) Anxiety for Online Practice Quizzes. *The Association for University Regional Campuses of Ohio (AURCO) Journal* 25: 92-107.
- Homan G, Hedrick J, Light M. 2019. Measuring Workforce Competencies of High School Graduates. *Association of University Regional Campuses of Ohio (AURCO) Journal* 25.
- Jacquemin SJ, Junker CR, Doll JC. 2019. The Branch Effect: Understanding Multi-Campus Enrollment and Student Success. *The Journal of Continuing Higher Education* 67(1): 1-12.
- Junker C. 2019. The Domestic Tyranny of Haunted Houses in Mary Wilkins Freeman and Shirley Jackson. *Humanities* 8(107): 1-13.
- Osborn AS, Ciampaglio CN. 2019. The Echinoid Fauna of the Lower Pleistocene Waccamaw Formation and Upper Pliocene Goose Creek Limestone of South Carolina, USA, with a Description of a New Encope Species. *Southeastern Geology* 53(2): 191-213.
- Peterman DJ, Ciampaglio CN. Shell RC, and Yacobucci MM. 2019. Mode of life and hydrostatic stability of orthoconic ectocochleate cephalopods: hydrodynamic

analyses of restoring moments from 3D-printed, neutrally buoyant models of a baculite. *Acta Palaeontologica Polonica* 64: 441-460.

- Yang Z, Johnson M, Posada N, Ou S, Sondergaard R. 2019. Film Cooling on the Geometrically Modified Trialing Edge Model of Gas Turbine Blade. *ASME*. 141(9): 091012.
- Yang Z, Johnson M. 2019. Velocimetry Based on Dye Visualization for a Pulsatile Tubing Flow Measurement. *Applied Optics* 58: C7-C13.
- Zhang W. 2019 A Uniformly Convergent Numerical Method Using Weak formulation for Singularly Perturbed Differential Equations. *Journal of Mathematics and System Science* 9(1): 1-6.
- Zhang W. 2019. Motivating and Engaging Students in Active learning of Mathematics: Mathematical Constants and Applications in Undergraduate Studies. *Association of University Regional Campuses of Ohio (AURCO) Journal* 25: 199-208.

### **Technical Reports**

- Jaqueth AJ. 2019. Guidelines for Weight-Carrying Capacity of Horses. *University of Minnesota Equine Extension Program.*
- Jaqueth AJ. 2019. Horse Dry Lots and Shelters. *University of Minnesota Equine Extension Program.*
- Jaqueth AJ. 2019. Managing Mud on Horse Farms. *University of Minnesota Equine Extension Program.*

### **Books and Edited Collections**

• Wilson DH. 2019. *The Psychotic Dr. Schreber.* Fiction & Theory. Stalking Horse Press.

### Book Chapters, Magazine Articles, Short Fiction, and Articles in Collections

• Faragher M. 2019. The Fourth 'R' is Rooted Belief: Rex Warner and the Politics of Revisionist Classicism. *Literature & History.* 

- Faragher M. 2019. Big Data and Universal Design in *The Home Market*. In *Humans at Work in the Digital Age: Forms of Digital Textual Labor. Editors Ross S, Pilsch A.* Palgrave.
- Kich M, Barlow A. 2019. *Pop Goes the Decade!: The Sixties.* ABC-CLIO/Praeger.
- Wilson DH. 2019. Jackanape. *The Café Irreal*. Issue 70.
- Wilson DH. 2019. The Yak and the Ram: An Essay on Domesticity. *Alienist Magazine 7:* 45-50.
- Wilson DH. 2019. Wörterflucht. *Alienist Magazine* 6: 110-113.
- Wilson DH. 2019. Kill the Reader: A Short Essay on Contemporary Idiocy in Forty-Eight Parts. *Alienist Magazine 5*: 114-118.

#### **Book Reviews and Literary Critiques**

- Faragher M. 2019. Review of *The Politics of 1930s British Literature: Education, Class, Gender* (N. Periyan). *George Orwell Studies.*
- Wilson DH. 2019. Ambiguities of Influence, Review of *The Shining (Cultographies)* (K. Donnelly). *Extrapolation* 60.3: 128-130.
- Wilson DH. 2019. Review of *Applied Ballardianism: Memoirs from a Parallel Universe* (S. Sellars). *Foundation: The International Journal of Science Fiction* 48.3: 128-130.
- Wilson DH. 2019. Experiments in Postcapitalism, Review of *Sisyphean* (D. Torishima). *Los Angeles Review of Books.*
- Wilson DH. 2019. Experimental (Auto). Review of *Room to Dream* (D. Lynch, K. McKenna). *Extrapolation* 60.1: 93-96.

#### **Forthcoming Scholarship**

\* Section includes works accepted and in press but not yet published

- Daniel D, Daniel A. *Expected 2020.* Debates on the Origins of Music in the Early Reception of Darwin. *History of European Ideas.*
- Ebersol JA, Cicimurri DJ, Jacquemin SJ, Stringer GL, Ciampaglio CN. *Editorial Review and Press 2020-2021*. Fossil Sharks and Bony Fishes of Alabama. Book, *University of Alabama Press.*
- Follo G. *Expected 2020.* Teaching Personal Protection and Safety to Middle School Students in Physical Education. *Journal of Physical Education, Recreation & Dance.*
- Gunnoe CD, Daniel D. *Expected 2020.* Anti-Paracelsianism from Conrad Gessner to Robert Boyle: A Confessional History. *Daphnis* 48: 1-38.
- Jacquemin SJ, Junker C, Cubberley M. *Expected 2020.* Does a Prolonged Faculty Strike in Higher Education Affect Student Achievement in First Year General Education Courses? *Journal of Collective Bargaining in the Academy.*
- Junker C. Expected 2020. Review of Disability Studies and the Environmental Humanities: Toward an Eco-crip Theory (S.J. Ray, J. Sibara). ISLE: Interdisciplinary Studies in Literature and Environment.
- Junker C. *Expected 2020.* Disability, Femininity, and the Environment in Wallace Stegner's Angle of Repose. *Studies in the Humanities.*
- Junker C, Comer T. *Expected 2020.* Introduction on Special Issue on Disability Studies and Ecocriticism. *Studies in the Humanities.*
- Wilson DH. *Expected 2020. Outré.* Novel. Raw Dog Screaming Press.
- Wilson DH. Expected 2020. Peckinpah: Un Romance Ultravioleta. Ediciones Vestigio.
- Wilson DH. Expected 2021. Jackanape and the Fingermen. Drama. Black Scat Books.
- Wilson DH. *Expected 2022. Constellations: Minority Report.* Film Criticism. Columbia University Press.
- Wilson DH. *Expected 2023. Usurper.* Novel. Raw Dog Screaming Press.
- Zhang W. *Expected 2020.* Mathematical Theorems and Applications in Undergraduate Studies. *Association of University Regional Campuses of Ohio (AURCO) Journal.*

