Scholarship . Creativity . Community . Collaboration

THE FIRST ANNUAL

UNIVERSITY OF AKRON INTERDISCIPLINARY SYMPOSIUM

INCLUSION AND DISTINCTION THROUGH SCHOLARSHIP

Tuesday, April 9th, 2019

Support for this Symposium

Funding for this symposium was made possible in part by a Sociological Research Grant from Alpha Kappa Delta International Sociology Honor Society. The views expressed in written symposium materials and by speakers and presenters do not necessarily reflect the official opinions of Alpha Kappa Delta; nor does mention of trade names, commercial practices, or organizations imply endorsement by Alpha Kappa Delta.

Additional support generously provided by:

EX[L] Center for Experiential Learning
Student Driven Initiatives
The Williams Honors College
Buchtel College of Arts and Sciences
College of Engineering
College of Health Professions
College of Business Administration
College of Applied Science and Technology

The First Annual

"INCLUSION AND DISTINCTION THROUGH SCHOLARSHIP"

University of Akron Interdisciplinary Symposium

The University of Akron
Student Union Grand Ballrooms
April 9th, 2019 | Akron, Ohio

UAIS

Scholarship . Creativity . Community . Collaboration

Mission Statement

This year's theme is Inclusion and Distinction through Scholarship. A central goal of the University of Akron is to provide diverse learning experiences that equip students with life-long skills. UAIS strives to contribute to this goal by bringing a wide range of scholarly pursuits together for the betterment of presenters as well as attendees. Additionally, the inclusion of community partners with faculty and students from diverse disciplines will allow for an enriching learning experience and the potential for collaboration to further academic excellence. This is an opportunity to display the importance of academic research and scholarship as a valuable tool for learning and community development.

Table of Contents

Tuesday, April 9th 2019

Starts at 8:00 AM — Check-In (Ongoing)

8:35 AM - 8:50 AM — Opening Remarks

Scott Swiatek, *Symposium Chair*
Matt Williamson, *Symposium Chair*

9:00 AM - 9:30 AM — **EX[L] Center "Ziptalks"**

Jimmy Carter
College of Arts and Sciences

Courtney Rosekelly,
College of Business Administration
Craig Dilworth,
College of Health Professions

Abby Perkins,
College of Engineering

9:45 AM - 10:45 AM — **Poster Session 1**

College of Arts and Sciences
College of Business Administration

11:00 AM - 12:00 PM — **Poster Session 2**

College of Health Professions
College of Engineering

12:15 PM - 1:30 PM — **Luncheon & Awards**

"Thoughts on Student Scholarship, Community Engagement, and Faculty Mentorship"

Dr. Mark Tausig, *Professor Emeritus, Department of Sociology*

Awards Presentation

Arts and Sciences Awards

Business Administration Awards

Health Professions Awards

Engineering Awards

EX[L] Awards

1:45 PM - 2:45 PM **Publisher Panel**

Scholarly Publishing: Some Questions and Answers for Graduate Students and Faculty

Jon Miller, Ph.D.,(Moderator)
Professor, English Department, Director, UA Press

Mark Clemente
Scholarly Communications Librarian, Case Western Reserve University

David Parsons I
Senior Customer Marketing Manager, Elsevier,

Ira Sasowsky
Professor, Department of Geosciences, The University of Akron

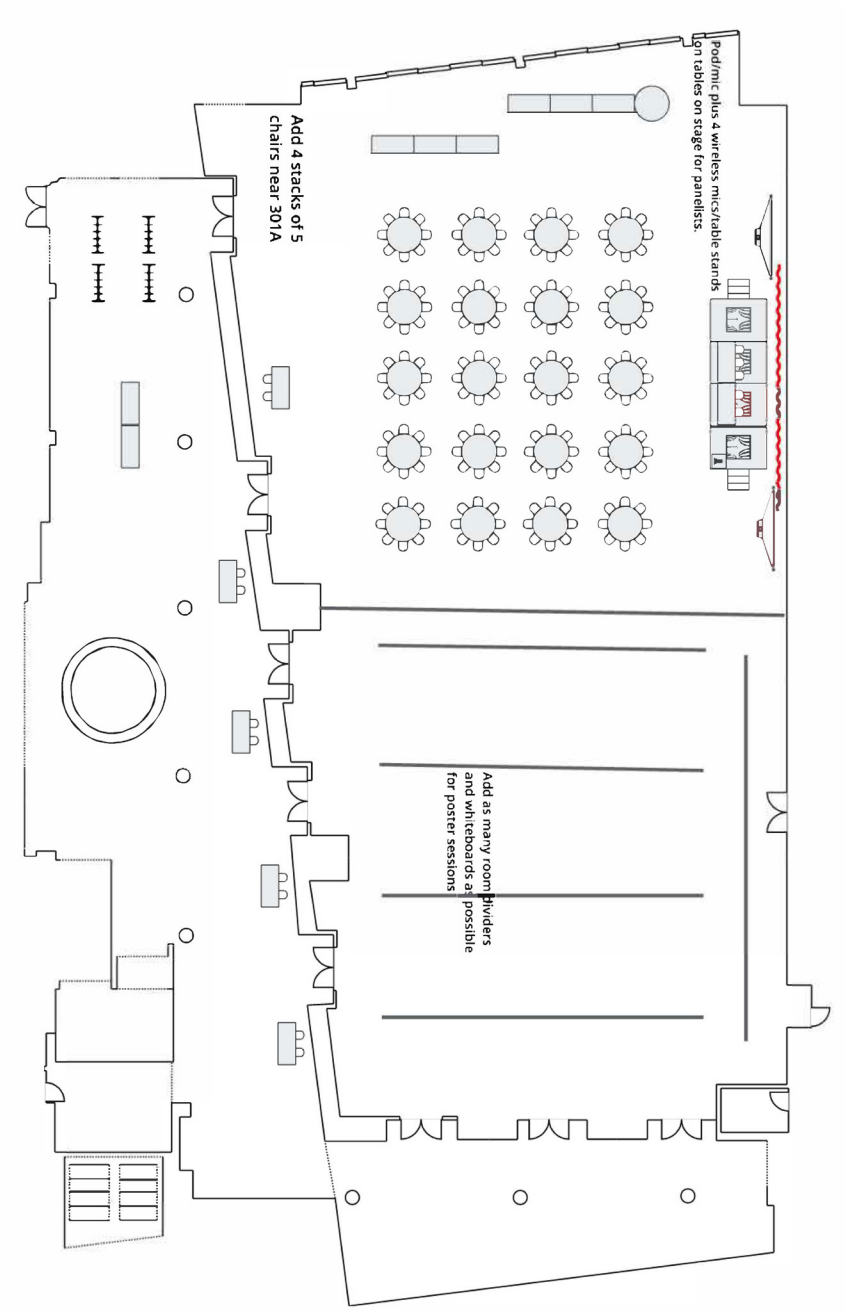
Megan Stevenson
Journal Sales Executive, Taylor & Francis Group

*Allow 15 minutes between each poster session for setup and teardowns

** Please report to the poster session for your college during your presentation time

*** You must have a ticket for lunch

Grand Ballroom Layout



ZipTalks

1:45 pm-2:45 pm

Jimmy Carter jrc96@zips.uakron.edu
College of Arts and Sciences

Courtney Rosekelly, clh216@zips.uakron.edu
College of Business Administration

Craig Dilworth, cad146@zips.uakron.edu
College of Health Professions

Abby Perkins, agp28@zips.uakron.edu
College of Engineering

ZipTalks are abbreviated talks where students speak for five minutes about their area of research. The presentations hail from a variety of disciplines and are meant to spark a conversation related to each presentation, as well on how the presentations may intersect with each other.

Abstracts for Poster Presentations

9:45 AM - 10:45 AM, Session 1

College of Arts and Sciences and College of Business Administration

1) Victim-Blaming Attitudes and Gender: The Cumulative Effect on Bystander Intervention for an Intimate Partner Violence Victim

Molly B. Hartsough, *(Buchtel College of Arts and Sciences)*
mbh49@zips.uakron.edu

Intimate Partner Violence (IPV) impacts thousands of women across the United States each year. This study examines the effect of IPV myth belief on bystander willingness to call for police intervention for an IPV assault. I propose that bystanders who believe in IPV myths are less likely to call for police assistance for a victim experiencing a physical assault by an intimate partner. Data were collected from 708 students enrolled at a Midwest public university during the 2015 spring semester. I use Ordinary Least Squares (OLS) regression to examine the relationship between bystander willingness to call police, IPV myths, gender, and racial / ethnic identity for the full sample. I also examine gender-specific models. Results indicate that belief in IPV myths reduce bystander willingness to call police for IPV assaults. Additionally, Black respondents are less willing to call police compared to White respondents. The independent variable effects operate differently for Male and Female respondents. Overall, this study suggests that belief in IPV myths reduces bystander willingness to intervene by calling police for a victim during an IPV assault. University educators should consider how to counteract these beliefs through curriculum that educates students about the realities of IPV victimization.

2) Behind the Mask: An Examination of Gender and Comic Book Fans

Abigail Williamson, Matthew Williamson *(Buchtel College of Arts and Sciences)*
acw95@zips.uakron.edu

The superhero genre is a multi-million dollar industry that permeates through mainstream culture today. With comic book movies dominating the box office, numerous television shows and comic book conventions taking place every year, the genre is important. This study aims add to the growing literature on the superhero genre and the impact it has on society. This qualitative study examines how individuals interact with each other at comic book conventions, how individuals show their love for comics, and how individuals view their gender as it relates to the superhero genre. This study used participant observations along with an in-depth interview. The emergent themes of the data are: gender (as it relates to inequality and traditional gender norms), relationships, and the geek identity.

3) Continued Monitoring of the Geomorphological & Sedimentological Changes to the Middle Cuyahoga River, Ohio, as a Result of Two Dam Removals

John D. Marke, John A. Peck, *(Buchtel College of Arts and Sciences)*
jdm228@zips.uakron.edu

The Monroe Falls Dam was removed in 2005 and the LeFever Dam in 2013 to improve water quality of the middle Cuyahoga River, Summit County, OH. These dam removals increased the energy of the middle Cuyahoga River. Geomorphology profiling and channel sediment grain size studies were re-measured in 2018 in order to determine the long-term response to the dam removals. In September, 2018 fifteen channel transects were surveyed. The grain size distribution of twenty-seven channel sediment samples was determined by sieve analysis. Thirteen years after the Monroe Falls Dam was removed the old impoundment sediment continues to erode in some locations where the banks are nearly vertical. In the months following the Monroe Falls Dam removal, downstream, 114 cm of eroded impoundment sediment had accumulated vertically. The 2018 survey shows that most of the accumulated sediment had been transported further downstream and the channel returned to its pre-dam removal elevation. By the fall of 2018, a profile in the former LeFever Dam impoundment shows that 55% of the impoundment sediment still remains. The river channel continues to erode and it is predicted to be 40 m wide based on how the river responded to the earlier Monroe Falls Dam removal. shows and comic book conventions taking place every year, the genre is important. This study aims add to the growing literature on the superhero genre and the impact it has on society. This qualitative study examines how individuals interact with each other at comic book conventions, how individuals show their love for comics, and how individuals view their gender as it relates to the superhero genre. This study used participant observations along with an in-depth interview. The emergent themes of the data are: gender (as it relates to inequality and traditional gender norms), relationships, and the geek identity.

4) "Knowing what you know by doing it": Evaluating Empirically an Applied Undergraduate Psychology Seminar

Olivia R. Clark, Aaron Bethea, Samsara Soto, Charles Waehler,
(Buchtel College of Arts and Sciences)
orc3@zips.uakron.edu

Although psychology students gain a wide variety of knowledge, skills, and abilities (KSAs) desirable to the workplace (e.g., critical thinking, oral presentation), undergraduates are often unsure how to transfer these KSAs to applied positions (e.g., Peterson, Wardwell, Will, & Campana, 2014). Undergraduate psychology programs have been called upon to use applied experiences to assist their students in better appreciating the applicability of their learned KSAs to the workforce. Our creative response to this call to better prepare students for the workforce has been the "Field Experience Seminar" (FES), an optional class for psychology majors here at UA. In this class students obtain a supervised placement in the community to gain work experience in the field. The seminar (2-hours per week) enhances the placement experience by involving students in discussion, instruction and evaluation through reflective learning, case

presentation, personal and peer review, and professional consultation in small groups facilitated by psychology department faculty. The goal of the seminar is to enrich and expand the applied learning experiences and illuminate the KSAs students are practicing.

5) Linear Gouges on the Bones of a Pleistocene Mastodon from Northeastern Ohio: Evidence of Scavenging, Gnawing, or Human Butchering?

