CELEBRATIONS | *of*

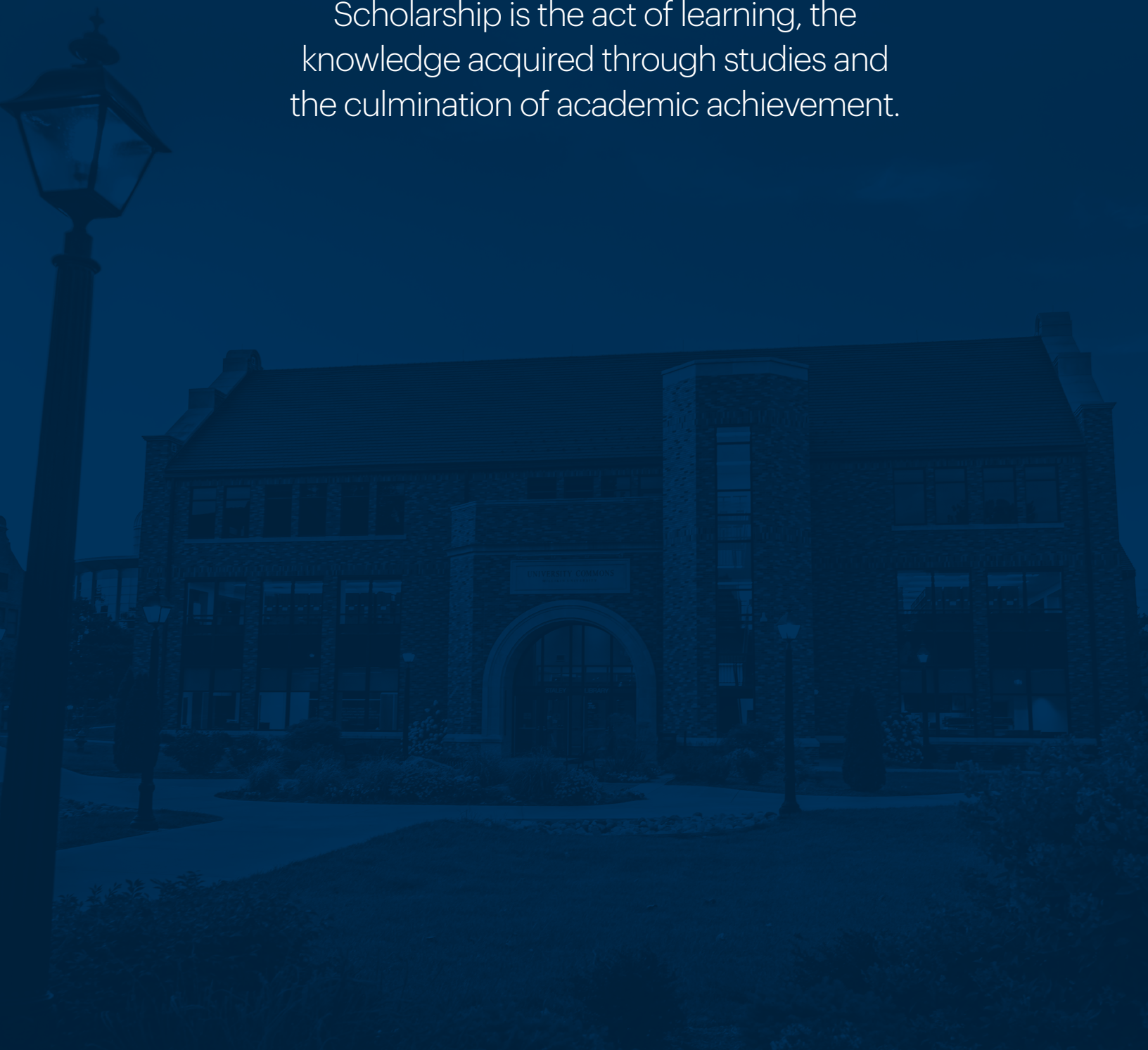
SCHOLARSHIP

AND POSTER SYMPOSIUM

2022

\skä-lər-ship\

Scholarship is the act of learning, the knowledge acquired through studies and the culmination of academic achievement.



celebrations *of* scholarship 2022

Celebrations of Scholarship showcases the outstanding work of Millikin students, proving that an education born from Performance Learning develops accomplished scholars prepared for graduate, professional and personal success.