#### **Conference Presentations and Proceedings**

- Albers AB, Stalings R, Post J, Campbaell N, Attariani H. 2019. Spherical Robot for Precision Agriculture. *Association for University Regional Campuses of Ohio (AURCO).* Kent State University, Geauga, Twinsburg, Ohio. *Recipient of Best Poster Award.*
- Attariani H. 2019. Melt Pool Prediction in Laser Additive Manufacturing. Invited Presentation University of Dayton, Dayton, Ohio.
- Bettinger M. 2019. Theory of Distance Education Research. Invited Presentation - *Research Initiative Program Fall 2019 Seminar Series.* Wright State University – Lake Campus, Celina, Ohio.
- Cavanaugh J. 2019. Lower Cost Textbook and Homework Alternatives. Invited Presentation - *Research Initiative Program Fall 2019 Seminar Series.* Wright State University – Lake Campus, Celina, Ohio.
- Cavanaugh J, Huelskamp D. 2019. What is AURCO? *Lake Campus Annual Research Symposium*, Wright State University Lake Campus, Celina, Ohio.
- Cavanaugh J, Huelskamp D. 2019. Who Owns My Course? And How to Protect Your Coursework? *Association for University Regional Campuses of Ohio (AURCO).* Kent State University, Geauga, Twinsburg, Ohio.
- Cavanaugh J. 2019. The Science of Brewing. *Association for University Regional Campuses of Ohio (AURCO).* Kent State University, Geauga, Twinsburg, Ohio.
- Ciampaglio CN, Fuelling L, Clayton AA. 2019. Improved Imaging of Macro- and Micro- Microfossils via Focus-Stacked Photography. *Lake Campus Annual Research Symposium*, Wright State University Lake Campus, Celina, Ohio.
- Ciampaglio CN, Fuelling L, Petterman DJ, Clayton AA. 2019. Examination of Conodont Elements Via Focus-Stacked Photography. *Geological Society of America Abstracts with Programs.* Vol. 51, No. 5. Geological Society of America Meeting, Phoenix, Arizona.
- Ciampaglio CN, Clayton AA, Fuelling LJ, Cobb, C. 2019. Preliminary Optimization of the Aqueous Formic Acid Solution Formulation and Dissolution Procedures Used in the Removal of Fossil Vertebrate Material for Carbonate Rocks. *Lake Campus Annual Research Symposium*, Wright State University Lake Campus, Celina, Ohio.
- Crites B. 2019. STEM is a Culture Not a Class. *Ohio Middle-Level Association Regional Workshop,* Columbus, Ohio.

- Crites B. 2019. Picture Perfect STEM. *Mercer County Professional Learning Conference,* Rockford, Ohio.
- Daniel D. 2019. The Whacky Reception of Paracelsus: Misunderstandings and Misappropriations Among Proponents and Anti-Paracelsians. *Sixteenth Century Society and Conference*, St. Louis, Missouri.
- Daniel D. 2019. From Paracelsus's Astronomy to Pseudo-Weigel's Astrology: The Anonymous Astrologia Theologizata (1617). Paracelsus and his Followers Under Investigation: an Early Modern European Work Shop of Alchemical, Cosmological, and Philosophical Forgeries, Fondation les Treilles, France.
- Daniel D. 2019. Spurious or Authentic: The Paracelsian *Liber de Imaginibus. Paracelsus and his Followers Under Investigation: an Early Modern European Work Shop of Alchemical, Cosmological, and Philosophical Forgeries,* Fondation les Treilles, France.
- Daniel D. 2019. The Pseudonymous *Astrologia Theologizata:* Synthesizing Paracelsus and Weigel in Seventeenth-Century Radical Spiritualism. *Lake Campus Annual Research Symposium,* Wright State University Lake Campus, Celina, Ohio.
- Faragher M. 2019. A Modernist Approach to Online Teaching. Invited Presentation *Research Initiative Program Fall 2019 Seminar Series.* Wright State University Lake Campus, Celina, Ohio.
- Faragher M. 2019. Observing Wartime Women: The Gender of Sociology in the Work of Celia Fremlin. *Modernist Studies Association Conference*, Toronto, Canada.
- Faragher M. 2019. The Psychographic Turn and Literacy Modernism. *Modernist Studies Association Conference*, Toronto, Canada.
- Faragher M. 2019. Nazi Zombies!: The Undead in Wartime and the Iconography of Mass Persuasion. *The Space Between Society Conference,* South Dakota University, Vermillion, South Dakota.
- Faragher M. 2019. Ministries and Moles: Literary Information Networks at the Ministry of Information. *Lake Campus Annual Research Symposium*, Wright State University Lake Campus, Celina, Ohio.
- Follo G. 2019. The Self in Autoethnography. *The Society for the Study of Social Problems,* New York, New York.
- Follo G. 2019. Women's Voice in Black Belt Magazine. *The Society for the Study of Social Problems,* New York, New York.

- Follo G. 2019. An Analysis of Physical Feminism, the Body and Black Belt Magazine. *Midwest Sociological Society,* Chicago, Illinois.
- Fulks, M. 2019. Weird is Cool in Middle School. *The Ohio Middle Level Association State Conference*, Columbus, Ohio.
- Hanlon R, Bloomfield BA, Jacquemin SJ, Westrick J, Ault A, Schmale DG. 2019. Characterizing Harmful Algal Blooms (HABs) Using Unmanned Systems in Three Freshwater Lakes in the US. *10<sup>th</sup> Annual US Symposium on Harmful Algae*, Orange Beach, Alabama.
- Huelskamp D, Follo G. 2019. The Classroom as a Contested Space: I Wanna Talk About it but Do I Have to Warn Them First. *Midwest Sociological Annual Conference*, Chicago, Illinois.
- Jacquemin SJ. 2019. Introduction to Scholarship and Research. Invited Presentation

   *Faculty Development Fall 2019 Seminar Series.* Wright State University Lake Campus, Celina, Ohio.
- Jaqueth AL. 2019. Alfalfa Forage Quality Improvement Progress. *Midwest Forage Association Symposium*, Wisconsin Dells, Wisconsin.
- Jaqueth AL. 2019. Equine Pasture Management: Balancing Horse and Environmental Health. Invited Presentation *Wright State Ecoseminar Series,* Dayton, Ohio.
- Jaqueth AL. 2019. Horse Weight Carrying Capacity. *Minnesota Horse Expo 2019,* Saint Paul, Minnesota.
- Jaqueth AL. 2019. Pasture Management for Animal and Environmental Health. Invited Presentation - *Research Initiative Program Fall 2019 Seminar Series.* Wright State University – Lake Campus, Celina, Ohio.
- Jaqueth AL. 2019. Real-Time Assessment of Alfalfa Nutritive Value. *Midwest Forage Association Symposium,* Wisconsin Dells, Wisconsin.
- Junker C, Comer T. 2019. Creating a Sustainable Future: The Intersection of Disability Studies and Ecocriticism. 21<sup>st</sup> Century Englishes Conference, Bowling Green, Ohio.
- Quian S, Arend K, Kowalski K, Kuzmick E, Sullivan M, Jacquemin SJ. 2019. A Modeling Framework for Estimating Wetland Phosphorous Retention Capacity. *National Estuarine Research Reserve System Annual Conference*, Charleston, South Carolina.
- Shell RC, Ciampaglio CN, and Palmer W. 2019. Marine Platystomid Fishes from the Early Permian of Kansas and Texas. *Geological Society of America Abstracts with Programs.* Vol. 51. No. 2. Geological Society of America Meeting, Phoenix, Arizona.

- Simons C. 2019. Integrating Food Science in Your Curriculum. *Ohio Association of Family and Consumer Sciences (OAFCS) Annual Conference,* Groveport, Ohio.
- Simons C. 2019. Teaching the Scientific Method. *Mercer County Professional Learning Conference*, Rockford, Ohio.
- Vandegrift G, Break K, Davis B, Deal S, Grube S, Luchnenko G, Oswalt A, Secaur N, Slater B. 2019. Creating a Bank So Students Won't "Break the Bank": An Open Source Bank of Exam and Quiz Questions. *Lake Campus Annual Research Symposium*, Wright State University – Lake Campus, Celina, Ohio.
- Wilson DH. 2019. Multiple Book Signings and Panels. *StokerCon: Horror Writers Association (HWA) Annual Convention.* Grand Rapids, Michigan.
- Zaman A. Yakopcic C, Wang S, Shin E, Wang WS, Taha T, Subramanyam G. 2019. Analysis of Lithium Niobate Memristor Devices for Neuromorphic Programmability. *IEEE National Aerospace & Electronics Conference (NAECON)*, Dayton, Ohio. *Recipient of Best Poster Award*.