Brynne Burgy, James Thomka, *(Buchtel College of Arts and Sciences)*
beb59@zips.uakron.edu

Approximately 60% of an adolescent male mastodon ("Little Horatio") was recovered from a Pleistocene kettle lake deposit in Fairlawn, Summit County, northeastern Ohio in 1966. Although the material has been available for study, no research has been published on its preservation, paleobiology, or paleoecology. As part of a larger taphonomic study, several isolated bones, most commonly ribs, were recognized as substrates for short, linear gouges. The appearance of these gouges is compatible with either tooth scrape-marks, representing activity of scavengers; gnawing marks by rodent incisors; or tool cut-marks, representing butchering by humans. Careful examination of the morphology and distribution of these structures indicates that rodent gnawing is the most likely process. This is supported by a gouge of two parallel structures (seemingly paired incisors); the preferential occurrence on elongate, thin bones and absence on other portions of the skeleton that are commonly targeted by scavengers and humans; symmetry that does not suggest a handedness to gouges; and the absence of archaeological artifacts at the site. The size of these structures is appropriate for smaller rodents rather than beavers as producing organisms. This study emphasizes the significance of careful attention to subtle features to vertebrate taphonomy and biotic interactions.

6) Laboratory Experiment Assessing the Reliability of Fossil Shells as an Up Direction Indicator

Nicole Wagner, Dr. John Peck, *(Buchtel College of Arts and Sciences)*
niw6@zips.uakron.edu

In mountainous regions, tectonic activity often tilts sedimentary rock layers from their original position. Within these tilted layers, there are physical features that geologists can use to determine the up direction during the time of original deposition. These indicators include trough-cross stratification, groove casts, and fossil shells orientated concave down. This research tested the reliability of the depositional position of Blue mussel (Mytilus edulis) shells as an up direction indicator. An Armfield SS MKII sediment transport flume was used to erode, transport, and deposit shells under controlled conditions. Shells were placed in the flume concave up with the shell's hinge pointing both upstream and downstream. Of 83 shells that were eroded, transported, and deposited, 4% were deposited concave up, and 96% were deposited concave down in the more hydrodynamically stable position. Thus, this experiment confirmed that the orientation of the Blue mussel, and possibly similarly shaped shells, may be used as an indicator of the original up direction in sedimentary rock layers.

7) A Pollen Record of the Younger Dryas form the Sediments of Silver Lake, Summit County, Ohio

Sierra Swisher, Dr. John A. Peck *(Buchtel College of Arts and Sciences)*
ses167@zips.uakron.edu

Lacustrine sediment pollen records provide a better understanding of past vegetation and climatic conditions. Following the Laurentide Ice Sheet deglaciation, the kettle lake, Silver Lake in Summit County, Ohio formed. A complete sediment record was recovered in a 13.5-meter-long core. Prior work revealed the first organic matter increase was 1069cm deep, which was selected for this study. Pollen was isolated using standard chemical acetolysis methods. Pollen was identified and counted at 400x magnification. Organic-poor sediment samples from below 1069cm contains high Picea, Abies, and low Pinus concentrations. At 1069cm depth, there is a change in organic matter and pollen taxa. Above 1069cm, organic-rich sediment contains low Picea, Abies, and high Pinus concentrations. Picea and Abies indicate cold, moist conditions, whereas Pinus indicates cool, dry conditions. Published pollen studies reveal a shift from Picea and Abies to Pinus as an identifying characteristic of the Younger Dryas onset in the Allegheny Plateau. The inferred Younger Dryas onset in the Silver Lake sediment record correlates to published, well-dated pollen records from Ohio. The relative dating correlation allows the chronology of Silver Lake to be better constrained. Silver Lake pollen records provide a better understanding of past vegetation, giving evidence of past climate conditions.

8) Causes and Consequences of Problem Drinking in Akron's Bhutanese/Nepali Refugee Community

Vyshnavi Ramini, Arnell Scott, Lacey Long, Nuha Alashabani, Jimmy Carter, Scott Swiatek *(Buchtel College of Arts and Sciences)*
vr49@zips.uakron.edu

In the recent years, thousands of Bhutanese and Nepali refugees have been settled in Akron's North Hill community. Due to various traumatic events and issues from resettling, alcohol abuse has become an issue. This study aims to uncover the reasons why refugees are drinking and the consequences. 100 members from Akron's North hill community were interviewed regarding perceptions of these issues. Our initial findings suggest that some of the causes of drinking include unemployment due to loss of status in America, dislocation from family members, and language barriers. Underage drinking is also common because of cultural barriers between parents and children. This leads to consequences such as issues with the police, domestic violence, and depression and suicide. Prior studies suggest that solutions to these problems include the implementation of a culturally competent mental health treatment program, resocialization through social gatherings, counseling in schools, and mobilizing community leaders to discuss alcohol use and abuse.

9) Enhancing Learning in an On-line Psychology Class

Hayley Coyne, Emma Griffith, Kayla Maximovich, Tayler Gill, Charles Waehler *(Buchtel College of Arts and Sciences)*
hc101@zips.uakron.edu

Online courses are on a steady rise with today's ever-expanding technology and online accessibility, but not without concern. Students learning via remote computer access may become isolated in their efforts to digest new information. Particularly in classes with content that is theoretical in nature, this solitude may result in monocular review of complex notions, limited opportunity to consider applications for abstract ideas, reduced ingenuity in understanding novel material, decreased critical thinking, and diminished motivation to succeed. Given these concerns, we have taken a different approach in creating an on-line version of a traditional classroom course that focuses on learning and comparing an array of personality theories. We are promoting course engagement and critical thinking by creating personalized videos that supplement the traditional lecture and textbook material covered. These brief videos, created by successful former students, provide personal observations and applications presented in each unit. These videos complement the course material by offering another perspective through summarizing and clarifying key points, comparing theorists, and contributing personal and real-world experiences that tie the subject material to concrete applications.

10) A Record of Anthropogenic Environmental Impacts From the Sediments of Nesmith Lake, Ohio

Brandon Kopfer, John Peck *(Buchtel College of Arts and Sciences)*
bk81@zips.uakron.edu

Sediment cores were recovered from Lake Nesmith, Summit Co. Ohio and characterized by four distinct zones interpreted to reflect historical time periods. Sediment cores were analyzed for dry bulk density, organic % and ferrimagnetic properties. The Pre-settlement Period 268-62 cm-below-lake-floor (cmblf) has high organic content (~60%), low dry bulk density (DBD) and low amounts of fine grained ferrimagnetic minerals. The Pre-settlement Period is interpreted to reflect minimal sediment input when the watershed was forested before Euro-American settlement. The Settlement Period (62-24 cmblf) has moderate organic content (~30%), high DBD, and high amounts of coarse grained ferrimagnetic minerals. The Settlement Period is interpreted to reflect an abrupt increase in sediment input to the lake when the land was cleared for agriculture. The Sediment Input Period (24-12 cmblf) has the lowest organic content (~14%), and highest DBD. The Sediment Input Period is interpreted to reflect increased sediment yield to the lake when The Great Flood of 1913 collapsed the East Reservoir Dam. The Present-Day Period (12-0 cmblf) has moderate organic content (~24%), high DBD, and declining amounts of coarse grained ferrimagnetic minerals that developed under today's land use. Environmental regulations may have contributed to the decline in ferrimagnetic particles in the sediment.

11) The Influence of O2 Availability on the Growth of the Fe(III) Reducing Bacteria in Coal Mine-derived Acid Mine Drainage

Zachary Santangelo, John Senko *(Buchtel College of Arts and Sciences)*
zcs10@zips.uakron.edu

Acid mine drainage (AMD) is an environmentally harmful outcome of coal mining. Mining exposes FeS2 to oxygen and results in low pH and iron oxidation. Fe(III)

precipitates after Fe(II) is oxidized in AMD fluids exposed to the surface. Bacteria in AMD acquire energy through respiration. Aerobic respiration uses the most favorable terminal electron acceptor, oxygen. Once oxygen is depleted, the next thermodynamically favorable terminal electron acceptors can be used, including Fe(III) and sulfate. Fe(III) reducing bacteria are anaerobes, respiring in anoxic conditions. However, recent studies indicated that oxygen did not inhibit Fe(III) reduction. Enrichment cultures for anoxic and oxic Fe(III)-containing media were tested for 166 days. Cultures were inoculated with material from an AMD contaminated site. Cultures were maintained through three transfers. After each transfer, Fe(III) reduction was observed by quantifying the accumulation of Fe(II) concentration. Fe(III) reduction occurred in both oxic and anoxic conditions, but Fe(III) reduction was restricted by oxygen. Culture samples were examined under a scanning electron microscope, where bacteria were observed to be larger in anoxic cultures than in oxic cultures. While Fe(III) reducing bacteria continued to metabolize in both aerobic and anaerobic settings, Fe(III) reduction in oxic conditions was less than anoxic.

12) Health Disparities and Perceptions: The Consequences of Becoming Sick or Having a Predisposed Illness While in Prison

Nickolaus Gotsiridze, Robert L. Peralta, Meghan A. Novisky, James R. Carter *(Buchtel College of Arts and Sciences)*
njg51@zips.uakron.edu

The perceptions and experiences of former prison inmates were documented with respect to health, health care, and interpersonal violence. An important component of reintegration is assessing health, health care, and interpersonal violence experiences among inmates during and after release from prison. Data on these factors is critical to inform public health and criminal justice decisions that impact inmates during imprisonment and after release. Thirty-eight qualitative semi-structured interviews were conducted among recently released inmates in Ohio. Interviews collected self-report data on health status, health care access, and experiences with violence victimization during and after incarceration. Interviews covered current health behavior and the experience of reentry into the community to better understand paths and barriers to successful reentry. Qualitative findings were reported pertaining to three preliminary emergent themes: The social ramifications of 1) health disparities, 2) perceptions of institutional healthcare (day-to-day), and 3) perceptions of medical healthcare (in the patient room)

13) Relationships between Adhesive Performance and Substrate Preference Behavior in Tokay Geckos (Gekko gecko)

Alexandra Pamfilie, Austin M. Garner, Alexandra M. Pamfilie, Ali Dhinojwala, Peter H. Niewiarowski *(Buchtel College of Arts and Sciences)*
amp183@zips.uakron.edu

The past several decades of research into gecko adhesive system performance, morphology, and ecology have uncovered a stunning array of results. The gecko adhesive system is apparently able to adhere to a wide variety of surfaces, including those that are rough. However, some recent work suggests that the

contact the adhesive toe pads are capable of generating may be greatly diminished on rough surfaces. A handful of laboratory studies have investigated gecko adhesive performance on rough surfaces, but it is still unclear how surface roughness impacts gecko adhesion. Here, we attempt to determine if gecko adhesive capacity is reduced on rough surfaces of interest and if geckos, when given a choice, will avoid using these surfaces.The results of this study will provide additional data detailing how surface roughness impacts gecko adhesion and give a starting place for future studies investigating how adhesive performance may be related to substrate preference and habitat use in free-ranging geckos.

14) Unintended Punishments: Examining the Mental Health Impacts of Barriers to Communicating with Loved Ones in Prison

Katie Bullock *(Buchtel College of Arts and Sciences)*
kmb391@zips.uakron.edu

In 2016 there were over 2 million people incarcerated in the United States (BJS 2018). While there are many intended consequences to mass incarceration, such as providing a sense of security and justice for citizens, there are many unintended consequences, like the negative emotional and financial impacts incarceration can have on loved ones. This work delves further into understanding these unintended consequences by looking at the emotional impacts that are felt by the female partners of male prisoners when they face additional barriers to communicating with their loved one. These barriers can include things such as not being able to afford collect calls from the prison, difficulty making long journeys to see their partners, and difficulties with visitation policies. To do this, I conducted a path analysis to look at the impact these additional barriers had on mental health. Results showed that feeing that the prison was too far away to visit, visitation rules were difficult to follow, and that the cost of visiting prison was too high were all associated with poorer mental health. I analyze these results through the lens of attachment theory and provide policy suggestions based on this analysis.

15) Bullying Victimization and Depression Among Ghanaian Students

Ebenezer Duah, Dr. Baffour Takyi *(Buchtel College of Arts and Sciences)*
ed38@zips.uakron.edu

The main objective of this study is to examine the association between bullying victimization and depression among Students in Ghana. Data for the study were drawn from a cross-sectional population sample of 3632 Junior and Senior High School Students from the Global School-based Student Health Survey of 2012 (GSHS2012). I used Ordinary Least Squares (OLS) regression, while controlling for sex, age, grade, SES, school bond and parental bond. Results revealed that bullying victimization significantly predicted depression. In addition bullying victimization was positively associated with depression for both males and females. School authorities and stakeholders should educate students about the effects of bullying.