During this celebratory event, students from across the University will present the results of their research, scholarship and creative efforts to the Millikin community. Multiple concurrent sessions modeled on a scholarly conference format, organized independently by each department, will run across the campus. In addition, the annual Poster Symposium will highlight the scholarly work completed by students in regularly scheduled courses, seminars, independent studies, directed studies, internships, SURF, Leighty Scholar, Long-Vanderburg Scholar and James Millikin Scholars projects.

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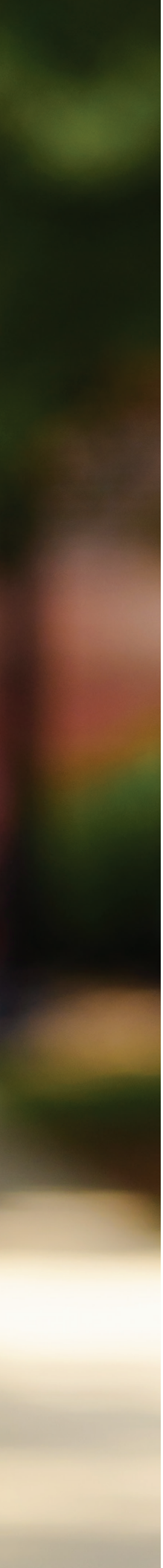

Performance Learning Lives at Millikin University

Millikin University's annual Celebrations of Scholarship provides a showcase for the incredible academic engagement our students experience throughout the year. Through Performance Learning opportunities both inside and outside the classroom, our students are challenged to engage in the real work of the disciplines they study, applying their knowledge and skills to real-world applications with real risks and rewards. Throughout our Celebrations of Scholarship, students will share their scholarly and artistic accomplishments with new audiences, giving every member of the Millikin community an opportunity to share in the celebration of their achievements and their potential for continued success.

Mary Black
Provost

College of Arts & Sciences

See the Results of Our Students' Research

Every year Celebrations of Scholarship is a great day for students to share their creativity, scholarship, investigations, explorations and discoveries. Many of the projects you will hear about today are the result of months, even years, of hard work in collaboration with faculty and peers. The students are proud and ready to present the fruits of their labor.

Faculty in the College of Arts & Sciences expect students in all of our academic programs to discover, create and use newly acquired knowledge. This is true of students in University Studies classes and this is true of all of our students at every stage of their academic growth in their disciplines. Millikin students are here to be the makers, the innovators, the discoverers, the research collaborators and the creative users of new knowledge.

For several students, these presentations will be the first time they are sharing their work with audiences beyond their classrooms and laboratories. But many College of Arts & Sciences students have presented research at national and regional conferences this year, and for them Celebrations of Scholarship is an opportunity to share their nationally recognized work here, on their home campus. Several of our students have also competed as teams at regional or national academic competitions such as Moot Court, Model Illinois Government, Model United Nations and the Ethics Bowl. Our journalism and media students have received national awards for radio production and outstanding journalism. At Celebrations of Scholarship you can see samples from these competitions and this award-winning work.

Today is your chance to enjoy these presentations firsthand. I invite you to join in the 2022 Celebrations of Scholarship presentations, forums and exhibits sponsored by the College of Arts & Sciences. Join us as we recognize the outstanding achievements of our students. Join us in the celebration of the creativity of students at Millikin University. Join in the excitement and fun of Performance Learning.

Dr. Randy Brooks
Dean, College of Arts & Sciences

Biology

Zika-reactive antibodies present in Central Illinois tropical migrant species

SH320
8:00 a.m.-8:30 a.m.