#### **Active Research Agreements and New Scholarly Grants**

- Attariani H. 2019. A Hybrid Fuel Cell Battery Capacitor Power Source for UAVs. Amount: \$1,200,000. Funding Source: Ohio Federal Research Network (OFRN).
- Axe B, Danylchuk H, Ewing C, Kinney B, Schmersal D, Jacquemin SJ. 2019. On the Potential for Wetlands to Remove Harmful Microbes – Student Led Project. Amount: \$500. Funding Source: Wright State University – Lake Campus Research Initiative Grant.
- Ciampaglio CN. 2019. Sectioning of Large, Consolidated, Sediment Cores: Creating a Library of Paleoenvironmental and Sedimentological Data from Selected Localities throughout the USA. Amount: \$1,350. Funding Source: Wright State University – Lake Campus Research Initiative Grant.
- Cobb C, Ciampaglio CN. 2019. Consolidation of Sedimentary Cores and Isolations of Microfossil Content. Amount: \$500. Funding Source: Funding Source: Wright State University Lake Campus Research Initiative Grant.
- Ciampaglio CN, Wilms P. 2019. Chondrichthyan and Bony Fish Diversity, Stratigraphy, Sedimentology, and Paleoenvironmental Analysis of the Portersville Shale. Amount: \$500. Funding Source: *Applying Scientific Knowledge (ASK) Program* 
  - College of Science and Mathematics Wright State University.

- Crites B. 2019. Picture-Perfect STEM and Train the Trainer Model. Amount: \$3,000. Funding Source: Mercer County Civic Foundation.
- Crites B. 2019. Picture-Perfect STEM and Train the Trainer Model. Amount: \$4,000. Funding Source: Students First Grant.
- Crites B. 2019. Picture-Perfect STEM and Train the Trainer Model. Amount: \$1,000. Funding Source: Western Ohio Educational Foundation.
- Crites B. 2019. Planning and Implementing STEM Day with St. Marys Local Schools and Parkway Local Schools. Amount: \$1,235. Funding Source: Western Ohio Educational Foundation.
- Crites B. 2019. Science Day 2020 Awards. Amount: \$220. Funding Source: Western Ohio Educational Foundation.
- Crites B. 2019. STEAM Project with the Book *If I Built a Car.* Amount: \$100. Funding Source: SEMA.
- Crites B. 2019. STEM Camp. Amount: \$1,000. Funding Source: Mercer County Civic Foundation.
- Daniel D. 2019. Lake Campus Student 2019 Study Abroad Tour of Scandinavia. Amount: \$1,500. Funding Source: Western Ohio Educational Foundation.
- Follo G. 2019. Data Management of Autoethnography Information. Amount: \$1,807.20. Funding Source: Wright State University Lake Campus Research Initiative Grant.
- Fulks M. 2019. Education Outreach. Amount: \$1,500. Funding Source: Western Ohio Educational Foundation.
- Fulks M. 2019. Student Research. Amount: \$500. Funding Source: Wright State University Lake Campus Research Initiative Grant.
- Jacquemin SJ. 2019. Lake Campus Research Symposium Promotion and Expansion. Amount: \$1,000. Funding Source: Western Ohio Educational Foundation.
- Jacquemin SJ. 2019-2021. NSF-RAPID-Collaborative Research: Targeted Sampling of an Unanticipated Harmful Algal Bloom in Lake Anna, Virginia with Aerial and Aquatic Robots. Amount: \$27,608. Funding Source: National Science Foundation.
- Jacquemin SJ, 2019-2023. Nutrient and Sediment Retention Potential of a Saturated Buffer in Grand Lake St Marys Watershed. Amount: \$61,468. Funding Source: Blanchard River Demonstration Farms Network Ohio Farm Bureau.
- Jacquemin SJ, McGlinch G, Dirksen T. 2017-2019. Maumee River Sediment and Nutrient Reduction Project. Nutrient and Sediment Retention Potential by

Controlled Pond and Riparian Tile Buffer Systems. Amount: \$96,783. Funding Source: Ohio EPA, Great Lakes Restoration Initiative (GLRI).

- Jaqueth AL, Jacquemin SJ. 2019. A Novel Approach to Habitat Restoration and Water Quality Improvements. Amount: \$1,600. Funding Source: Wright State University Lake Campus Research Initiative Grant.
- Jaqueth AL. 2019. Plant Populations and Stem Counts to Predict Yield of Modern Alfalfa Varieties. Amount: \$28,218. Funding Source: National Alfalfa & Forage Alliance.
- Jaqueth AL. 2019. CFANS Postdoc Board Travel Award. Award: \$800. Funding Source: College of Food, Agriculture and Natural Resources, University of Minnesota.
- Richter T. 2019. Ongoing Research and Development of VR/AR Instructional Curriculum. Amount: \$4,807.32. Funding Source: Donation (Vohdehaar Family and The Coca-Cola Program for Education).
- Wang W. 2019. Engineering Study Abroad Program. Amount: \$1,500. Funding Source: Western Ohio Educational Foundation.
- Wang W. 2019. Water Quality Monitoring Buoy for GLSM. Amount: \$1,500. Funding Source: Western Ohio Educational Foundation.



# Lake Campus Research Symposium - 2020



Note: 2020 Symposium moved online as part of efforts to mitigate spread of COVID-19. Please visit the Lake Campus Research Webpage at https://lake.wright.edu/research to attend virtually.

#### **Research Symposium Overview**

The Lake Campus Research Committee is pleased to present the fifth annual Lake Campus Research Symposium. The Research Symposium provides an opportunity for the campus to showcase the scholarly achievements of faculty and students and represents one of the pillars of the Lake Campus Research Initiative. Presentations in the symposium demonstrate faculty and student commitment to pedagogy and their respective disciplines as they advance classrooms, study areas, and community. Congratulations to Lake faculty and students for their success and much encouragement for the future.

#### **2020 Symposium Presentation Abstracts**

• Adams E, Cubberley M, Junker C. 2020. Grand Lake St Marys Archive.

This poster will present an overview of our proposed project related to the Grand Lake St Marys archive, as well as the initial local history findings. The objective of our broader project is to create a publicly accessible archive (including newspapers, magazines, historical documents, photographs, maps, oral histories, diaries and letters, and ephemera) related specifically to Grand Lake St Marys and other regional history. To accompany this archive, we want to be able to create and maintain online thematically based exhibits (using tools like Omeka, for example) that would make visible the important environmental, cultural, and regional history of the Mercer and Auglaize county area. We intend for this project to have both civic and scholarly purposes. The civic value is in giving the public access to the primary and secondary documents relate to the region's history, as well as organizing and curating compelling narratives based on the that history. Academically, digital versions of these documents allows for research in the area of environmental history and environmental humanities using the tools of the digital humanities.

• Ciampaglio CN, Fuelling LJ, Cobb C. 2020. Sectioning of Large, Consolidated Sediment Cores: Creating a Library of Paleoenvironmental and Sedimentological Data from Selected Localities Throughout the USA.

Our lab currently houses an inventory of eighty complete sediment cores, which have been collected from Alabama, California, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Missouri, Nebraska, North Carolina, Ohio, Pennsylvania, South Carolina, South Dakota, Texas, and West Virginia. Taken together, the cores span most of the continental USA, as well as geological time periods from the Devonian through the Pleistocene, and a variety of marine, near-shore, and freshwater paleoenvironments. Several of the sample cores were sectioned,

impregnated with epoxies, and further processed in order to obtain data vital to our studies on bone-bed formation and depositional environmental factors that control mass vertebrate assemblages. Taken together, the processed cores and the thin sections that are obtained provide "depositional records" that provide valuable information for a large variety of sedimentological and paleontological studies. While processing of the cores and preparation of thin sections will be an on-going endeavor, we are now able to "boast" that the Lake Campus contains one of the largest, most varied processed core repositories of its kind outside of the USGS.