16) Androgyny and Alcohol Use Among College Students: An

Analysis of Heavy Episodic Drinking Using Social Bond Theory

Eric Victory *(Buchtel College of Arts and Sciences)*
etv5@zips.uakron.edu

The purpose of this research is to investigate whether androgyny influences heavy episodic drinking (HED) for college students. Using secondary data (N=690) from a sample of undergraduates attending a mid-western state university, preliminary results showed that being androgynous was significantly associated with lowered the probability of HED in Model 1 and Model 2 for males and females, when controlling for several variables. Applying social control theory (Hirschi 2005), androgynous college students were less likely to engage in HED. University administrators should strive to establish androgynous workshops for students to reduce alcohol related behaviors on college campuses.

17) Teams in a Multigenerational Workforce: Perceptions on Job Satisfaction, Engagement, and Team Performance

Nusrat Islam *(Buchtel College of Arts and Sciences)*
ni14@zips.uakron.edu

Multigenerational labor force is an organizational reality today forcing employees of different generations and age groups to work in harmony. Past research lack in assessing how multigenerational employees rate workplace characteristics associated with efficiency. Using data from the 2008 Age and Generations Study conducted by the Sloan Center for Aging, this study observes how workers of two age categories, older workers or those above 55 and younger workers or those below 55, evaluate three important workplace measures: job satisfaction, engagement, and team performance. Results indicate that compared to younger workers, older employees in multigenerational work teams are less satisfied at their job but more engaged at work. Possible age-related causal factors, such as ageism, are suggested as reasons for these outcomes and future research directions using alternative analytical strategies are recommended.

18) Morphology and Configuration of the Adhesive Toe Pads of an Anolis Lizard in Comparison to Those of its Gecko Counterparts

Austin M. Garner, Michael C. Wilson, Anthony P. Russell, Peter H. Niewiarowski, Ali Dhinojwala *(Buchtel College of Arts and Sciences)*
amg149@zips.uakron.edu

The remarkable ability of geckos to adhere to surfaces has served as inspiration for hundreds of studies spanning the disciplines of biomechanics, chemistry, ecology, evolution, functional morphology, material science, and physics. Fibrillar (hair-like) adhesive systems have independently evolved in two other lineages of lizards (anoles and skinks), but comparatively little is known about these adhesive arrays. This is particularly surprising for anoles, because they have been the subject of intensive ecological and evolutionary study for decades. The morphology and configuration of the adhesive structures of several species of geckos has been examined, with patterns of variation in a number of morphological characters being revealed along the length of their adhesive toe pads. In contrast, such potential variation in the configuration of anole adhesive toe pads remains largely

unexplored. Indeed, the only data that are currently available relate to single fiber dimensions of a few species. Here we describe preliminary fiber morphology and configuration data for an anole and compare this to the patterns reported for gecko fibers. Our results not only add to the diversity of existing morphological data for lizard fibrillar adhesive systems, but also stand to serve as additional sources of inspiration for biomimetic fibrillar synthetic adhesives.

19) Belief Bias Depends on Conservatism, Not Age

William D. Carney *(Buchtel College of Arts and Sciences)*
wdc24@zips.uakron.edu

In today's political climate, when basic facts and reasoning are seemingly up for debate, it is increasingly important to be able to identify well-reasoned arguments, regardless of one's political leanings, and to retain this skill throughout the lifespan. Research has shown, however, a persistent belief bias—a tendency to judge an argument's validity based on its conclusion's agreement with one's beliefs, rather than its logical quality. Other findings suggest that belief bias can be reduced by instruction to avoid belief bias. The current project seeks to explore whether older adults, believed to be more prone to biased reasoning, respond differently to such instruction, as well as to identify other potential individual differences in belief bias. Participants (41 young adult, 33 older adult) completed an online survey in which they were asked to evaluate valid and invalid syllogisms about political topics, both before and after instruction to avoid belief bias. Contrary to the literature, there was no significant difference between the bias scale scores or correction post-manipulation based on age group. However, there was a significant interaction between reduction in bias scale score and political conservatism, regardless of age.

20) Need for Hypoxia/HAB modeling in Water Treatment Plants in Lake Erie

Banafsheh Khakipoor, Shivakumar Sastry *(Buchtel College of Arts and Sciences)*
bk98@zips.uakron.edu

Harmful algal bloom and dead zone conditions can cause source water pH levels to drop. When these changes are detected at the source, it forces significant adjustment during the water treatment process. The problem is difficult to address because of several factors that affect the onset, extent and duration of HAB and dead zone events. We are working on a predictive model that can advise operators in water treatment plants about changes in water quality at intake, one to three days in advance. This model will estimate the dissolved oxygen and pH changes at the source. Operators can use this model to change the chemical dosage during treatment process in a more gentle manner. In the future, this model can be extended incorporate additional details of the nutrient and waste eco-system including both point and non-point sources of pollution for water bodies.

21) Synthesis, Characterization and DFT Calculations of Heterocyclic-Substituted Oligophosphazenes as Metal Chelators

Claire Tessier Ph.D., Yuan (Mike) Xue, Wei-Yuan Chen, Carrie Salmon, Ryan Nash, Valentine Gogonea Ph.D. *(Buchtel College of Arts and Sciences)*
yx27@zips.uakron.edu

With amino- or mixed amino- alkoxy- side groups, polyphosphazenes have been applied as biodegradable material in the past two decades. The objective of this project is to synthesize and characterize heterocyclic-substituted polyphosphazenes, which can chelate transition metals and then release functional metal complexes by cleaving P-N or P-O bonds for biomedical applications. To avoid consuming expensive polymers, tests have been done on oligomers as a model study. Chlorophosphazene trimer and tetramer ([PCl2N]3 and [PCl2N]4) have been completely substituted with heterocyclic rings. The substituted products were then treated with different metal cations such as Zn(II), Ru(III), etc. The structure of substituted phosphazenes and metal complexes have been identified by a variety of instrumental analyses including 31P NMR, 1H NMR, IR and UV spectroscopies, mass spectrometry and X-ray crystallography. To have a better understanding of the chemical properties of substituted phosphazene oligomers and give explanations on how they could bind with metals cations, computational methods have been applied to calculate their geometry, energy, electron distribution, etc.

22) Modeling Cancer Drug Resistance Using Tumor Spheroids

Megha Gupta, Pradip Shahi Thakuri, Hossein Tavana *(Buchtel College of Arts and Sciences)*
mg184@zips.uakron.edu

Using 3D cultures of colon cancer cells. We periodically treat the tumor spheroids with drugs followed by a recovery period to mimic patients' chemotherapy regiment. By measuring the growth rates of tumor spheroids, we predicted resistance of colon tumor spheroids to the drugs. We treated tumor spheroids of HCT116 cancer cells with 10 nM trametinib, a MAPK inhibitor, to target the overactivated MAPK signaling pathway. We used a pulsed dosing to expose the cells to four 4-day treatment cycles with 4 recovery phases in between, and measured sizes of treated and untreated spheroids. Growth rates of spheroids were calculated by measuring the difference in spheroid size before and after treatments. We observed a significant increase in size of HCT116 spheroids. The growth rate of spheroids during 4 treatments of cycles were -0.0053 mm3/day, -0.0001 mm3/day, 0.00195 mm3/day, and 0.0021 mm3/day respectively. vWe established a 3D drug resistance model of cancer to targeted drugs. We showed that periodic treatment of targeted therapies results in resistance to the targeted anti-cancer compound. Molecular studies on how cancer adapts to treatment would provide steps to tackle adaptive resistance of cancer.

23) Biomechanics of the Praying Mantis Foreleg Strike

Colleen Unsworth, Walid Abuhashim, Sydney Brannoch, Gavin Svenson, Henry Astley *(Buchtel College of Arts and Sciences)*
waa23@zips.uakron.edu

Praying mantises (Mantodea) catch prey by rapid motion of their specialized forelegs. Due to the high speed requirements to catch quick prey items, a mantis

must accelerate their limb segments rapidly, which depends upon mechanical power. This research investigates the foreleg strike of the Chinese Mantis (Tenodera sinensis) capturing live prey (Periplaneta americana) to determine whether power-amplification is used in the mantis strike. In our preliminary data, we recorded four strikes at 700 frames/second with two Edgertronic high-speed cameras, tracked the points in three dimensions. In these strikes, the distal tip of the tarsus reaches an average maximum velocity of 0.746 m/s, with an average peak acceleration of 60.7 m/s2. These values suggest purely muscular actuation, and so we will use inverse dynamics to compare joint angles, angular acceleration, torque, and power across individual foreleg segments (coxae, femora, tibiae, tarsi) to identify coordination and control patterns and which joints are primarily responsible for generating power. The apparent lack of power amplification in T. sinensis forelegs suggests that tradeoffs may preclude some animals from using it, such as the dual function of T. sinensis forelegs for both prey capture and locomotion.

24) A Theoretical Model of Group Positioning and Community Policing

Jodi C. Noland, Scott Swiatek *(Buchtel College of Arts and Sciences)*
jcn15@zips.uakron.edu

Community policing programs offer opportunities for police departments to educate community members and improve neighborhood problems by facilitating a collaborative relationship between law enforcement officers and community members. These programs have been found to be beneficial, especially for improving relationship with racial minorities who are generally more likely to have negative perceptions of law enforcement agents. Our theoretical model proposes community policing will effect neighborhood characteristics (social disorder, fear of crime, and social cohesion) that shape perceptions of quality of police contact while using group positioning theory to account for racial differences in perceptions of quality of relationships with police. We use the Community Police in Baltimore (1986-1987) survey to test our model of group position and neighborhood characteristics on quality of police contact using ordinary least squares (OLS) regression. Our results support existing literature and group positioning theory in finding a positive relationship with age and social cohesion and a negative relationship with race and policing contacts. Inconsistent with previous literature, we find no significant relationship between social disorder and fear of crime on quality of police contact. Our findings expand the literature and create model demonstrating the importance of group positioning and neighborhood characteristics on community policing initiatives.

25) Student expeariences at the University of Akron: Barriers to Graduation

Justin Persinger, Hailey Vasko, Julia Bendel, Jessica Leyva *(Buchtel College of Arts and Sciences)*
jep94@zips.uakron.edu

In this paper, members of the Sociology Club explore reasons why students choose to attend the University of Akron, and barriers they face in moving towards graduation. Sociology Club member analyze data collected from 812 undergraduate students at the University of Akron. They find that beyond

financial needs and constraints, students identified accessing classes needed to graduate and good advising as important barriers to graduation. Students who are first in their family to go to college report significantly higher levels of barriers to graduation as compared to non-first generation students.

26) Budget NYC

Mitchell Secaur, Sara Woika *(College of Business Administration)*
ms245@zips.uakron.edu

Mr. Digits is a data analyst, who, after his work with the Department of Education, is quite the expert when it comes to public government data. As a NYC native, Mr. Digits was shocked to find out, through IQuantNY, that there was an $800 million dollar typo in the budget. He enlists the help of our friend, Ms. Numbuzz, who then reaches out to us. Together, we have formulated a plan to save NYC from future financial distress. Using Tableau and SAS to analyze the data we will ask the following questions: What contracts are responsible for a significant amount of the NYC government's spending? What departments are receiving the most focus from the NYC government based on the spend to date since 2012? What vendors within these departments are the greatest contributors to the NYC government's budget spending? Once answering those questions we will Recommend how NYC can use this data to avoid financial issues in the future.

27) Market Research for Local Business: NORKA Beverage Company, LLC

Courtney Rosekelly, Sydney Bornstine, Paul Collins, Craig Dilworth
(College of Business Administration)
clh216@zips.uakron.edu

A succession of team projects in a marketing research course at The University of Akron offered a unique collaboration opportunity between the students, eBay Akron Retail Revival program, Bierce Library, The Taylor Institute for Direct Marketing, and the College of Business Administration for a client: Norka Beverages, LLC, an Akron-based craft soda producer. Our intentions were to determine consumer preferences for craft soda flavors for resurrecting the client's brand and releasing a product line extension. Teams started by conducting secondary data research pulled from sources, such as, the mega databases held within the University Libraries. The results of our work were followed by the collection of primary data in the form of a focus group which blind tested competitor products to determine preferred flavor profiles and overall preferences for each brand tested. Results of our research suggested that while the carbonated beverage industry was contracting, the emerging craft soda segment was growing possibly from being seen as healthier than traditional soda. The focus group added vital insight by identifying the preferred flavor profile brand and the order of a product line extension. Recommendations were given to the client continue collaborations efforts with conclusive research designs.