Presenter(s):
Katie Curtis

Faculty Sponsor(s):
Dr. Travis Wilcoxen

Abstract/Description:
Zika Virus was first detected in humans in South America within the last 10 years. In the native virus range of Africa, primates are the primary reservoir host for this virus, but little is known about reservoir hosts in South America. Zika is an Arbovirus, similar to West Nile Virus, and other Arboviruses have avian reservoir hosts. Zika is unique in that transmission from reservoir to definitive host is dependent upon a small number of mosquito species – each of which does not have an established population in Central Illinois. The purpose of this study was to determine if neotropical migrant bird species are carrying Zika Virus upon arrival in Central Illinois during migration. We used three different assays to detect active antibodies and found cross reactivity with West Nile Virus in all but one bird, indicating at least one Spring migrant was positive for Zika Virus. This suggests that birds could serve as Zika Virus reservoirs and could spread the virus to a much broader range in this hemisphere.

Avoidance Behavior by Wingless *Drosophila melanogaster* of a Food Source Infected with Lipopolysaccharides

SH320
8:30 a.m.-9:00 a.m.

Presenter(s):
Sydney Kehrmann

Faculty Sponsor(s):
Dr. Marianne Robertson

Abstract/Description:
Individuals conserve energy through pathogen avoidance by preventing a costly immune response. We tested *Drosophila melanogaster* responses to simulated bacterial contamination of food. We did not pre-expose the control group to any LPS, and only pre-exposed flies to a food source containing LPS in the experimental group, and then observed their visits to infected and non-infected food sources. Our data support the hypothesis that male *D. melanogaster* will show avoidance of a food source infected with LPS, but females do not. These differential results between male and female flies demonstrate sex-specific behaviors following exposure of an endotoxin.

Associations between interferon gamma (IFN-ɣ) levels and ivermectin treatment on avian malarial parasite loads

SH320
9:00 a.m.-9:30 a.m.

Presenter(s):
Jenna Thelen

Faculty Sponsor(s):
Dr. Travis Wilcoxen

Abstract/Description:
Little is known about cytokine signaling in birds. Malarial parasites are easy to detect in blood smears from birds of prey, and parasite loads can potentially be manipulated with pharmaceutical treatment. In this study, we used ivermectin to attempt to experimentally reduce malarial parasite load in birds of prey, and to simultaneously determine if the cytokine interferon gamma (IFN-ɣ) is released proportional to parasite load. While ivermectin did successfully reduce malarial load, there was no significant association between parasite load and IFN-ɣ levels in birds with ivermectin treatment or birds without. These findings suggest that other cytokines must coordinate the immune response to intracellular parasites in birds.

Prevalence of tularemia in birds of prey: a role for hawk flies?

SH320
9:30 a.m.-10:00 a.m.

Presenter(s):
Morgan Rockwell

Faculty Sponsor(s):
Dr. Travis Wilcoxen

Abstract/Description:
Birds of prey can be infected by a gram-negative coccobacillus, Francisella tularensis or tularemia. F. tularensis can be transferred to a host via direct contact with another host, including ingestion or inhalation. Raptors can be parasitized by Hippoboscidae flies, but it is unknown if they can transmit tularemia. We explored prevalence of tularemia in raptors and Hippoboscid flies with direct ELISA and indirect IgM ELISA. The highest prevalence of F. tularensis was in larger predators (GHOW, RTHA & TUVU), perhaps because these raptors have a diet high in rabbits or other mammals, putting them at a higher risk.

Chemistry

Prevention of Enamel Stains from Coffee and Red Wines

SH320
10:00 a.m.-10:30 a.m.

Presenter(s):
Victoria Mineo

Faculty Sponsor(s):
Dr. George Bennett

Abstract/Description:
Colored beverages, such as coffee, red wine, Gatorade, Powerade, and sweet and unsweet tea, stain tooth enamel. The aim of this research was to investigate the effect that increasing the pH of these beverages has on how the beverages stain bovine enamel disks that act as a proxy for human teeth.