# • Clark T. 2020. Impact of Technology Presence on Late Adolescent/Emergent Adult Social Development.

The purpose of the proposed study is to examine the positive or negative impacts technology may or may not be having on late adolescent and emerging adults' social development. Technology has become more easily accessible to us, but only to those who can afford it. In order to study this, participants from different socioeconomic backgrounds as well as different ages will be found to provide the best possible representations for each group. The study will consist of participants ranging in age from 16 years old to roughly 22 years old. This study will be done primarily through observation of daily technology use and social developments that may or may not occur from using the technology. The expected results are that having a lot of technology present will negatively impact social development. The current study could be the foundation for future research to see if having technology available to everyone regardless of SES could enhance social development.

• Cobb C, Kinney B, Muether G, Cubberley M. 2020. Progress Towards a Chemistry Outreach Program.

This poster outlines progress towards the development of a sustainable outreach program to promote chemistry in the surrounding communities of Wright State University – Lake Campus. Initial efforts will focus on curating chemistry demonstrations and hands-on activities focused around slimes for elementary/middle school children. The phosphorescent, magnetic, thermosensitive, floam, non-Newtonian, and volcano slimes will be prepared and evaluated (for safety and reusability) in a laboratory setting. The outreach program will then be presented to the Lake Campus Natural Sciences Student Association and, finally, to a small group of elementary school-aged children at the Mercer County District Library. Progress towards this work and future directions is also presented.

# • Cobb C, Danylchuk H, Clayton A. 2020. A Preliminary Analysis of Municipal Water Quality in the Midwest.

Underground industrial infrastructure such as pipelines, rigs installed for drilling oil and natural gas, and hydraulic fracturing systems have been under close investigation for at least the past three decades. Though there is an extensive body of research on the impacts these systems have on public health in West Virginia, Pennsylvania, and New York, the links between these issues are still ongoing and controversial. In the Midwest, many residents from regions of Michigan and Ohio have experienced problematic results that directly stem from the installation of underground industrial infrastructure. This study will serve as a preliminary analysis of municipal waters affected by these installations in the Midwest with a focus on western Ohio. Samples will be collected from multiple residences and surface water locations in Guernsey County, Ohio. The collected water will

be tested for an array of chemicals and bacteria that derive from pipeline and injection well leaching. The sampling and testing will continue to be monitored over 12 months to determine any possible seasonal differences in the water quality of these areas in Guernsey County.

# • Daniel D. 2020. Paracelsus and the Biblical Foundations of Magic: Natural, Celestial, and Demonic Astronomy.

Paracelsus's understanding of magic--which he discussed in terms of the types of natural, "celestial" (or Christian), and demonic astronomy—is based largely on his idiosyncratic Biblical exegesis. An important and iconoclastic voice within early modern natural philosophy and medicine as well as Reformation spiritualism, the Swiss-German broke with medieval theories of magic via his synthesis of theology and magic. Although incorporating the mostly extra-Biblical concepts of the tria prima (salt, sulphur, and mercury), elemental matrices, and microcosm-macrocosm analogy, Paracelsus's spagyrical world (or magico-alchemical cosmos) also featured a concept developed in his extensive theological writings, namely, that the universe consists of two overlapping cosmologies, the natural and the divine, the former a mortal creation by God the Father, and the latter an eternal creation by God the Son. In this context Paracelsus countered the types of natural magic—e.g., nectromantia, astrologica, and signatum—with its more potent "celestial" analogues.

#### • Doseck T. 2020. Happiness and Health.

We diet, practice yoga, work out and get adequate hours of sleep, but there might be something we are missing. Happiness is a factor of our well being that many people may be overlooking. One hundred adult men and women will be given surveys through Survey Monkey asking about their levels of happiness and about their health. We expect to find those who are happier at home, at their jobs, and in other social settings also have less illness, less trips to the doctors, and overall a higher quality of life. Those who are not happy with their spouse or family, with their career or with other social settings are more likely to have more trips to the doctor's office and more illnesses throughout the year.

• Ewards K, Schoenherr C, Borges L. 2020. In Newborns, What is the Effect of Drug Use by the Expecting Mother in Comparison to No Drug Use by the Expecting Mother on the Baby's First Year of Life?

Drug use during pregnancy has many impacts on the baby's and mother's health. Prenatal drug use affects a child's development during his or her life. When exposed to in utero drug use the baby tends to have a lower birth weight, preterm birth, and intrauterine growth restrictions compared to a baby not exposed to drugs. The number of infants being born with withdrawal to drugs is increasing. This is an important problem because the number of fetuses exposed in utero to drugs is increasing. Research shows that exposure does pose a risk to the fetus and birth outcomes. Finding and implementing interventions to support expecting mothers struggling with drug use is a challenge for medical professionals.

• Ewing C, Strang B, Axe B, Birt J, Kinney B, Senger Z, Jacquemin SJ. 2020. Potential for Wetlands to Remediate Harmful Pathogenic Fecal Coliform Bacteria from Streams.

Wetlands are increasingly becoming a cornerstone of stream remediation in the highly eutrophic regions of the Midwestern United States. Wetlands have numerous advantages over other technologies as they incorporate natural biological process resultant from plants and bacteria while also providing an increase in wildlife habitat and greenspaces rather than relying on costly and technologically complex processes to treat waterways. The capacity for wetlands to remediate nutrients and improve water clarity is fairly well established. However, less is known about their potential to affect changes in the pathogenic microbial communities (such as E. coli) commonly associated with runoff in agricultural areas with high populations of livestock and manure runoff. The objective of our research study was to assess remediation potential by quantifying stream bacterial concentration of fecal coliforms before and after flowing through a wetland in Grand Lake St Marys watershed. Results indicated that stream water far exceeded established Ohio Dept of Health exposure guidelines of ~235CFU per 100ml sample, ranging up to over 4,000 CFU but that the wetlands reduced concentrations of Ecoli from between 50 and 85% on average, with the highest reductions in the spring. These results provide additional positive information regarding the potential for wetland remediation Ohio waterways.

 Faragher M. 2020. Fire or Blood? Aestheticizing Resistance in Naomi Mitchison's Narratives of Slavery.

In 1935, Naomi Mitchison wrote to The New Statesman about her time in Arkansas visiting sharecroppers with Zita Baker, describing the impoverished region as an "untidy countryside...worse than any rural housing I have ever seen in Europe." Four years later, Naomi Mitchison published The Blood of the Martyrs (1939), a novel centering around Roman practices of slavery and the persecution of early Christians. A testament to radical notions of forgiveness and pacificism, the novel offers a distinct contrast to her earlier interwar novels. Unlike her other Greek slavery allegory of the 1930s, The Delicate Fire (1933), or even her contemporary political novel of the period, We Have Been Warned (1935), Mitchison's The Blood of the Martyrs locates resistance to slavery outside the visions of violent revolution often cited in her earlier interwar fiction. This talk will argue that Mitchison's travels, particularly her work supporting the Southern Tenant Farmers' Union, reprise the author's vision of authoritarian opposition. Whereas violent overthrow of the masters in Delicate Fire (and violent fascist uprising in We Have Been Warned) catalyzed the realization of democratic ideals in her earlier novels, The Blood of the Martyrs sidelines violent resistance in favor of a community of slaves that fosters love, pacifism and forgiveness as a response to the abhorrent violence of slavery and persecution. Though all the major characters in The Blood of the Martyrs find their fate at the jaws of hungry lions in the Circus Maximus — allegorizing the intractability of racist persecution — Mitchison's emphasis on the spirit of collective resistance, including its ability to transcend death, suggests a new approach to the politics of resistance in her fiction.