28) The Significance of Fine Art in Business Curriculum

Cameron Felix, Hannah Keller, R Ray Gehani *(College of Business Administration)*
cf69@zips.uakron.edu

Should inclusion of fine art in business education curriculum improve learning effectiveness? Research studies are indicating that now more than ever, businesses are increasingly seeking competitive minds for creative problem solving. Scholars who have pointed out that the arts play an important role in our economy. They note that the arts can enhance business value by developing new competencies to innovate their company faster. A Northeastern University article states that art is indeed significantly relevant for consumer need identifications as well as differentiation of products from competitors. Our preliminary research exploration using a qualtrics survey 65 anonymous people indicate that, 100% of respondents say that creativity influences innovation, 34.4% consider art significant, and 21.3% feel that art is relevant in business as well as supply chain. Paintings in particular are playing a huge role in how business education is viewed in colleges today. Our study describes how the role of arts can help enhance value adding activities through systems thinking. Our goal is to show the public that adding fine arts to business curriculum can help enhance creativity and innovation.

29) Intergenerational Transmission of Educational Attainment: A Look at Racial Differences

James Imhoff *(College of Business Administration)*
jpi5@zips.uakron.edu

An overwhelming majority of Americans believe that hard work alone can push even the most disadvantaged of us beyond our upbringing. The link between parental and child labor outcomes in the form of educational attainment, income, or social class is known as intergenerational correlation. Due to vast differences in black and white American educational attainment, this paper conducted a study to measure just exactly how parental education will impact a child's future. As literature and theory suggest, parental education, family income, race, gender, and several other factors all have a tangible benefit on determining how much schooling a person seeks out. This study focuses on the impact that, specifically, parental levels of educational attainment have on child's future education. Using the Panel Study of Income Dynamics at the University of Michigan data was collected on these variables listed above. Ordinary Least Square regression and a TOBIT model were run to conclude how intergenerational transmission of education differs by race. This study concludes that overall, black American heads of household are not as influenced by parental levels of education as white American heads of household. In one example, white female heads of household can expect to gain almost twice the benefit from a parent finishing high school rather than not completing high school when compared to black females. This paper suggests that to close the gap between black and white educational attainments differences, increasing the emphasis placed on achieving more education may not be an effective solution for diminishing the gap.

30) An Exploratory Research Study of Poetry on Ways to Enhance Business Education

Joshua Davis, Zach Dunphy *(College of Business Administration)*
jld191@zips.uakron.edu

Business education is often focused on analytical skills, however most high level

jobs in business require a significant amount of creative and critical thinking. Poetry is an art of self expression through rhythmic symmetry and emphasis, breaking concepts down to their most fundamental aspects. Students writing poetry can help them to reflect on past experiences and use creativity to express their knowledge (Celly 2009). This research study will compare the level of success between students who have used poetry in their studies for "synthesis' and those who focus on memorization of "knowledge" (Patterson 2009). Levels of success is defined by rates of retention of core learning objectives. Our hypothesis is that the use of poetry will result in a strong correlation with improvement in critical and creative thinking of learners, relative to students who do not use poetry in their studies (Wright 2010). We also intend to examine what styles and uses of poetry best lend themselves towards learning and retention. Finally we discuss limitations of poetry in business education, and the environments where poetry would be less effective.

31) Jazz in Business Education

Edward Volk, Ryan Fenton, Luke Massie *(College of Business Administration)*
ejv9@zips.uakron.edu

The recent decline in the United States world ranking for education is causing a serious concern. There are similar concerns for the decline of business school education. What are the best ways to improve the business education system? Whereas there have been many attempts over the years to improve how educators teach students, new research studies suggest a focus on using more effective learning techniques by thinking outside the box. Inspired by these new studies using arts, this research study examines how Jazz music improvisation can enrich an engaging learning environment for learners of all ages. We will study how a diverse group of students can be inspired by jazz improvisation to open the learners' minds, and improve their overall recollection and application of learned materials. We will develop recommendations for educators regarding how they can promote creative learning by utilizing how arts such as Jazz improvisation add value to learning.

32) Marketing for Mutts: Student Marketing Project for Non-Profit

Sydney Bornstine, Mia Santagata, Megan Shildt, Parker Shults
(College of Business Administration)
srb121@zips.uakron.edu

RunningDog is a nonprofit organization that trains volunteers to run with adoptable dogs from local shelters and adoption centers. The organization hopes that with the added exercise and attention the dogs receive, they will become better behaved and more adoptable. RunningDog was faced with issues of awareness and perception, which in turn created a low number of volunteer sign-ups. People who heard about RunningDog for the first time were confused as to what the program actually did, and the organization was having a difficult time retaining dedicated volunteers. We proposed a campaign, which included suggestions for improvements of the logo, slogan, and overall organization mission to position RunningDog in a way that gave anyone exposed to the brand for the first time a clear idea of what the organization stood for. Our research showed that the

target audience was active women, ages 16-22, who liked dogs and enjoyed volunteering. Four different events were planned to engage current and potential members of the organization and to reposition the brand. Direct marketing, paid social media advertising, and public relations events were suggested to increase brand awareness. This campaign would help RunningDog, a local nonprofit organization, improve overall brand awareness and public perception.

33) We Care Tees & New Logo Design

Mary Lowe *(College of Business Administration)*
mll90@zips.uakron.edu

The owner, Ramahn Wilder, started We Care Tees in August of 2017 when Hurricane Harvey impacted the United States. He wanted to help in some way, so he made t-shirts to sell and donated all of the profits to families affected by the storm. He continued to run this business by donating 10% of the profits of each item to customers choice of non-profit organization. The problem We Care Tees was facing was there were more female customers than male. They attributed the problem to the heart in their logo. We Care Tees wanted to change the logo to something more gender neutral, so everyone could wear their We Care Tees with pride. The focus of the project was to target everyone possible but put more emphasis on what men would want. We designed the new logo with the focus on keeping it clean and simple, it has three overlapping triangles with each one representing a primary color since they are a printing company. The meaning behind the triangles is to represent strength to remind the customers that they are strong enough for what life throws at them, matter who is wearing it.

34) Brain Drain and Emigration: How Do They Affect Source Countries?

Nicholas Chura, Dr. Francesco Renna *(College of Business Administration)*
nkc11@zips.uakron.edu

This paper examines the effect of different skill levels of emigration on the source country's labor market, from high skill brain drain to low skill emigration. By utilizing an IADB Brain Drain data set to measure emigration rates among those with low, medium, and high educational attainment in a country, the effect of brain drain vs. low skill emigration on productivity and unemployment is examined. These data span from 1980 to 2010 with measurements every five years for 195 World Bank countries. By utilizing two two-way fixed effects models with GDP per capita and unemployment rate as the dependent variables, the results indicate that medium skill emigration reduces productivity, confirming a portion of the concept of "Brain Drain." Low skill emigration also reduces unemployment, and there is evidence of upward pressure on the wages of stayers. Therefore, there are possible benefits and drawbacks of emigration depending on the skill level of the emigrants.

35) Marketing E-Commerce Optimizations Using Biometric Technology and Research

Lillyanne Sweitzer, Bayli Strub, Stephen Addico, Catie Hickin
(College of Business Administration)
lms228@zips.uarkon.edu

There is ongoing debate regarding the roles of art and science in marketing. Those who argue in support of its artistic nature cite creativity, imagination, and expression as its hallmark. I believe, however, that today's marketing is also scientific, rooted in data manipulation, research, and analysis. My Marketing and Sales Management capstone project exemplifies this argument. I led a team of 3 students in creating a comprehensive marketing plan for an Akron-based business Client. Because our Client primarily operated on an ecommerce website, our team sought to understand and optimize how users interacted with the website. Rather than basing our recommendations on our own opinions, we designed an experiment to collect eye tracking, mouse tracking, and facial recognition data. Utilizing this biometric technology in our marketing research provided a means to objectively measure consumer's attention, interaction, and emotional response to the Client website. By embracing data-driven strategies and research, our team positioned our recommendations as credible and objective rather than simply a creative suggestion. Learnings were used to design content and a communication strategy that could best capture shopper attention and perception. In all, this research delighted our client and illustrated marketing's role as both an art and a science.

Abstracts for Poster Presentations

11:00 AM - 12:00 PM Session 2
College of Health Professions and College of Engineering

36) Regional Brain Tissue Displacement and Strain is Higher in Chiari Malformation Subjects than Control Subjects: A Study with DENSE MRI

Blaise Simplice Talla Nwotchouang, Soroush Heidari Pahlavian, John Oshinski, Xiaodong Zhong, Francis Loth, Rouzbeh Amini
(College of Engineering or College of Polymer Science and Polymer Engineering)
bn23@zips.uakron.edu

Studies have documented brain tissue dynamics in Chiari malformation type I (CMI), but these findings are generally limited to tracking a single location in the image. We employed displacement encoding with stimulated echoes magnetic resonance imaging (DENSE MRI) to quantify brain tissue displacement and principle strains throughout the brain parenchyma in CMI subjects and controls. We hypothesized that brain motion and principal strain would be higher in CMI subjects compared to controls. Six subjects with a documented clinical diagnosis of CMI and 8 controls were included in this study. Spatial peak mean displacement (PMD) and principal strain was calculated in each pixel on 7 different brain regions. CMI subjects exhibited higher displacement than controls; cerebellar PMD was 54% higher in CMI subjects than controls. Extension principle strains in the cerebellum was 71% larger in CMI subjects than controls. Similar results were seen in the brainstem. The major finding of this study is that tissue displacement and principle strains in brain parenchyma is elevated in CMI

subjects compared to control subjects. Tissue displacement or strain may be a new biomarker to assess the functional severity of CM1.

37) Time Resolved Roadway Resistance Study for Connected Vehicles

Ethan Shajie, Ping Yi *(College of Engineering or College of Polymer Science and Polymer Engineering)*
es31@zips.uakron.edu

Despite of tremendous advancement in autonomous and semi-autonomous vehicle's safety technologies in recent years, there is still a significant room remaining for improvement on active safety features of a vehicle and safe inter vehicle distance. Factors affecting emergency braking and rolling resistance such as tire-surface friction, braking system and environmental conditions vary from one situation to another, therefore a passive estimation method based on predefined parameters cannot sufficiently serve advance transportation system. The new developed time- resolved braking distance concept can assist automaker and traffic engineers to address advance transportation needs and result in safer roads. It was found that calculating braking distance based on generated driving power and active driving-resistance forces in a global system can significantly improve safety and efficiency in transportation network.

38) Maintaining Multipotency of Neural Stem Cells Under Synthetic FGF Peptide Micro-environments

Diana Liz Philip, Elena A. Silantyeva, Matthew L. Becker, Rebecca K. Willits *(College of Engineering or College of Polymer Science and Polymer Engineering)*
dlp100@zips.uakron.edu

Current stem cell culture conditions require the use of human or animal derived whole proteins. However, by utilizing synthetic peptides to mimic whole proteins, we can control the presentation of the signaling motif, fabricate consistent and inexpensive in vitro culture conditions. This study investigates synthetic alternatives to culture components of human induced pluripotent neural stem cells (hNSCs). Current hNSC growth conditions require fibroblast growth factor 2 (FGF2) for potency and Matrigel® for cellular adhesion. The FGF2 utilized is typically a recombinant or purified human protein, which is expensive and difficult to isolate, increasing cost and variability. In addition, Matrigel®, derived from mouse tumors, consists of primarily laminin and variable amounts of additional proteins and growth factors. However, by utilizing synthetic alternatives such as YIGSR for laminin and FGF peptide (FGFp) for FGF2, we seek to fabricate a controlled and consistent culture condition. Our preliminary findings suggest that FGFp can be utilized as a culture substitute for FGF2, as similar hNSC potency and proliferation rates were found. Currently we are investigating hNSC behavior on GYIGSR-tethered substrates, to ensure sufficient cell adhesion to the culture substrates. Future work will determine if utilizing this dual-functionalized substrate could eliminate the use of Matrigel® and FGF2 in hNSC culture.

39) Investigating the Role of Betaine Regulation in Syringomyelia

Dipak Pukale, Nic Leipzig, Mahmoud Farrag, *(College of Engineering or College of Polymer Science and Polymer Engineering)*
dp130@zips.uakron.edu

Syringomyelia (SM) is a neurological disorder that is characterized by the formation of a fluid-filled cyst, a syrinx, inside the spinal cord. It is a common coincidence with multiple neurological diseases such as Chiari malformation I, trauma, and several other disorders. Even though surgical intervention seems to be the most commonly accepted therapeutic modality to treat the syrinx (2, 4), it is unsatisfactory and is associated with long-term failure rates as high as 80% according to some reports. The role of betaine as an osmoprotectant has been extensively studied in plant and bacteria cells. Also, mammalian kidney and liver cells show the osmoprotectant role of betaine, however, there is no specific study of betaine osmoregulation in the central nervous system (CNS) especially connected to disease states. The primary goal of this research is to reveal the role of local betaine regulation on syrinx dynamics and to discover drugs that can target both betaine and tonicity regulation, with the long-term goal to provide nonsurgical therapeutic options for the treatment of SM. Our primary hypothesis is that SM development and expansion is primarily due to specific osmolyte (betaine) upregulation and dysregulation of its channel, BGT-1, and this results in abnormal fluid accumulation within the spinal cord leading to syrinx formation.