Communication

Communication Capstone Presentations

SH317
8:00 a.m.-9:00 a.m.

Presenter(s):
Brigid Duesterhaus, Faith Fitzsimmons, Emily Haag, Nathaniel Moore, Riley Sawin

Faculty Sponsor(s):
Dr. Nancy Curtin

Abstract/Description:
Senior communication majors present their capstone reflections.

Environmental Studies

Environmental Studies majors present on their internship or research experience

SH317
9:00 a.m.-10:30 a.m.

Presenter(s):
Gabriella Barone, Bryan Dabulskis, Maria Holloway-Racine, Holden Owens, Ethan Wade

Faculty Sponsor(s):
Roslyn O'Conner

Abstract/Description:
Presenter's topics will include: Utilizing Local Gardens for Connections to the Natural World, The Benefits of Revitalization of Vacant Lots, The Impact of Diet on the Environment, A Sustainability Plan for Millikin University, The Importance of Recycling Locally and Globally.

History

"The Little Women ... Who Started this Great War": 19th-Century Female Abolitionists

SH412
1:00 p.m.-1:30 p.m.

Presenter(s):
Madison Roberson

Faculty Sponsor(s):
Dr. Dan Monroe

Abstract/Description:
This paper analyzes the contributions made to the abolition of slavery by women of different races, backgrounds and abilities as well as their struggle against gender hierarchy in the 19th century. Female abolitionists overcame not only the institution of slavery but also the Cult of Domesticity and its limitations. Most notable are the efforts of white writer Harriet Beecher Stowe and Black poet Frances E.W. Harper. Female abolitionists challenged the Peculiar Institution through their work in the Underground Railroad and The Liberator. Though often a second thought to their male contemporaries, the abolition of slavery relied on the efforts of female abolitionists. These women controlled the education of children, published compelling written works, presented at anti-slavery events and used the power of both sympathy and empathy to persuade apathetic Northern whites. Their unique position in 19th-century society allowed female abolitionists to reach an audience that their counterparts could not, greatly increasing anti-slavery support.

A Dichotomous Analysis of PTSD and Sartrean Existentialism through Ernest Hemingway

SH412
1:30 p.m.-2:00 p.m.

Presenter(s):
Hannah Prochnow

Faculty Sponsor(s):
Dr. Dan Monroe

Abstract/Description:
This paper explores the connections between post-traumatic stress disorder (PTSD) and the philosophy of existentialism by analyzing the lives and works of Jean-Paul Sartre and Ernest Hemingway. Both writers grew up in an era of heightened global political strife and cultural change, and wrote about war and a shifting society as if to give future readers an intimate glimpse into what it meant to be a creative during this time. This paper argues that although Hemingway lived and fought differently than Sartre, his numerous works recounting his experiences with war and PTSD reveal an underlying theme of existential thought that closely mirrors Sartrean beliefs.

HURF

HURF Presentations

SH418
1:00 p.m.-2:00 p.m.

Presenter(s):
To be determined

Faculty Sponsor(s):
Dr. Eric Roark

Abstract/Description:
HURF award winners will present their research.

Modern Languages

"We Exist. We're Here": La Historia, el Trato y la Resistencia de Afro-Mexicanos de Guerrero, Oaxaca y Veracruz.

SH418
2:00 p.m.-2:30 p.m.

Presenter(s):
Madison Roberson

Faculty Sponsor(s):
Julio Enríquez-Ornelas

Abstract/Description:
This paper analyzes the long-existing presence of Black people in Southern Mexico from their origins in Africa to modern-day. Afro-Mexicans were enslaved and stolen from their homes during the Atlantic Slave Trade and transferred to Southern Mexico. After slavery was abolished in Mexico in 1837, Black Mexicans still faced mistreatment and racism from the Indigenous and lighter-skinned Mexican population. This abuse and subsequent stereotyping led to the minimal representation of Black Mexicans in Mexico and abroad, resulting in a lack of knowledge about their entire existence today. Despite these obstacles and lack of coverage, Afro-Mexicans contributed endless cultural artifacts to Mexico. They are painters, singers, seamstresses, farmers and more. They are a significant portion of Southern Mexico and the African Diaspora that can no longer remain hidden in la Costa Chica and Veracruz.