• Fogt N, Rindler N, Saintignon N, Schwieterman J, Wilker C. 2020. Simulated Car Design for Educational Learning.

Students have trouble applying information learned in the classroom to real-world situations, so it is important to design a model of a system that incorporates these difficult concepts. This project will encompass the research

and design of a simplified model of a system found in an automobile that demonstrates fluid-thermal concepts. This project will also include how data is to be obtained from this system using sensors connected to LabView software. Students will be able to operate the system and retrieve data in real-time. This will allow students to apply concepts learned from classwork to real world engineering systems by using the data retrieved from this model. It will also serve as an aid to demonstrate concepts that may not easily be understood without a visual demonstration. This project will be beneficial to students attending engineering classes in that it will increase their understanding of knowledge learned in class and aid them in applying this knowledge to real world situations.

• Follo G. 2020. The Fight for Wright: The Lived Experiences of Faculty in a Strike Environment.

The purpose of this study is to examine the lived experience of faculty that have participated in a union strike using a phenomenological approach. The AAUP – WSU faculty experienced one of the longest strikes within higher education in the United States in recent years. This research examines the varied lived experiences of the faculty as negotiations lasted over a year and half and climaxed in Spring 2019 with a strike lasting three weeks. As higher education is continually being challenged, faculty across the nation looked to WSU to evaluate the strike experience on both sides of the picket line. However, this research examines how the "event" of the strike was experienced by the faculty. Upon Institutional Review Board approval, I used purposive, snowball sampling to approach faculty at the Dayton and Lake Campuses. I interviewed 17 Dayton and 10 Lake Campus faculty. The semi-structured interview schedule addressed experiences before, during and after the strike. This poster will begin to present preliminary findings in terms of life on the picket line, why faculty went on strike and life on campus and in their departments before and after the strike.

#### • Fulks M. 2020. Middle School Research: Strategies for Adolescent Education.

All of us remember middle school, and very few of us would like to go back. That's the case for middle school teachers, too. They've got some of the hardest jobs in education: working with students who want responsibility but aren't always equipped to handle it. Turnover at this level is higher than it is at both the elementary and high school levels, but the teachers who stick around tend to do so because they're dedicated, determined, and maybe just a little bit crazy. Our presentation at the 2019 Ohio Middle Level Association Conference, Weird is Cool in Middle School, included 10+ strategies for dealing with adolescents in the classroom. Among the developmentally appropriate topics shared were: the science of the teenage brain, body betrayal, teen bone growth, active learning strategies, and the power of teachers in the lives of these vulnerable kids. Whether you are a parent interacting with one adolescent or a teacher interacting with many, you know the truth: adolescents can be hard to parent and even harder to teach. Our presentation reminded our participants of many of the best practices related to the weird and wonderful world of the adolescent learner!

• Gilbert W, Topp C, Weiss D, Starr K, Ewing C, Slater B, Michael H, Woods E, Brackman H, Rammel T, Stump M, Ricker J. 2020. The Effects of Peppermint Olfactory Cues on Delayed Memory Recall.

One's memory of details, knowledge, people, places, and things is essential to live a productive life. Finding products that enhance memory could contribute to this aspect. Several studies have indicated that the scent of peppermint influences a person's ability to concentrate. The current study attempts to examine the effects of the scent of peppermint on memory. For this study, participants from Wright State University—Lake Campus will participate in a delayed word recall memory task. Participants in this experiment will be exposed to either a peppermint scent through a mist diffuser or to a mist lacking a scented oil. The projected hypothesis is that the presence of peppermint will enhance the student's delayed memory recall. This study could help fill in the gaps of knowledge surrounding research on memory.

• Greene L. 2020. Effects of Outside Opinions on Individual's Perception of Mental Illness.

The purpose of this proposed study is to evaluate the effect of outsiders' opinions on individual perceptions of personal mental illness. How treatment is addressed is affected by the individual's perception of the diagnosis, which can be affected by outside opinions. Thirty clients of a mental health clinic will be interviewed before their first and second therapy sessions; before the second session, each participant will be exposed to either a positive, neutral, or negative opinion regarding mental illness. The change in their interview answers will determine how influential they perceived the opinions to be. The survey will identify the participants' feelings of acceptance, resentment, and denial in terms of their mental illness, thereby measuring their general perception of their mental illness. The results are expected to show that exposure to positive opinions lead to acceptance of the condition, while negative opinions lead to resentment or denial of the condition.

• Greene L, Hochstein D. 2020. What's the Value in Diversity?

Diversity has recently become a popular buzzword within many facets of society, with an emphasis on the positive effects diversity will bring to society. However, there is a need to determine what these positive benefits are, as well as objectively validating their very existence. This proposed review will examine research from a wide variety of fields to determine if experimental evidence supporting the value of diversity exists, as well as to suggest how value is defined within those fields.

• Hess C, Bruns A, Buschur I. 2020. In Patients that Suffer From Depression, What is the Effect of Using Herbal Medications in Comparison with Traditional Medications, on Decreasing Depression?

Depression is a serious mental illness that affects the mood of the patient. Depression causes the patient to have a constant feeling of sadness and loss of interest in daily life activities. People with depression can feel hopeless and worthless causing them to have recurrent thoughts of suicide or suicide attempts. Depression is one of the most common illnesses today and can affect any person at any age. It is believed to be caused by an imbalance of neurotransmitters and hormones released by the brain. Therefore, there are many medications that can be used for depression that alter these neurotransmitters and hormones. However, these medications can cause

unwanted side effects such as insomnia, upset stomach, diminished sexual performance and interactions with other medications. This can lead patients to abruptly stop the use of these medications, as a result, another treatment should be available for people who do not want to take the traditional medicines. An alternative to traditional medicines for depression include herbal medicine. These herbal medicines can include St. John's Wort, Saffron, Ginseng, Lavender and many more. These herbal medicines can be shown to have positive outcomes on a patient's depression with minimal side effects. Therefore, this paper will be describing the alternative herbal medicines that can be used for depression and their effectiveness in improving depression.

# • Homan C, Buening E. 2020. In Autistic Young Adults, What is the Effect of Music

Therapy on High Anxiety and Low Self-Esteem Levels Compared to No Music Therapy? High levels of stress and low self-esteem are common in autistic individuals, especially with young adults. Various techniques have been done to help these levels even including musical interventions. Not many people know the effects music therapy has on a patient with autism. However, music can decrease the effects of anxiety and heighten self-esteem. Music therapy gives autistic patients the ability to learn how to control outbursts through music. Music therapy can allow a patient with severe autism the ability to share their emotions, and allow them to gain self-worth.

• Huelskamp D, Cavanaugh J. 2020. Students Perceptions of the Effectiveness of Online Learning Platforms Versus Traditional Learning.

Universities are continuing to offer more online and blended course formats for students to take. The traditional lecture with textbook assignments is being supplemented with online varieties of assignments, allowing for more flexibility and a cheaper cost. Wright State University Lake Campus has recently utilized an Inclusive Access system for textbooks for Lake Campus students; with this access, many professors also incorporate their homework assignments online with the access, potentially saving students money. Do students prefer one type of online homework platform over the other types offered? Do students prefer online over inclass assignments? This is a preliminary study of student preferences in online learning modalities offered at Lake Campus, and their thoughts on the benefits and drawbacks of these learning platforms.