40) Inter Laminar Damage Detection in Composite Materials

Hariharan Rangarajan, Yogesh P. Singh, Gregory N. Morscher
College of Engineering or College of Polymer Science and Polymer Engineering)
hr29@zips.uakron.edu

Using ceramic matrix composites (CMCs) for high-temperature applications in jet engines increases durability and reduces weight and cooling requirements resulting in improved efficiency and fuel savings. Understanding, detecting, and monitoring different types of damage are essential in achieving optimal performance from components made from CMCs. The Direct Current Potential Drop (DCPD) method is a non-destructive technique of estimating damage in composite materials. DCPD technique works by measuring nodal potential differences when current is flown through the material. Direct current spreading in different woven and laminate composites is modeled to follow a ladder resistor network in which the nodal voltages decrease exponentially as one moves away from the current nodes. However, in presence of a crack/delamination this trend transitions to a linear potential drop. A prototype to incorporate DCPD for damage inspection was designed using spring loaded connectors. The data was recorded using Arduino Mega and plotted in Matlab to analyze trend in nodal voltages and locate any defects. The prototype provides a cheap, portable and easy to use probe as an alternative to the existing techniques which can be expensive, require elaborate setups and limit the flexibility of operation e.g., X-ray CT, Acousto-ultrasonics etc.

41) Transcorneal Electrical Stimulation Shown to Reduce The Signs of Glaucoma

McKay Cavanaugh, A. H. Jassim, L. Coughlin, J. Stukel, R. K. Willits, D. M. Inman *(College of Engineering or College of Polymer Science and Polymer Engineering)*
mmc80@zips.uakron.edu

Glaucoma causes irreversible blindness. Transcorneal electrical stimulation (TES) has shown positive effects for nerve pathology within in vivo models. We hypothesized that TES would slow glaucoma progression. The effect of TES on a degenerative animal model was determined by examining the brain, optic nerve, retina, intraocular pressure, and visual acuity. Animals were divided into experimental, age match control, and young control group and TES (or sham) was applied for 8 weeks. We found visual acuity increased in TES-stimulated mice only. Retinal ganglion cell numbers were significantly higher in the young control, but no statistical differences were found in numbers between stimulated and control mice. TES increased the integrity of the optic nerve, demonstrated by transmission of cholera toxin B from the eye to the brain. Increased levels of energy, measured by ATP, were found in the retina and optic nerve in stimulated mice. Our current results demonstrate positive effects of TES on the animal glaucoma model.

42) Rotary Torsion Fixtures for Augmentation to Existing Testing Machines: Generating Pure Torsion Loading from Axial Motion

Marnie M. Saunders, Luke Schmitt, Drake Smalley, Gunther Mandt
College of Engineering or College of Polymer Science and Polymer Engineering)
grm21@zips.uakron.edu

Mechanical testing platform developed around small-scale and cost-effecting testing. Generating pure torsion using linear motion while being able to accommodate a variety of lengths. Given our existing platform tests the specimen in a horizontal orientation , we developed a fixture for this configuration.

43) Interactions of Cancer Associated Fibroblasts and Breast Tumor Cells in Three-Dimensional Collagen Matrix

Sunil Singh, Sydnie Tran, Dr. Hossein Tavana *(College of Engineering or College of Polymer Science and Polymer Engineering)*
ss502@zips.uakron.edu

Normal fibroblasts are induced by cancer cells residing in tumor microenvironment to an activated phenotype known as cancer associated fibroblasts (CAFs). CAFs are the most abundant stomal cells within tumors that produce hallmark signaling molecule like Stromal cell derived factor (SDF-1) that promotes tumor proliferation. CAFs promote matrix contractility and invasion of cancer cells. To study interaction between CAFs and tumor cells in complex three-dimensional (3D) matrix, we produced tumor spheroids with high throughput technology utilizing polymeric aqueous two-phase system and encapsulated spheroids with fibroblasts suspended in collagen gels. Using these 3D microtissues, we demonstrate that SDF-1 secreting CAFs cells induce higher contractility of collagen matrix through Rho-ROCK signaling pathway. Confocal images of microtissues show that highly

contractile CAFs cause higher invasion of breast cancer cells in collagen matrix than normal human mammary fibroblasts. These results illustrate role of SDF-1 secreting CAFs in tumor invasion and potential use of these microtissues to study tumor-stromal interactions and mechanisms of drug resistance.

44) Modeling Adaptive Resistance of Colon Cancer to Targeted Therapies Using Tumor Spheroids

Pradip Shahi Thakuri, Hossein Tavana *(College of Engineering or College of Polymer Science and Polymer Engineering)*
pst10@zips.uakron.edu

Adaptive drug resistance is a major clinical problem despite early success of targeted anti-cancer drugs to treat cancer. To model adaptive drug resistance of cancer to targeted drugs we used 3D culture of colon cancer cells. We treated colon tumor spheroids periodically for three different cycles of treatments followed by 2 recovery periods in between the treatments to mimic how patient receive chemotherapy. We used Mitogen Activated Protein Kinases inhibitors (MAPKi) to target the deregulated MAPK pathway in HT-29 spheroids. Spheroid growth analysis showed increase in the growth rates of spheroids during the pulsed MEKi treatment/recovery periods, indicating resistance of tumor spheroid to drug treatment. In addition, western blot identified compensatory feedback signaling through PI3K/AKT. We co-targeted an active pathway (MAPK) and a treatment-induced activated pathway (PI3K/AKT), by combining MAPKi and a PI3K/AKT inhibitor, dactolisib, and used lowest synergistic concentrations of each pair to demonstrate efficacy over single treatment. Combinations of MEKi and dactolisib synergistically inhibited the growth of tumor spheroids by downregulating the inter-pathway feedback signaling. Our approach to use engineered 3D cultures and mimic clinical cyclic drug exposure and recovery offers a novel strategy to identify mechanisms of drug resistance and develop rationally-designed treatments to block drug resistance.

45) Analysis of Microstructure and Mechanical Properties of Additive Repaired Ti-6Al-4V by Direct Energy Deposition

Sulochana Shrestha, Manigandan Kannan, Gregory Morscher, Andrew L. Gyekenyesi *(College of Engineering or College of Polymer Science and Polymer Engineering)*
ss405@zips.uakron.edu

The recent advances in additive manufacturing have opened up new possibilities in aerospace industry; ability to successfully repair turbine blades being one. Repair approaches with Direct Energy Deposition (DED) is one prospective method to overcome the drawback of IRB(blisks) in its ability to repair damage; which would otherwise require full removal and either an expensive replacement or a complicated repair, for damage beyond a minor dent. In order to attend confidence in such repairs using AM , the characterization of additively repaired specimen is necessary. Ti-6Al-4V specimens fabricated by DED using two different feedstocks (metal powder and wire) were investigated in this study. The test coupons consist of half-conventional and half additively manufactured(AM) material with a bond line in the center of the specimen gauge. The microstructural features (a lath thickness, colony size and prior β grain size), tensile properties in

relation with the microstructural characteristics and fatigue behavior of the built samples were characterized and compared with the 100% stock annealed Ti-6Al-4V coupons. Subsequent analyses of the fracture surfaces were conducted using Scanning Electron Microscopy (SEM) for evaluation of the failure mechanism and the presence of process defects and their impact on overall fatigue performance. The mechanical properties of the DED repaired Ti-6Al-4V were found to be slightly lower than the stock material in this study but compared favorably to published results of annealed Ti-6Al-4V.

46) A Systematic Study of Mechanical Properties, Corrosion Behavior and Biocompatibility of AZ31B Mg Alloy After Ultrasonic Nanocrystal Surface Modification

Chang Ye, Xiaoning Hou, Haifeng Qin, Hongyu Gao, Steven Mankoci, Ruixia Zhang, Xianfeng Zhou, Zhencheng Ren, Gary L. Doll, AshlieMartini, Nita Sahai, Yalin Dong *(College of Engineering or College of Polymer Science and Polymer Engineering)*
xh14@zips.uakron.edu

As biomaterials, Magnesium (Mg) and its alloys provide a possible solution to eliminate additional surgeries because of their biodegradable properties. However, low corrosion resistance significantly limits the biomedical applications of Mg/Mg alloys. Furthermore, lower fatigue resistance also accelerates the corrosion rate after Mg and its alloys are implanted in electrolytic and aqueous environments. Considering the possibility of improving the overall properties of Mg alloys, AZ31B Mg alloys were processed by UNSM in this study.

47) Traffic Reformation - Looking Beyond 2020

Gary P. Neffenger, Jr., PE, *(College of Engineering or College of Polymer Science and Polymer Engineering)*
gpn1@zips.uakron.edu

The transition to smart cities, smart roads, autonomous vehicle production is a far more complicated undertaking than merely designing, creating, and producing a tangible product with adequate technology to navigate roadways safely and efficiently. Cities must prepare for the move towards technologically assisted and enhanced traffic operation and management, including Akron in Summit County, Ohio - the primary urban area focused on in this discussion. Every city's transition to smart cities involves a collaborative effort between governing authorities, private industry, academia, and the general public that is unprecedented. Looking far beyond the year 2020, every region's traffic reformation is or will be planning for and participating in a public, private, and end-user driven collective, collaborative move to real-time, technology-assisted communication of changes in traffic patterns, traffic incident management, and emergency response. Private industry, academia, governing authorities, and the general public all must work together to develop improvements to real-time communication systems for existing traffic operations without increasing driving distractions during this transitional period in addition to considering intermodal transportation needs through communication of real-time traffic data, thus reducing public safety risk and the cost of traffic incidents and delays to the environment and the economy.

48) Signal Processing Techniques for Identifying OSA Episodes and Artifacts in Pediatric Sleep Lab Data

Padmini Selvaganesan, Michala Dauterman, Ishwor Gautam, Jyoti Krishna, Ajay Mahajan *(College of Engineering or College of Polymer Science and Polymer Engineering)*
ps120@zips.uakron.edu

This paper reports on using advanced signal processing techniques such as Wavelet transforms to analyze data from pediatric sleep labs. The data from sleep labs are scored on the flow by the night technicians during the sleep study and then the following day by a day technician before being analyzed by the physician. The objective is to develop automated scoring routines to identify any OSA (Obstructive Sleep Apnea) events and to identify artifacts in the data. Typically, during sleep lab procedures in patients under the age of two, the use of pacifiers throughout the night leads to artifacts in the sensor measurements due to the constant movement of mouth during the sucking motion. This causes disturbance specifically in readings from the airflow sensor which is placed right above the mouth and below the nose to measure airflow, respiratory rate and breathing patterns. Simulated lab studies are provided as proof-of-concept for the proposed methods to remove artifacts and for automated scoring of events.

49) The Rheological Signatures of Entropy Production

Harini Sridharan, Ruel McKenzie *(College of Engineering or College of Polymer Science and Polymer Engineering)*
hs141@zips.uakron.edu

Temperature and its fluctuations have a significant impact on life that spans diverse phenomena such as weather patterns, sperm motility and even common artefacts such as artistic paintings and electronic devices; for instance, it can prove to be fatal if the temperature difference between our body and rectum rises even by 3.5°C. From the perspective of materials, application of temperature gradient develops thermal stresses within it which ultimately leads to an increase in entropy. This increase in disorder is an irreversible process which can permanently alter the properties of the material ultimately, affecting its life. It is hypothesised that when a thermal gradient is orthogonally superimposed on shear deformation in a rheometer setup, it affects the flow properties such as its viscosity profile and density variation to name a few. Polymers in particular, are affected by gradients extensively during their processing, manufacturing and storage due to their insulating capacity. A custom thermal gradient generator was designed and incorporated into a torsional rheometer setup to investigate the effects of a thermal gradient on the rheological properties of different materials. It is also capable of characterizing the entropy of the system to understand the link between thermal gradients and entropy.

50) Thermo-Mechanical Characterization of SiC/SiC Ceramic Matrix Composites Under Combustion Facility

Ragav P. Panakarajupally, K. Manigandan, Gregory N. Morscher *(College of Engineering or College of Polymer Science and Polymer Engineering)*
rp95@zips.uakron.edu

Ceramic matrix composites (CMCs) especially silicon carbide (SiC) fibers embedded in silicon carbide matrix are the candidate materials for high temperature propulsion applications because of their low weight and high temperature capability. One limitation is that at high temperatures these materials undergoes oxidation and surface recession. To successfully implement CMCs in jet engines it is essential to characterize these materials under similar jet engine conditions. A Combustion facility which can apply simultaneous combustion loading and mechanical loading is developed to simulate jet engine conditions. The main objective of this study is to investigate the effect of combustion environment on the mechanical properties and damage mechanisms of coated and uncoated SiC/SiC CMCs.