Feminicidios en la frontera entre Estados Unidos y México.

SH418
2:30 p.m.-3:00 p.m.

Presenter(s):
Haileigh Rife

Faculty Sponsor(s):
Julio Enríquez-Ornelas

Abstract/Description:
This presentation will be about the killing of women on the U.S./Mexico border. The goal is to raise awareness of the violence occurring and what is being done to help.

Direct Teacher Intervention and its effect on Content Retention and Student Behavior

SH418
3:00 p.m.-3:30 p.m.

Presenter(s):
Shania Mitchell

Faculty Sponsor(s):
Julio Enríquez-Ornelas

Abstract/Description:
I will be doing a case study on three different students exhibiting poor behavior and low motivation for education. I am currently working with all three students outside of school hours to assess their response to my direct intervention with the goal of creating better motivation and classroom engagement. I will be documenting the process and then reflecting and analyzing the results by comparing my research to my personal experiences.

Philosophy

Philosophy Senior Thesis Presentations

SH418
9:00 a.m.-11:00 a.m.

Presenter(s):
To be determined

Faculty Sponsor(s):
Dr. Eric Roark

Abstract/Description:
Philosophy Senior Thesis Presentations

Sociology

Sociology Capstone Presentations

SH412
9:30 a.m.-11:00 a.m.

Presenter(s):
Frank Bryan, Hannah Grubbs, Jade Kallenbach, Justin Mysliwiec, Reena Riley, Ariana Speagle

Faculty Sponsor(s):
Dr. Ken Laundra

Abstract/Description:
Senior Sociology majors will present on our current group project, the Torrence Park Revitalization Project.

Evaluating the Underlying Causes of Delinquency: Does community service truly have an effect on recidivism rates?

SH412
11:00 a.m.-11:30 a.m.

Presenter(s):
Reena Cynthia Riley

Faculty Sponsor(s):
Dr. Jorge Chavez-Rojas

Abstract/Description:
As a student minoring in Criminal Justice, I have learned that those who come from harsh backgrounds may have little support from family. They may end up being trapped in the criminal justice system. In this presentation I evaluate whether restorative justice programs in Illinois are truly making a difference in these teenagers' lives.

College of Fine Arts

A Look Inside the Process

Often, the only public presentation of an artist's work is the finished product. Audiences typically don't have the opportunity to see the applications of theory and practice taking place in the process of the creation of art. The Celebrations of Scholarship in the College of Fine Arts allow us to look inside the process, which involves analysis, research, development of structural and conceptual frameworks, and critically informed aesthetic judgment. This is the scholarship that informs and is embodied in a work of art.

We invite you to explore the process of creation with our students, and hope that the insights offered will allow you to enjoy the finished products of art-making even more fully. Who knows, you may enjoy seeing the process as much, if not more, than the product!

Laura Ledford
Dean, College of Fine Arts

Arts Technology & Administration

2022 Images in Motion Film Festival

SH327
8:00 a.m-8:30 a.m.

Presenter(s):
Nathan Amaya, Andrew Arnold, Claire Eppley, Ryan Judd, Skylar Meents

Faculty Sponsor(s):
Eric Hector

Abstract/Description:
Students will present their marketing plan for Millikin's 2022 Images in Motion Film Festival. They will detail the outreach program they used to bring films to the festival as well as how they brought attention to the event itself. They will also discuss the design and execution of the festival as an overall event.

An Investigation and Proposal for Millikin E-Sports

SH327
8:30 a.m.-9:00 a.m.