• Jackson A, Jettinghoff L, Carter M. 2020. In Those Who Smoke, How Does Vaping Compared with Cigarette Smoking, Influence Respiratory Complications Over 6 Months?

The respiratory system is a vital system in the body. There are a lot of ways to harm the respiratory system and create irreversible complications. Smoking cigarettes has been around for many years and most people are aware of some of the respiratory complications that it can cause. Those who are adult smokers are at risk for developing asthma, COPD, TB, and much more. A new form of smoking is vaping, and many are unaware of the impact it can have on the respiratory system. The research completed on vaping is showing damage to the lining and alveoli in the lungs. The long term effect of vaping is unknown due to the newness of this trend. Discovering the impact both of these smoking methods have on the lungs is very important as well as determining which one is most harmful.

• Jacquemin SJ, Birt J, Strang B, Ewing C, Axe B, Dirksen T. 2020. Nutrient Removal Potential of Constructed Wetlands in Grand Lake St Marys Watershed.

Constructed wetlands are becoming an increasingly important management tool to reduce nutrient rich agricultural runoff in the Great Lakes region. The objective of this study was to assess the removal efficiency of two constructed wetlands operating on tributaries of Grand Lake St. Marys (Prairie Creek and Coldwater Creek) located in northwest Ohio. Water samples were collected weekly during 2019 year from inflow and outflow points where they were analyzed for nutrient (nitrate-N, total phosphorus, dissolved reactive phosphorus) concentrations following standard EPA colorimetric methods. Overall, while both wetlands experienced high mean nutrient inputs (concentrations in mg/L) across both fall and summer seasons ranging from 0.5 to 13+ NO3-N, 0.1 to 1.5+ TP, and 0.05 to 0.75+ DRP, respectively, high removal efficiencies (often in excess of 75%) produced significantly reduced outflow concentrations (paired t tests; p<0.05) largely consistent with EPA recommended TMDL target values for sub watersheds of these size (~20mi2: 1.0 mg/L NO3, 0.10 mg/L TP). Extending these concentration reductions to effect size and loading, wetland flow through rates, and daily stream discharge data from USGS gauging stations revealed that PC and CC Treatment Train Wetlands were found to have collectively removed approximately 10,000 lbs of nitrogen, 150,000 lbs of sediment, and 750 lbs of phosphorus throughout the year. This ongoing study continues to demonstrate the importance of constructed wetlands towards freshwater conservation strategies.

• Jaqueth A, Jacquemin SJ. 2020. Potential of Pasture Grasses to Reduce Soil Runoff in Simulated Spring Seeding Applications.

Declines in surface water quality has emerged as one of the foremost environmental, social, and political issues in the Midwestern United States over the past several decades. One of the leading causes of water quality issues in this region has been linked to non-point source surface runoff of soil, nutrients, and chemicals from primarily agricultural landscapes. Surface runoff negatively affects water by facilitating eutrophic conditions and additionally, negatively impacts landscapes by reducing the organic and top soil layers leading to production declines. Thus, best management practices that focus on reducing runoff rates in agricultural acreage are a high priority. The objective of this research project was to evaluate the use of forage grasses for reducing runoff. We simulated pasture establishment using a series of replicated indoor grow trays which included bare soil (control) as well as cool and warm-season pasture mixes. Upon exposure of experimental trays to a standard 2-inch spring rain, it was found that the bare soil exhibited the highest runoff potential with the two warm and cool-season treatments exhibiting increasingly less runoff. The implications of this research are important as this work provides insight into agricultural pasture establishment methodology that benefits environmental stewardship.

# • Johnson H, Borger V, Mock M. 2020. Effect of Temperature on the Growth of Mold on Provolone Cheese.

How much does temperature affect how fast cheese molds? A piece of mold from a strawberry was placed on six different slices of provolone cheese and the slices stored in a refrigerator (40oF), incubator (93.2oF) and on a counter at room temperature (72oF). Mold growth was monitored weekly by measuring the diameter of mold spread in each treatment. After three weeks, the cheese held in the incubator had the highest rate of mold growth, while the cheese held at room and refrigeration temperature showed similar growth profile. However, by the fourth week, the mold exposed to room temperature grow exponentially above other treatments. Results indicate

that unrefrigerated cheese may be able to resist mold growth in the first two weeks of storage. After that there is rapid degradation.

• Kiel K, Hager M, Sailer J. 2020. In Females of Reproductive Age, Does Obesity Relative to Polycystic Ovarian Syndrome (PCOS) Increase the Risk of Adverse Effects During Pregnancy, Delivery, and Neonatal Outcome?

PCOS is one of the most prominent female reproductive disorders and with that comes fears for women about their health and ability to safely bear children. Women diagnosed with a reproductive disorder commonly fear they won't be able to reproduce. This is not the case for the majority of obese women, PCOS does increase the risk of developing gestational diabetes, hypertension, and preterm labor. All of these complications can negatively affect the outcome of her pregnancy, therefore the mom needs to be closely monitored and healthcare workers intervene when appropriate. Pregnancy for an obese woman with PCOS can be challenging for a woman but with today's research, medical advancements, and proper treatment mom and baby can have healthy lives.

• Lautzenheiser C. 2020. When, Why, and Maybe?

Retirement is a personal decision based on when and why a person is retiring. The average length of life has begun to rise due to medical advances, more education, financial stability, and an overall better way of living. Due to these factors, may the average age of retirement be increasing as well? A survey given to local assisted living centers and work centers may help answer this question. Recently, it has been noted that more elderly are heading back to work after their retirement. Using our survey, we hope to find out if the same factors determining retirement are deciding whether a person goes back to work. The surveys will be taken on a voluntary basis, with the answers being compared together based on the life stage the participant is currently in. These comparisons will lay the foundation of future research into these questions.

• Marlow B. 2020. Attitudes Towards Social Media Regarding Age.

Social media has increasingly worked its way into the everyday lives of individuals from a vast array of ages and backgrounds. Notably, the perceived effects and attitudes towards social media can vary with age. Through this proposed study, attitudes and feelings towards social media from 80 individuals, across four age groups, will be compiled from the Mercer and Auglaize county area via survey. An explanation from every participant explaining how social media affects their lives will be provided. From the responses, a better understanding of how social media is perceived to affect society, as well as it's perceived effect on the participants will be documented. It is predicted that older individuals will have a predominantly negative view of social media, and that younger individuals will have mixed feelings towards it. This study will provide insight on how individuals across numerous age ranges residing in the Mercer and Auglaize county area view social media.

• Marshall MM, Metzner GK, McCluney KE. 2020. Using  $\delta^{18}$ 0 to Track PO<sub>4</sub> Entering the Western Basin of Lake Erie.

Algal blooms in the Western Basin of Lake Erie are dependent upon nutrients provided by major rivers within Northwest Ohio. To develop more accurate methods of defining which of these waterways is the largest contributor, a proof of concept study is being conducted using  $\delta$ 180 of phosphate molecules. In the summer of

2016, under relatively low stream flow conditions, 10-20L samples of water were collected at the several major branches within the Portage River, at the mouths of the Portage, Maumee, and Sandusky Rivers, and at two locations within the Western Basin. In the spring of 2017, these collections were repeated during high flow or flood conditions. Silver phosphate was then precipitated from these water samples for  $\delta$ 180 analysis. For comparison of our water collections with possible PO4 sources,  $\delta$ 180 of various fertilizers, wastewater effluents, and manures were also analyzed. Water samples that were collected during low flow conditions supported our expectation of lower  $\delta$ 180, a reflection of higher biological processing and values near that of equilibrium calculations. Water collections at high flows exhibit a reciprocal pattern with much higher  $\delta$ 180. This was again expected as lower retention time within streams restricts biological processing and allows the  $\delta$ 180 of potential sources to be more evident. These  $\delta$ 180 values, collectively, will provide insight into the validity of this novel method of tracking inorganic phosphorus.