51) Probabilistic Model for Rebar-Concrete Bond Failure Mode Prediction Considering Corrosion

Benjamin (Ahmad) Soraghi, Qindan Huang, Derek Hauff *(College of Engineering or College of Polymer Science and Polymer Engineering) as481@zips.uskron.edu*

Adequate bonding between rebar and concrete is the keycritical to ensuring the reliable performance of RC structures. This rebar-concrete bond behavior directly influences the structural load carrying capacity and structure failure mode. It is found empirically that bond behavior is affected by many factors, including concrete cover, transverse reinforcement, rebar spacing, bar size, bar geometry, concrete properties, resteel stress and yield strength, bar surface condition, and etc. While many past studies have focused on the prediction of bond strength, how those factors influence the bond failure mode (i.e., pullout failure or splitting failure) is not well investigated, particularly when the concrete is not well confined and/or corrosion is present. The goal of this research is to propose a probabilistic model todevelop a predict bond failure mode prediction model considering corrosion. The model development is based on a group of bond testing results of 44 beam-end specimens with various rebar size, corrosion levels, covers, and stirrup confinement. This study adopts logistic regression and lasso logistic regression, where the failure mode is the categorical dependent variable and the aforementioned factors that could influence the bond behavior are the independent variables. In lasso logistic regression, a penalty factor is used for remove insignificant variables; in logistic regression, a model selection is applied to select variables that are needed for an accurate and practical model. The developed model can be used for bond failure mode prediction, and the selected variables can help developing the optimal design and/or retrofitting strategies.can be further used for corroded RC structure performance evaluation. Lastly, the proposed bond model is employed in the nonlinear finite element models of intact and corroded RC beams to investigate the importance of bond failure mode prediction model on evaluating flexural behavior of the beams.

52) Co-Cultured Cell Models Mimic Cancer Tumor Microenvironment

Madison Plaster, Stephanie Lemmo Ham, Hossein Tavana *(College of Engineering or College of Polymer Science and Polymer Engineering) mkp42@zips.uakron.edu*

In vitro tumor models are valuable tools to recapitulate in vivo tumor phenotypes and to help understand the response of tumor cells to different treatments. A major catalyst of tumor growth is stromal cell-cancer cell interaction in the tumor microenvironment. The association of triple negative breast cancer cells (TNBC) with carcinoma-associated fibroblasts (CAFs) are thought to promote survival, proliferation, drug resistance, and metastasis of cancer cells through the interaction of CXCR4 - CXCL12 signaling. To mimic this heterocellular tumor environment, we co-cultured TNBC cells, which were modified to overexpress the chemokine receptor CXCR4, with CAFs, which were transduced to secrete a stromal derived factor CXCL12. We demonstrated that co-cultures of TNBC cells and CAFs resulted in higher metabolic cellular activity than that of TNBC cells co-cultured with HMFs. Through immunostaining, we discovered that TNBC cells that overexpress CXCR4 co-cultured with CAFs proliferated at a higher percentage than normal TNBC cells co-cultured with CAFs. Our results indicate that CXCR4 - CXCL12 signaling between the TNBC cells and CAFs significantly increases the proliferation and metabolic activity of the TNBC cells. Our study established that CXCL12 binds to the chemokine CXCR4 receptors on the TNBC cells, increasing cell proliferation and metabolic activity. Co-culturing TNBC cells and supporting CAFs reproduces a major aspect of the in vivo tumor microenvironment and helps understand the effect of cancer-associated fibroblasts on functions of cancer cells.

53) Emergent Mechanics of Bird Nests

Nick Weiner, Hunter King *(College of Engineering or College of Polymer Science and Polymer Engineering)*
nrw27@zips.uakron.edu

A bird nest is stable bulk material comprised of many individual sticks and, in the simplest case, contains no adhesives and is held together only through internal friction between the components. A lot of research has been done on similar aggregate structures of low aspect ratio components (grains, soil, etc.) in the field of granular materials, however, very little has been done in exploring the mechanics of aggregate materials made up of high aspect ratio components. We designed experiments to probe the stress-strain behavior of an artificial simplified nest, made up of ~2500 homogeneous sticks of aspect ratios above 50. We are exploring how the internal structure (coordination number, contact slipping, etc.) of the material changes during loading and unloading cycles, as well as how the bulk stress strain behavior changes will different loading procedures. We are also creating a simulation model to match our system in the limited cases of different properties we can explore experimentally. Providing useful information that cannot be extracted easily from the experiment (force chains, contact point location, etc.). Initial results for the experimental system will be presented, as well as preliminary hypotheses for why the system behaves in the unique ways observed.

54) Free Water from Thin Air

Aida Shahrokhian, Jiansheng Feng, Hunter King *(College of Engineering or College of Polymer Science and Polymer Engineering)*
as396@zips.uakron.edu

Harvesting water by intercepting atmospheric fog is a proven effective, cost-

saving solution in certain regions where surface water is scarce. Namib desert beetles with bumpy elytra have been frequently cited as a source of biological inspiration in the context of harvesting fog for fresh water. The narrative portrays the bumps as an adaptation to modify wettability to facilitate transport of accumulated water to the mouth of the beetle. While transport can be crucial in some cases, the potential dominant role of the bumps as aerodynamic features that change the impaction rate of fog droplets has not yet been studied. In this study, we show in careful experiments with simplified analogs that small modification of surface morphology (eg. addition of millimetric bumps) can play a dominant role, reaching as much as a three-fold difference when compared with smooth surfaces of identical wettability. The result suggests an alternative driver of morphological adaptation in animals and plants which depend on direct interception of fog for water.

55) Structural Family Therapy with an Incarcerated Mother and Her Teenage Daughter: A Clinical Case Study

Eman Tadros *(College of Health Professions)*
eet18@zips.uakron.edu

A clinical case study will be conceptualized to exemplify effectiveness of using family therapy with an incarcerated hispanic, HIV positive mother and her teenage daughter. This presentation discusses the tenets, principles, and conceptual basis of Structural Family Therapy integrated with Solution-Foucsed and Narrative Techniques. Structural Family Therapy defines a problem in terms of boundaries, hierarchies, roles, subsystems, cross-generational coalitions, complementarity, developmental processes, and a family's life cycle. "A therapist enters a therapeutic situation with the assumption that a family is wrong (about the problem). A problem is not an identified patient, but certain family interactional patterns" (Minuchin, 1981, p.67). Eliminating the notion of an identified patient allows the family together to work collaboratively on the problem while releasing the blame from the incarcerated individual. Attendees will learn the theoretical and research basis for treatment, pathological processes, etiology, ethical considerations, and interventions in treatment. This presentation offers an anti-pathological, multicultural intersectionality approach to working with families; including discussion on practices of criminal justice and mental health that are often overlooked when diagnosing: gender, cultural, and religious factors.

56) Empowerment Though Narrative and Solution Focused Therapy

Eman Tadros *(College of Health Professions)*
eet18@zips.uakron.edu

Solution Focused Therapy sheds a positive light on a client's problem(s) by instilling hope, focusing on the connection with the client, and describing the problem in a way to display change being possible. Narrative Therapy focuses on the stories individuals tell about their past in which shape their current and future lives. Both therapies are based on treating each client as an individual with a problem rather than that the individual is a problem and being able to give power back to the client. The purpose of these ideologies are to open a client to alternative understandings. This presentation will teach clinicians to empower and identifying

their clients' positive strengths and resiliency factors. Narrative and Solution-Focused Techniques will be integrated to instill positivity and empowerment in clients. Techniques such as deconstruction, collaboration, complimenting, miracle/ exception/ scaling questioning will be analyzed and modeled. Furthermore, bridging Solution Focused's positive, goal-oriented philosophy and Narrative's empowerment and resiliency orientation gives a voice to unheard client(s).

57) The Effect of Breastfeeding and Rooming-In Care on Neonatal Abstinence Syndrome

Rachel Boyer, Lindsay Gal, Mahaylie Cline *(College of Health Professions)*
rhb21@zips.uakron.edu

Concurrent with a rise in opioid abuse during pregnancy is an increase in the number of babies born with Neonatal Abstinence Syndrome (NAS). Despite this crisis, no single treatment has been identified for NAS. This paper sought to analyze and synthesize research evaluating the effectiveness of breastfeeding and rooming-in care on the need and length of pharmacologic treatment and length of hospital stay for neonates with NAS. Twenty-six peer reviewed research articles published between 2006 and 2017 were selected from PubMed and CINAHL for analysis. The studies focused on neonates with NAS born to mothers addicted to opioids or undergoing opioid maintenance treatment (OMT). The studies reviewed included systematic reviews and research studies utilizing control and intervention groups in various countries with sample sizes ranging from 16 to 952 neonates. Findings indicate that breastfeeding and rooming-in are effective for mild-moderate NAS whereas pharmacologic treatments are recommended for moderate-severe NAS. In addition to these findings, this paper will discuss limitations faced while compiling research and the possibility for future research and implementation into practice.

58) Evaluating State Anxiety Levels in Nursing Students

Rachel Stevens, Tyler Blake, Rachel Nussbaum*(College of Health Professions)*
rns33@zips.uakron.edu

Anxiety can be a serious problem that reduces physical, cognitive, and clinical performance. Nursing students have been found to experience especially high levels of state anxiety which, according to Dorothea Orem's self-care deficit theory, causes a deficit in health promotion and the health of oneself. There is little evidence available about how progression through a baccalaureate nursing program in the United States impacts anxiety. A descriptive cross-sectional study measuring nursing student state anxiety was performed on a convenience sample at a midwestern public university in the United States via an online survey. The research questions were "Is there a difference in self-reported anxiety levels in baccalaureate nursing students based on program progression (year in program)?" and "Is there a relationship between GPA and GAD-7 scores?" Using independent t-tests and correlation analysis, it was determined that there is a statistically significant difference in level of anxiety (higher) in sophomore students compared to junior and senior nursing students. There is also a slight positive

correlation between student GPA and GAD-7 scores. Education for sophomore nursing students focused on improving familiarity and comfort with the program is discussed as a possible solution for high anxiety levels in this cohort.

59) Effectiveness of Alternative Cerebral Palsy Treatments in Pediatrics: Systematic Review

Katrina Beery, Olivia Doria, Emily Fricker *(College of Health Professions)*
krb100@zips.uakron.edu

Cerebral palsy (CP) is a multi-faceted movement disorder that affects the lives of approximately 500,000 children in America and millions across the globe. Traditional treatment involves physical and occupational therapies. The purpose of this systematic review is to identify, describe, and critically appraise the evidence about the effectiveness of alternative therapies including hippotherapy, aquatic therapy, and robotic gait training in children with CP. Researchers have found that these therapies improve gross motor function and balance. This review focuses on determining which age sub-population would benefit most. A critical appraisal of studies is conducted and followed by recommendations for practice based on the findings, validity, reliability, and applicability of the studies. This systematic review may have implications in the nursing care of children with CP and nurse advocacy for increased availability of alternative treatments. Further, this project is an example of what baccalaureate-prepared nurses do to determine evidence for practice.

60) Exploring the Utility of MUAC in Classifying Adult Metabolic Syndrome Risk Using NHANES 2015-2016

Hayley Boucher, Brian Miller, Laura Richardson, Judith Juvancic-Heltzel *(College of Health Professions)*
hgb6@zips.uakron.edu

MetS is a constellation of cardiometabolic risk factors. A validated screening method is critical to attenuate development of diseases, and improve healthcare outcomes.
This study defined and validated a risk criterion for MetS using MUAC as a valid alternative criterion for MetS classification risk. The sample was from NHANES 2015-2016 data including adults over the age of 18 (N = 9,971). MetS was defined using NCEP ATP III 2005 MetS criteria. A recursive partitioning methodology (RPM) created binary MUAC criterion by sex, using 75% of the total sample and was validated with the remaining 25% of the sample. 17% of the total sample presented with MetS. The RPM resulted in sex specific MetS criteria with the MUAC criterion >32cm ($p = 0.024$) and >29cm ($p = 0.024$) for males and females, respectively. Those meeting the criteria were 9.84 (males) and 9.23 (females) times more likely to present with MetS than without the MUAC criterion. The classification accuracy for both training and validation models were 83% with no statistical difference between models ($p = 0.983$). MUAC shows promise in being an effective screening method for MetS in guiding further diagnostic tests to prevent associated cardiometabolic morbidity and mortality.

61) The Effect of Coconut Oil Replacement on Sensory and Physical Characteristics in Blueberry Muffins

Emily Weaver, Nathan Burns *(College of Health Professions)*
elw48@zips.uakron.edu

Consumers have begun looking to incorporate functional foods to help reduce the risk of developing specific kinds of diseases. Studies have been conducted to assess both the subjective and objective measures of both partial and complete oil substitutions and their effects on consumer acceptability through a sensory evaluation. The purpose of this study was to determine the effect of complete substitution of vegetable oil for coconut oil on physical and sensory characteristics on blueberry muffins. Vegetable oil was used as the control and coconut oil. The sensory evaluation was conducted by 21 individuals and used a 7-point hedonic scale to assess the control and variable muffins based on appearance, volume, moistness and texture, taste, and overall acceptability. Height, width, viscosity, and moisture content were also evaluated using two control and two variable muffins. Both sensory and objective data was entered into IBM SPSS (version 25). The data was assessed using a p value < 0.05. Sensory results indicated that there was no significant difference in appearance, volume, moisture/texture, taste, and overall acceptability. The physical property results revealed that there was no significant difference in moisture content and width, however, there was a significant difference in viscosity and height.

62) Effect of Avocado Puree Replacement on the Viscosity, Height, Moisture Content, and Consumer Acceptability of Brownies

Joshua Weaver, Sydney Schiemann *(College of Health Professions)*
jtw66@zips.uakron.edu

Studies show that avocado has multiple health benefits including the reduction of cholesterol and the prevention of cardiovascular diseases. Avocado is a monounsaturated fat, which is considered a healthy fat. Butter is a saturated fat, which is considered an unhealthy fat. This creates a demand to replace butter in baked goods with avocado to create a guilt-free dessert. The objective of this experiment was to determine the effects on viscosity, height, moisture content, and consumer acceptability when avocado is substituted for butter in brownies. Samples were evaluated on appearance, texture, flavor, moisture, and overall acceptability by twenty participants. Both sensory and objective data was analyzed by IBM SPSS software (version 25). The control sample had a significantly higher mean score on a 7-point hedonic scale in all five sensory evaluations when compared to the sample prepared with avocado ($p < 0.05$). Moisture content, height, and viscosity of avocado brownies were significantly different from regular brownies ($p < 0.05$). Results revealed that consumers preferred the regular brownies compared to avocado brownies. This information may be useful to both producers and consumers when considering total, or partial, fat substitution in baking products.

63) Wideband Acoustic Immittance in Dogs

Megan Leas, Cara Donovan, Kristine Sonstrom, Ph.D., James Steiger, Ph.D. *(College of Health Professions)*
mml124@zips.uakron.edu

Hearing sensitivity has been assessed in dogs since the 1980s with Brainstem Auditory Evoked Response (BAER) testing as the gold standard. BAER testing can indirectly suggest the type of hearing loss; however, a more time and cost effective direct assessment of middle ear function is needed. Tympanometry has been shown to be an effective measure of middle ear function in dogs. Though, a pressurized seal is needed to complete the test which can be difficult to obtain in unsedated dogs. This is due in part to the vertical and horizontal component of the dog's external auditory canal. Wideband acoustic immittance (WAI) is used to measure acoustic impedance, admittance, and reflectance of the middle ear without the need for a pressurized seal. WAI stimuli are chirps or pure tones. The test involves the comparison of incident and reflected waves; middle ear disorder can affect the latter. The purpose of this study was to explore the efficacy of using WAI in dogs, specifically to observe patterns consistent with normal middle ear functioning. To our knowledge, WAI has not been studied in dogs and it is unclear whether the norms collected on humans can be applied to dogs.

64) A Tale of Two Healthcare Systems: Total Laryngectomy in the United States and Spain

Anna Nyszczy *(College of Health Professions)*
ann53@zips.uakron.edu

For individuals entering the field of health professions, an understanding of variation between global health systems can foster more informed viewpoints when working with multicultural populations. To further investigate this relationship, I analyze the macro-structure of the healthcare systems in the United States and Spain to better understand plans of treatment, economic burden to patients and quality of life reports for patients undergoing total laryngectomy surgery in each country. A critical review of scholarly journals and studies relating to the healthcare systems of each country and total laryngectomy surgeries showed a unique picture of each system. When compared, the United States' health system shows increased financial burden to the patient and more difficulties in coordinating appointments and procedures needed for successful treatment. This is attributed to universal healthcare without copay and supportive care such as homecare in the Spanish system. Other factors such as low socioeconomic status and difficulty regarding access contribute to poorer outcomes in both healthcare systems. Engaging with the differences between systems illustrates that care can be achieved in different ways, a crucial lesson in increasing the knowledge base and intercultural competence of the upcoming workforce in United States healthcare.

65) Nutrition Students Amp Up Nutrition at Camp

Julia McPherson, Victoria Luma *(College of Health Professions)*
jdm226@zips.uakron.edu

A productive partnership between the UA Biology Department Field Station and the Nutrition Center developed after Dr. Roketenetz, the program director, noticed the children participating in the field trip were consuming poor quality snacks and foods brought from home and school. Since 85% of children in Akron Public City schools fall below the poverty line, this population is especially at risk for inadequate consumption of nutrition. Now, in its third year of partnership, the Nutrition Center Dietetic Interns facilitate nutrition education through crafts and activities while providing healthier meals and snacks. The goal of this program was to make following recipes and home cooking less daunting to children and their families by exposing children to adaptations of familiar foods throughout the camp and then providing an easy to follow book containing those recipes. The campers learned about Go, Slow and Whoa foods, food safety, and measurement in cooking through crafts and activities. Student surveys identified the favorite and least favorite foods.The general consensus indicated the taco bar the favorite and the coleslaw the least favorite. In terms of retention, more than 50% of the students were able to report back the lesson on Go, Slow, and Whoa foods.

66) Burnout Syndrome in Critical Care Nurses

Katie Burke, Kelly Claridge, Mallory Bidlen *(College of Health Professions)*
khb8@zips.uakron.edu

Burnout syndrome among nurses, especially within the critical care setting, has been a persistent and increasingly prevalent problem in the healthcare field. This systematic review aims to explore the common causes of burnout among nurses associated with working in a critical care setting. Twenty-five peer-reviewed articles, published between the years of 2000 and 2018, were selected for analysis and synthesis using the databases PubMed and CINAHL. We included research studies conducted in the United States, Spain, France, China and Iran with sample sizes ranging from 42 to 2,392 intensive care unit (ICU) nurses. The articles included in this review were from systematic reviews and individual experimental studies that used Maslach Burnout Inventory, General Health Questionnaire, Integrative Literature Reviews, Depression Screenings, Cross-Sectional studies, and the Connor-David Resilience Scale. Findings demonstrate a high incidence of burnout among critical care nurses, with common causes related to environmental, situational and personal factors.

67) Do Woodwind and Brass Players Have Increased Pulmonary Function

Malik Scales, Anthony Schneider *(College of Health Professions)*
mts68@uakron.edu

It's known that swimming improves pulmonary fitness levels because swimmers have increased lung capacity and thus improved lung functions. It's believed that one reason for improved lung function is because they have to control their breathing thus providing training to their respiratory system. Similar to swimmers woodwind and brass instrument players also have to control the flow of air. Thus my aim is to find out if those same adaptation are found in musicians that play brass or woodwind instruments. Participants were briefed on the details of the

testing protocol and completed informed consent forms. Then completed a questionnaire including demographic data, swimming events and instrument played. Spirometry was performed following American Thoracic Society/ European Respiratory Society (ATS/ERS) Task Force recommendations (M.R. Miller, 2005). They preformed the 3 spirometry trails and best out of the 3 was used for analysis and MMV was preformed once. Swimmers mean FVC, FEV1, MMV and breathes per minute values were higher compared to the musicians. Musicians FEV1/FVC mean values were higher. There were no statistical difference when comparing absolute FVC, FEV1, FEV1/FVC and MMV values. However there was a statistically significant difference when comparing relative FVC and FEV1 vaules.

68) Do Woodwind and Brass Players Have Increased Pulmonary Function

Katherine Allensworth, Lacey Burkholder, Haley Schaffter *(College of Health Professions)*
kpa14@zips.uakron.edu

Illness contributes to a decrease in student class attendance which can lead to increased academic stress. Decreasing the spread of illness among those living in residence halls is essential to academic success. The purpose of this systematic review was to identify interventions implemented in residence halls on college campuses to reduce the spread of illness. The research conducted was completed by means of a systematic review of literature including 20 peer reviewed articles published between 1999-2017 from the databases CINAHL Plus, PsychInfo, and PubMed. Findings from this review revealed a focus on three interventions used to decrease illness among college students living in residence halls: (1) hand washing, (2) lifestyle initiatives, and (3) education. Of the three, hand washing and educational measures were found to decrease the spread of illness, while lifestyle initiatives were found to have no direct correlation to the spread of illness.

69) The Accuracy of Female Collegiate Soccer Players in Self-Detecting Ventilatory Threshold

Nicole Krueger, Ronald Otterstetter, Erica Schrader *(College of Health Professions)*
nlk30@uakron.edu

Ventilatory threshold (VT) occurs when minute ventilation (Ve) increases nonlinearly with increasing exercise intensity. Research shows subjects are able to recognize VT by noticing changes in breathing. VT is important as positive training adaptations occur at intensities at or above this threshold. To quantify how accurately female collegiate soccer players can perceive their VT. METHODS: Volunteers from a women's collegiate soccer team were recruited (n=17, age= 19 □ 1.56 yrs) and performed a modified maximal treadmill protocol. Subjects were to indicate when a change in breathing was noticed (perceived ventilatory threshold (PVT)). Actual VT was recorded using a metabolic cart. Pearson product correlation and independent samples t-tests were used to test the relationships and mean differences between VO2, VF, VE, and TV at PVT and VT. RESULTS: Positive correlations were found between actual VT and PVT on physiological variables with TV (r=.932), VO2 (r=.714), and VF (r=.684) and VE (r=.49) with moderate relationships. No statistically significant differences were found on

average VO2, VF, VE, and TV at PVT and VT. CONCLUSION: Female collegiate soccer players may be able to detect the changes in their breathing associated with VT, which could be useful in prescribing exercise for this population.

70) Program Evaluation for Child and Adolescent Inpatient Psychiatric Units

Jennifer Mancino *(College of Health Professions)*
jlm7@zips.uakron.edu

According to the National Survey on Drug Use and Health, suicide is the second cause of death among those 15-24 and third among adolescents 10-14. Suicide continues to climb without substantial information on effective treatment methods (Dirks, 2017). Adolescent inpatient psychiatric patients at Cleveland Clinic Child and Adolescent Inpatient Psychiatric Unit (unit) present in crisis as a threat to themselves, or others, with high levels of re-admittance upon discharge. It is unknown if a longer duration and more intensive therapeutic model, such as dialectical behavior therapy (DBT), on the unit would reduce psychiatric hospital reoccurrence among this population. Therapeutic services offered on the unit fall under the umbrella of rehabilitation therapy and include stabilization, recreational therapy and psychoeducation. One boundary of the current therapeutic program is omission of intensive therapeutic services such intensive individual and family DBT. The current model targets adolescents in crisis focusing on safety but avoiding underlying causes of behaviors. There is lack of research and empirical support for therapeutic interventions to reduce impairment of adolescents in an inpatient psychiatric facility (O'Brien, 2015). This project is a program evaluation to improve interventions in child and adolescent psychiatric inpatient units to reduce reoccurrence of admission upon discharge.

71) Assessing the Benefits of a Collegiate-Run Wellness Program for Akron Inner City Residents

Alaina Gent, Dr. Judith A. Juvancic-Heltzel *(College of Health Professions)*
akg40@zips.uakron.edu

This study offers insight into The University of Akron Wellness Wednesday Program, an interprofessional collaboration of allied health students and faculty presenting wellness programming to three off-campus low income housing developments. The residents receive wellness programming from various health disciplines during the academic year, with a five-month gap when the university breaks for summer. As a result, residents vocalize concern over their inability to remember the educational information. In order to assess the residents' ability to retain and recall information, a pre-test of topics covered by the programming, during the 2017-18 academic year, was given in April of 2018 and a post-test was given when residents returned to the program in September-November of 2018. The purpose of this study was to assess program benefits, determine resident retention of health education information, and explore other strategies to reinforce retention. Limitations of the study include a lack of participation in the post-survey, as many did not return for the programming after the summer break. Results from the study will be used to develop strategies to enhance programming and information retention.