• Maurer H, Young B, Bohman S. 2020. In Newborns, How Does Breastfeeding Compared with Formula-Feeding Influence Infections/Hospitalizations and Morbidity Rates Over the First Year of a Child's Life?

Breastfeeding and formula feeding are two ways to feed an infant after it is born. The importance of this is significant because of infections that children are suspectable to at such a young age. Children who breastfeed exclusively are shown to have lower infection/hospitalization rates than children who are formula-fed. Breastmilk has several qualities that help prevent infections in infants that formula does not. Formula is a good source of nutrients but it does not have the ability to stop infections from occurring. Infections can be very serious for infants especially if they are born preterm so having a way to help prevent these infections is very important. These infections can be very serious and can even lead to death. Preventing infants from death is one reason why this study should be researched further and presented to others to see.

• Niekamp A, Lehman A, Siefring B, Evers J, Spicer R, Petitjean S. 2020. Continuous Water Quality Monitoring Platform for Grand Lake St Marys.

For the past decade, Grand Lake St. Marys (GLSM) has struggled to provide a stable and clean water source for the community affecting people and businesses alike. A safe level of microcystin – a toxin in the harmful algal blooms– is 20 ppb in recreational water, and GLSM has seen an excess of 82 ppb. As of now, there is no solution to continuously monitor the water quality; therefore, corrective actions are only based off intermittent samples taken by hand. A solution to this issue would be a water quality platform (WQP) that monitors parameters such as water and air temperature, conductivity, pH, rainfall, and wind speed along with water depth in fifteen-minute intervals. To monitor the required parameters: 1) a remote WQP will be constructed, 2) the sensors on this platform will relay data wirelessly to a data logging computer, and 3) a database will be updated with the latest condition of the lake. The WQP will provide researchers means to learn in real time what contributes to the water quality, while community members are provided with the ability to monitor the conditions, safety, and usability of the water. Scientific evidence on the quality of the water allows sound decisions to be made regarding the management of the lake through determining the cruxes leading to the poor water quality. • Peterman DJ, Kinney B, Ciampaglio C. 2020. Why are Ammonite Sutures so Complex? An Investigation of Liquid Retention in the Septal Margins of Ammonoid Shells.

Ectocochleate cephalopods have external shells that function as a buoyancy apparatus. During growth, these cephalopods build successive divider walls (septa) within their shells that are later emptied to regulate buoyancy. Ammonoid cephalopods in particular had complicated, marginally frilled septa that have been subjected to many hypotheses regarding possible biological functions. Among these hypotheses is the retention of chamber liquid via surface tension. The relative amount of liquid retained by the septa was investigated with 3D printed models of theoretical ectocochleate shells, each filled with a single septum. A species of nautiloid, and two species of goniatites, ceratites, and ammonites were chosen to represent seven septa falling on a continuum of increasing complexity. These theoretical septa were 3D printed at 6 cm and 9 cm to assess the influence of scaling on liquid retention. For both scales, more complicated septa retain more liquid via surface tension. However, the fractallike margins of ammonitic septa retain much more liquid than their simple counterparts due to the recesses created by higher-order septal frilling. At larger scales, these same shapes retain less liquid per camera, suggesting this behavior is scale dependent. While experiments with the theoretical models offer an understanding of the relative differences in liquid retention, the chosen sutures all belong to different morphologies with different terminal sizes. Capillary retention over natural scales was investigated by isolating a single camera from a CT scanned specimen of the desmoceratid, Damesites. These experiments suggest that capillary retention heavily depends upon scale. At smaller sizes, the lower order corrugations of the septum hold single "droplets" of water around the margins. As scale increases, the higher order frills begin to retain liquid, suggesting that ammonitic septa are functional for this purpose at multiple scales. Beyond the terminal size of Damesites cameral liquid retention significantly decreases. These scaling properties also support a functional mechanism for the relationship between sutural complexity and terminal size in ammonoids in addition to constructional constraints. The cameral liquid held by surface tension could have served as liquid ballasts used to reduce positive buoyancy. Furthermore, these liquid reserves could have facilitated greater ranges of slow, passive buoyancy adjustments for vertical migration in the water column. Finally, binding the liquid in the chambers could have reduced disruptive "sloshing" during locomotion.

• Reman K, Smith B. 2020. In Hospitalized Pediatric Patients, What is the Effect of Providing Pet Therapy in Comparison to Not Providing Pet Therapy on Pediatric Patients' Physical and Psychological Health?

Pet therapy or animal-assisted therapy (AAT) is categorized as a cost-effective alternative treatment method for hospitalized pediatric patients. Recent reports of AAT have been shown to decrease anxiety and depression, boost communication skills, and soothe the fears of the family and patient. This integrated approach has positively impacted patients' psychological health, along with their physical health. The presence of an animal in the healthcare setting has proven to lower blood pressure and heart rate, as well as decrease pain. Pet therapy has also demonstrated a positive influence in children with mental illnesses such as Autism Spectrum Disorder and mental retardation by increasing social interaction and advancing their language skills. Pet therapy allows the patient to receive a unique and holistic approach to care that is unlike any other form of treatment available. AAT encourages a holistic approach to patient care encompassing the whole patient and not just the directed treatment of the medical condition.

• Shell R, Peterman D, Jacquemin SJ, Ciampaglio C, Fuelling L. 2020. Snakes on a Plain: Paleontology, Archaeology, and History of the Rattlesnake and Garter Snake in Western Ohio.

During an investigation of caves in Taylorsville Metropark, near Dayton, Ohio, vertebral remains of rattlesnake (Crotalus sp.) and garter snake (Thamnophis sp.) were recovered from sites radiocarbon dated to a the historical period (~146 years before present) and to the Hopewell Archeological period (~1,433 years before present). The latter specimens recovered represent the some of the oldest sub-fossil evidence of the migration of these genera into the plains and forests of Ohio. A review of scientific and historical records for each genus indicates that Thamnophis appeared in the region prior to the end of the Pleistocene Epoch and persisted in abundance up to the present day. Crotalus, however, likely appeared sometime after the end-Pleistocene before the Holocene Epoch's Medieval Warm Period. Historical reports of this genus further suggest that the decline of Crotalus in Ohio likely began sometime before 1882 CE: a trend that persists to this day, as rattlesnakes are absent throughout western Ohio.

• Short E, Pinchot R. 2020. In Liver Transplant Patients, Does Alcohol Exposure Compared to No Alcohol Exposure Increase the Risk of Liver Transplant Failure?

There is a stringent process to determine who can receive liver transplants. Alcohol is an important part of this process, with US transplant centers requiring a period of abstinence prior to transplant, lack of access to livers for alcoholics due to beliefs about their ability to stay sober, and monitoring of people considered "high risk" for recidivism after the transplant. While there is clear data on post-transplant alcohol use in transplant recipients with alcoholic hepatitis, more recent data has shown comparable alcohol use rates in non-alcoholic hepatitis patients, which makes the impact of alcohol use on transplant failure rates regardless of primary diagnosis an important area to explore. Additionally, the factors that cause transplant recipients to use alcohol post-transplant have begun to be further explored expanding the group that is at "high risk". Identifying these individuals and providing them with professional help has been shown to decrease rates of relapse. Preventing relapse is vital because research has shown that even one drink increases the risk of liver rejection and death.

• Siefring A, Siefring D, Gaerke B, Homan C. 2020. Cost-Effective Method to Determine Effect of Ethylene Gas on Ripening of Bananas.