72) Measuring Nutrition Literacy Among Participants Enrolled in a Weight Management and Chronic Disease Prevention Program

Abby Perkins *(College of Health Professions)*
agp28@zips.uakron.edu

Type II diabetes, hypertension, and overweight/obesity are three of the most common diet-related health conditions and are closely linked to negative health outcomes. Limited nutrition knowledge is associated with inadequate preventative care and poor diet quality, which may exacerbate the development of these conditions. Research suggests that targeted nutrition education increases nutrition literacy and thus is an important component of diet-related chronic disease prevention programs. Despite its importance, nutrition literacy tools are not widely available and/or routinely used in practice. Program/Participants: A total of seven 15-20-minute focused nutrition classes were incorporated into an existing wellness program offered through the Summa Health Equity Center. Pre and post-program measures of nutrition literacy were conducted using the Nutrition Literacy Assessment Instrument, a newly developed tool, to assess feasibility of use and changes in nutrition knowledge. Evaluation: Participants started with a high nutrition literacy score (88%), which changed little over the course of programming. Through incorporating this tool, a number of limitations were noted that suggest this tool may not be appropriate for this population. Additional research would be beneficial to further refine the tool and to develop methods of assessing nutrition literacy for use among audiences of varying pre-existing knowledge.testing protocol and completed informed consent forms. Then completed a questionnaire including demographic data, swimming events and instrument played. Spirometry was performed following American Thoracic Society/ European Respiratory Society (ATS/ERS) Task Force recommendations (M.R. Miller, 2005). They preformed the 3 spirometry trails and best out of the 3 was used for analysis and MMV was preformed once. Swimmers mean FVC, FEV1, MMV and breathes per minute values were higher compared to the musicians. Musicians FEV1/FVC mean values were higher. There were no statistical difference when comparing absolute FVC, FEV1, FEV1/FVC and MMV values. However there was a statistically significant difference when comparing relative FVC and FEV1 vaules.

Notes

Scholarly Publishing: Some Questions and Answers for Graduate Students and Faculty

1:45 pm-2:45 pm

Learning Objectives:

- Understand the background of the peer-review process.
- Understand the high cost of accessing licensed publications.
- Identify some strategies for authors to help in identifying potential publications to submit their works.

Dr. Jon Miller *(Moderator),* professor of English, Director of UA Press.

Mark Clemente *(Panelist),* is the *Scholarly Communications Librarian at Case Western Reserve University*, where he educates and advises the university community on copyright, scholarly publishing, and licensing.

David Parsons *(Panelist),* is *Senior Customer Marketing Manager and former Publisher at Elsevier,* an international academic publisher and data analytics company, specializing in science and health.

Ira Sasowsky *(Panelist),* is a *professor in the Department of Geosciences at the University of Akron.* Dr. Sasowsky has served as an editor, reviewer and has published widely in the geosciences and related fields.

Megan Stevenson *(Panelist),* is the *Journal Sales Executive for Taylor & Francis Group*, an international academic publisher in multidisciplinary areas and the largest publisher in the social sciences.

In this panel, the presenters will address general questions about the publication cycle of journal articles and monographs. Attendees will have an opportunity to explore current and key aspects in scholarly communication: the peer-review process, evaluating and choosing where to publish, and the cost of scholarly materials. The session features two perspectives from two panelists representing the publishing industry and two panelists representing academic institutions.

Common Terms Used in Scholarly Communication

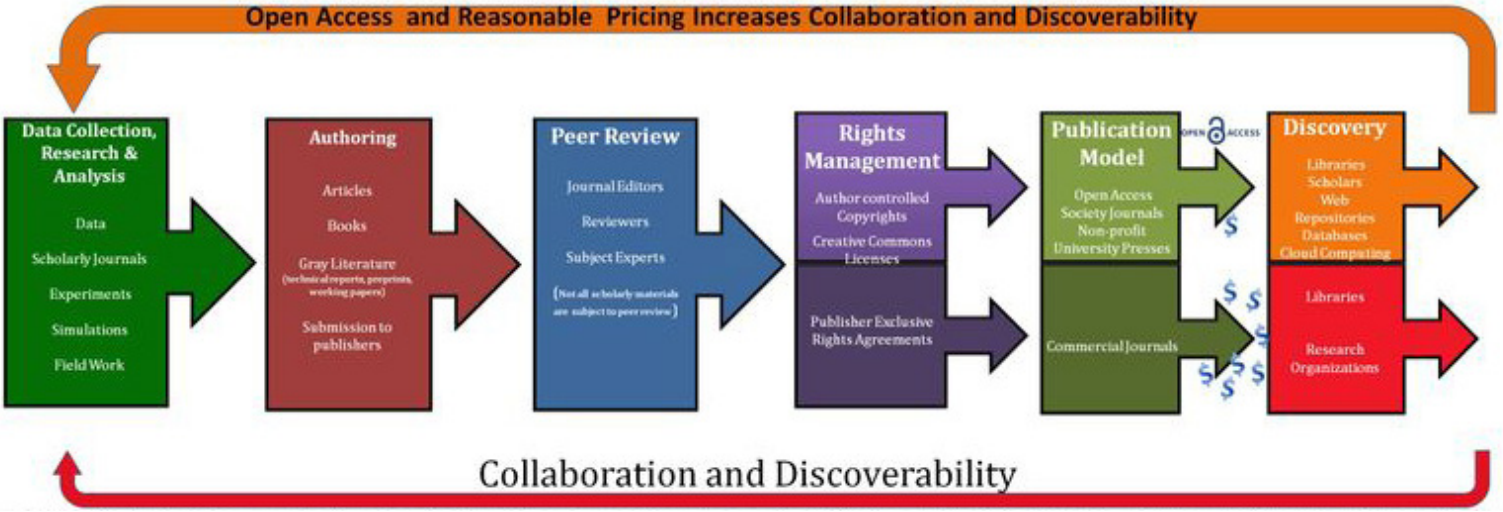
Open access: "Information content made freely and universally available via the Internet … usually because the publisher maintains online archives to which access is free or has deposited the information in a widely known open access repository. Open access is a new model of scholarly publishing developed to free researchers and libraries from the limitations imposed by excessive subscription price increases for peer-reviewed journals…" Source: https://www.abc- clio.com/ODLIS/odlis_o.aspx

Peer-review process: "The process by which original articles written by researchers are evaluated for scientific quality and correctness by other experts in the same field." Source: https://www.cancer.gov/publications/dictionaries/cancer-terms/def/peer-review-process

"Predatory" journals: Journals involved in "…'predatory publishing', a questionable business practice of charging fees to authors to publish their articles without standard editorial and publishing services provided by legitimate scholarly journals." Source: https://libguides.rutgers.edu/predatory

Scholarly communication: "The system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future" Source: https://www.arl.org/focus-areas/scholarly-communication#.XJQzOy2ZPs1

Lifecycle of Scholarly Communication



The structure of scholarly communication has developed over centuries to create, evaluate, certify, disseminate and preserve the intellectual outputs of scholars. It involves three major stakeholders -the scholars who create the knowledge, publishers, who review, edit, package and distribute the knowledge and the libraries/repositories that collect preserve and organize the knowledge. The digital revolution has enabled quicker and cheaper access to a wide range of information and alternative models of publication. Digital Publishing, Digital Repositories, Open Access Journals are all representatives of the alternative models of publications.
Creative Commons Licensing Agreements allow wider distribution and use of scholarly materials.

Credit: UW Libraries Scholarly Communication Steering Committee. (2011, October 24-30). Lifecycle of scholarly communication [Poster]. Open access exhibit. University of Washington, Seattle, WA.

Symposium Planning Committee

UAIS was made possible by the hardwork and dedication of the planning committee. The symposium began as a SDI (Student Driven Initiative) supported by the EX[L] Center. SDI's are projects students have applied and recieved support and/or funding for through the EX[L] Center.

Scott Swiatek
Graduate Assistant, Department of Sociology
2019 UA-IS Co-Chair
sas227@zips.uakron.edu

Matt Williamson
Graduate Assistant, Department of Sociology
2019 UA-IS Co-Chair
mw124@zips.uakron.edu

Eric Victory
Graduate Assistant, Department of Sociology
2019 UA-IS Communications & Promotions Co-Chair
etv5@zips.uakron.edu

Katie Bullock
Graduate Assistant, Department of Sociology
2019 UA-IS Communications & Promotions Co-Chair
kmb391@zips.uakron.edu

Stefanie Shatrich
Administrative Assistant, Department of Sociology
2019 UA-IS Communi
2019 UA-IS Logistics Chair
stefan1@uakron.edu

Dr. Carolyn Behrman
Co-Director, EX[L] Center
Professor of Anthropology
2019 UA-IS Fundraising Co-Chair
behrman@uakron.edu

Dr. Dane Quinn
Associate Dean, Williams Honors College
Professor, Department of Mechanical Engineering
2019 UA-IS Fundraising Co-Chair
quinn@uakron.edu

Savannah Sprankle
Sr. Student Manager, EX[L] Center
2019 UA-IS Graphic Design
sms462@zips.uakron.edu

Jodi Noland
Graduate Assistant, Department of Sociology
2019 UA-IS Symposium Treasurer & Awards
jcn15@zips.uakron.edu

Matthew Walker
Graduate Assistant, Department of Sociology
2019 UA-IS Symposium Treasurer & Awards
mw184@zips.uakron.edu

Dr. Robert Peralta
Associate Professor, Department of Sociology
Internship Coordinator
2019 UA-IS SDI and Adivsing Chair
rp32@uakron.edu

Faculty Support Committee

Dr. Robert C. Schwartz
Professor, Counselor Education & Supervision
Associate Dean, College of Health Professions
rcs@uakron.edu

Dr. Terry Daugherty
Assistant Dean & Director, Graduate Programs
Associate Professor, Marketing
td23@uakron.edu

Dr. Charles A. Waehler
Associate Professor, Counseling Psychology
cwaehle@uakron.edu

Dr. Janette S Dill
Associate Dean, Williams Honors College
Professor, Department of Mechanical Engineering
jdill@uakron.edu

Dr. Juan Xi
Associate Professor, Sociology
jx@uakron.edu

Marilia Antunez
Assistant Professor of Bibliography
Life & Allied Health Sciences Librarian
mantunez@uakron.edu

Dr. Robert Peralta
Associate Professor, Department of Sociology
Internship Coordinator
rp32@uakron.edu

Jacob Farrar
Director, The Taylor Institute for Direct Marketing,
College of Business Administration
jfarrar@uakron.edu

Submissions Review Pannel

College of Health Professions

Bill Fiala
School of Allied Health Technology
wcfiala@uakron.edu

Dr. Mary Jo MacCracken
School of Sport Science & Wellness Education
maccrac@uakron.edu

Rikki Patton
School of Counseling
rpatton@uakron.edu

Sheau-Huey Chiu
School of Nursing
schiu@uakron.edu

Jennifer Warren
School of Nutrition & Dietetics
jlw28@uakron.edu

College of Business Administration

Dr. Frederik Beuk
Department of Marketing
beuk@uakron.edu

Dr. Eric Brisker
Department of Finance
ebrisker@uakron.edu

Dr. Federico de Gregorio
Department of Marketing
vdegrego@uakron.edu

Dr. Ray Gehani,
Department of Management
rgehani@uakron.edu

Dr. Erin Makarius
Department of Management
makarius@uakron.edu

Dr. Li Wang
School of Accountancy
lw37@uakron.edu

College of Arts and Sciences

Dr. Jaun Xi
Department of Sociology
jx@uakron.edu

Dr. Robert Peralta
Department of Sociology
rp32@uakron.edu

Dr. Janette Dill
Department of Sociology
jdill@uakron.edu

Dr. John M. Senko
Department of Geosciences/
Department of Biology
senko@uakron.edu

College of Engineering

Dr. Bi-min Zhang
Chemical and Biomolecular Engineering
bimin@uakron.edu

Dr. Sawyer
Mechanical Engineering
ssawyer@uakron.edu

Dr. Yilmaz
Electrical and Computer Engineering
ys@uakron.edu

We are grateful to the sponsors that made the UAIS possible:

EX[L] Center for Experiential Learning
The Williams Honors College
Buchtel College of Arts and Sciences
College of Engineering
College of the Health Professions
College of Business Administration
College of Applied Science and Technology
Alpha Kappa Delta Sociology Honors Society

EXL CENTER FOR EXPERIENTIAL LEARNING

THE DRS. GARY B. & PAMELA S. WILLIAMS HONORS COLLEGE 19 75

ALPHA KAPPA DELTA SOCIOLOGY HONOR SOCIETY ESTD 1920
Partially funded by AKD

The University of Akron
College of Business Administration

The University of Akron
College of Health Professions

The University of Akron
Buchtel College of Arts and Sciences

The University of Akron
College of Engineering

The University of Akron
College of Applied Science and Technology