Ethylene, a gaseous plant hormone associated with fruit ripening processes, is produced by bananas as they ripen. Hence the presence of ripe bananas could trigger the ripening of green bananas if they are stored together. To test this hypothesis, green bananas, all at the same stage of maturation was collected and separated into two groups. One group was stored alone while the other group was stored with ripe bananas. The rate of ripening between the two groups was observed over 2 weeks and measured using a standard banana color chart. The study confirmed our hypothesis that green bananas ripen faster when stored with ripe bananas. Therefore, this experimental method is a cost-effective method to demonstrate the relationship between ethylene gas and fruit ripening. The alternative would require the use of artificial ethylene gas which would prove to be expensive.

• Simons C, Ciampaglio C. 2020. Cost-Effective Method to Compare Starch Hydrolysis Rates and In Vitro Expected Glycemic Index of Flours.

In vitro expected glycemic index (eGI) is a reliable tool to predict postprandial blood glucose concentrations. Making these predictions is important particularly for diabetes patients who must manage their health condition by consuming products with more slowly digestible carbohydrates. Current methods require lengthy preparation time and expensive equipment. In this study, a cheaper and faster in vitro method was developed. Legume samples were digested with continuous agitation for 3 hours with the help of alpha-amylase enzyme. Glucose production was monitored by measuring changes in refractive index using a refractometer. Relative hydrolysis rates of flours demonstrated effectiveness of the method to differentiate flours based on starch digestible. Furthermore, calculated eGI outcomes were comparable to peer-reviewed literature data.

• Simons C, Ciampaglio C, Fuelling L. 2020. Analysis of Bread Cross-Section Using Low Cost Imaging Technology.

Bread volume is one of the most important external characteristics of bread. Acceptable volume indicates a wellaerated crumb, good gas-retention, superior texture, proper formulation, dough handling and processing. Current imaging technology used to assess dough volume is cost inhibitive. Hence in this study, a simpler imaging method was used to determine dough cross-sectional area of bread in order to compare bread volumes among experimental treatments. Using the method, significant differences in bread volume was observed between bread loaves containing raw pinto bean flour at 0, 5, 10, and 15%.

• Simons C, Osorno J, Fuelling L. 2020. Predicting Anthocyanin Content in Canned Black Beans Based on Color.

The dark color of black beans is associated with the presence of anthocyanins. These are phytochemicals known to contribute to improved health due to their antioxidant, anti-inflammatory, anti-viral and anti-cancer benefits. Therefore, the color of canned black beans could potentially predict the total concentration of anthocyanins present. To test this hypothesis, 12 black bean varieties obtained from North Dakota State University Bean Breeding Program were cooked and evaluated for anthocyanin content and color characteristics (L\*, hue and chroma) of end-product. Pearson Correlation statistics was applied to determine if color values could be used as a reliable index to predict relative amounts of anthocyanin in cooked beans.

# • Vandegrift G, Heitkamp B, Partington A, Timmerman K. 2020. Reducing the Cost of Higher Education.

The inflation adjusted cost of higher education in the United States has doubled in the past 25 years. The current student loan debt is \$1.49 trillion, which is almost 7% of our \$21.4 trillion dollar gross domestic product.[1] A trend that has persisted for many decades is not likely to be reversed without a concerted effort, and the aforementioned monetary amounts are sufficiently large to warrant serious investments in search of alleviation. For example, the expected value of a proposed reform that reduces tuition costs by 1% for 1 year is almost certainly over \$10 million dollars, even if the proposal has only a 1% chance of succeeding. Extrapolate this to a 10% reduction with 10% probability of success over 10 years of accrued savings, and the expected value is \$10 billion (current) dollars.[2] Two proposals are discussed here: One involves the hosting of open source computer

programs that are typically offered on a commercial basis, and the other is that students have the opportunity to take an online standardized test as a "prelim" that allows them to complete a course with a reduction in both contact hours and required tuition and fees. These free online services can be maintained at very little cost and should be subsidized by the government in the same way access to state and national parks are available to all. The internet has made knowledge universally available. The next step is to make accreditation of a portion of that knowledge available to everybody at virtually zero cost.

• Voisard C, Stroud M, High Q. 2020. In Newborns, What is the Effect of Kangaroo Care (Skin to Skin Contact) Compared to No Skin to Skin Contact on Parental Bonding in Infants from Birth to One Month of Age?

Welcoming home a new baby is a challenging and sometimes stressful situation for even the most seasoned of parents. There are several decisions parents must make about the care their new baby will receive. One of those choices is kangaroo care. Although this intervention may not always be performed due to immediate medical concerns, immediate bathing, hospital policies, and cultural norms, it has been proven to have several benefits. Kangaroo care is defined as skin to skin contact in which the baby is placed on a parent's bare chest and is swaddled in warm blankets similar to how a mother kangaroo would carry her own baby. This intervention has been proven to stabilize temperature, aid in breastfeeding, and control respirations. Also, the research that was completed showed that kangaroo care had several other positive outcomes. These outcomes included increases in maternal and paternal attachment, as well as decreased stress levels in mom, dad, and the infant, allowing for bonding to occur.

• Wendel C, Clayton AA. 2020. What's In Your Backyard? An Observation Study of the Flora and Fauna in Three Differing Ecological Niches of Mercer County, Ohio.

Mercer County is home to multiple ecological niches. This research is structured to identify three of these niches and document the faunal and floral diversity as it relates to the individual site and variation between the three sites. Sites will be selected based on their unique characteristics and observations will be conducted using trail cameras over a nine-week period. Also, migratory patterns of animals moving through the area will be observed and documented. At the end of the nine weeks, organismal activity will be counted and documented. Additionally, a transect grid will be constructed, of the camera viewing area, and flora will also be identified for each research location. This observational study aims to correlate which niche attracts what organisms and to identify the potential flora that attracts them.

#### • Wilson A. 2020. What People Think When It Comes to Animals in Research.

The purpose of this proposed study is to examine the opinions of different age groups on animal rights and animals in research. This can be important to study because it can bring attention to animals being abused and it can possibly help find a substitute for animal testing. The sample for this study will be 50 participants who are between 15 and 21, 22 and 32, 33 and 45, 46 and 60, and 70 and older. Participants will be asked to complete a low risk survey, on paper and pencil, that focuses on animal rights and the way animals get treated in research labs. The expected outcome of these results would be that the 70 and older age group will be more likely to be okay with animals being included in research and not as for animal rights whereas the younger age groups would be more against animals used in research and more supportive of animal rights.

#### • Wilson DH. 2020. Outre.

In a future where cinema has usurped reality and there's nothing special about effects, an aging movie star takes on the role of a lifetime, growing the flesh of an otherworldly kaiju onto his body. Then: psychosis.... Combining the aesthetics of Herman Melville'sMoby-Dick, J.G. Ballard's The Atrocity Exhbition, and D. Harlan Wilson's own experiences as a model, stuntman, standup comic, and stiltwalker, Outré satirizes the contemporary mediascape while depicting a world in which schizophrenia has become a normative condition. Like his revolutionary biographies of Adolf Hitler, Sigmund Freud, and Frederick Douglass, the novel is written in Wilson's signature "Hörnblowér" prose and reaffirms the critical consensus that he is "a genre unto himself."

#### • Zhang W. 2020. Motivating and Engaging Students in Active Learning of Mathematics.

Mathematics presents many challenges to both students and educators. To overcome the mathematics barrier for undergraduates, as a mathematics educator, I am exploring a variety of new approaches to teach and learn mathematics. I will present some mathematical theorems and constants along with their applications in undergraduate studies. The aim is to create an active learning environment with hands on activities so that students not only understand mathematical concepts but also use their mathematical knowledge to solve real world problems.