Presenter(s):
Terezz Lee

Faculty Sponsor(s):
Jessa Wilcoxen

Abstract/Description:
Learn about how high-level competitive gaming can be the next big thing. E-sports often take the form of organized, multiplayer video game competitions between professional players, individually or as teams, and these teams compete for money up to $40 million! Want to know more? Hear Terezz Lee share his research and plan of action to bring competitive E-Sports to Millikin.

Code Blue

SH327
9:00 a.m.-9:30 a.m.

Presenter(s):
Ian Davison

Faculty Sponsor(s):
Jessa Wilcoxen

Abstract/Description:
This presentation discusses the creation and promotion of a graphic art series designed and coded using binary or hex code identifiers. Subject matter is greatly influenced by current world events.

Scientific Visualization: Using art to communicate scientific findings, and science to enhance art

SH327
9:30 a.m.-10:30 a.m.

Presenter(s):
Kade Nylen

Faculty Sponsor(s):
Jessa Wilcoxen

Abstract/Description:
Though many consider the fields of art and science to be opposing forces, they can, and often must, be used to foster innovation and distribution of each other. Scientific Visualization is a field that uses art to convey scientific findings – think of informative posters on the COVID-19 virus and/or vaccines. Traditionally, visualizations took the form of textbook/guide illustrations; but, with photography and new technologies, expanded to utilize new media such as 3-D rendered simulations, virtual/augmented reality and mobile games. This project involved creating visualizations for multiple Millikin biology research papers and following new methods to promote interactivity.

School of Music

How A Private Instructor Can Aid In Student Persistence In Music

SH327
10:30 a.m.-11:00 a.m.

Presenter(s):
Kody Myhra

Faculty Sponsor(s):
Dr. David Cook

Abstract/Description:
In this presentation, I will dive into the concept of motivation in a private music lesson setting, talk about what music student motivation requires, whether it is different with age or not, and how private music studio teachers can promote healthy motivational tactics in a conventional manner. I will be speaking on my own observations with students I have had experiences with, as well as more general statistics and research.

School of Theatre & Dance

Costume History Comes to Life

SH310
10:00 a.m.-11:00 a.m.

Presenter(s):
Katie Bodlak, Mira Burens, Kestrel Domann, Nicolet Endean, Kayla Fisher, Hunter IntVeld, MaryRose Jones, Katie Kocan, Emily Nicholas, Owen Peterson, Andrea Pfau, Mary Stefanski, Amelia Tam, Rachel Terry, Abby Urquhart

Faculty Sponsor(s):
Jana Funderburk

Abstract/Description:
The students of Costume History will share their research on items of dress in the form of video essays. Learn entertaining facts about why we dress the way we do, and how those motives don't really change throughout time!

Playwriting Class Readings

SH310
11:00 a.m.-12:00 p.m.

Presenter(s):
Katharine Baumann, Jacob Deetz, Allison Durham, Gillian Genardo, Isabella Hernandez, Rebecca Jaffe, MaryRose Jones, Elli Kettley, Demitri Magas, Hailey Miffitt, JJ Pierce, Zack Scott, Austin Tipton, Meghan Welfer

Faculty Sponsor(s):
Dr. Tom Robson

Abstract/Description:
Students from the TH 325: Playwriting class will present public readings of three 10-minute plays written for the class. Following each reading the audience will participate in a structured feedback process, modeled after the work we do each class period.

College of Professional Studies

Best Practices Informed by Scholarship

In the College of Professional Studies (CPS), we value the development of professionals who engage in active learning while acquiring knowledge. We believe there is no better example of active learning than an individual's engagement in scholarly endeavors. Scholarly engagement improves the body of knowledge of the professional. Scholarly engagement advances the application of theoretical concepts to practiced performance. Scholarly engagement supports the development of partnerships within communities. Scholarly engagement shapes the future of the professions in which we practice.

We celebrate scholarly engagement ... when Exercise Science and Sport students investigate concussive sports' injuries and use that knowledge to improve the overall health of athletes in rural communities. We celebrate scholarly engagement ... when School of Education students complete comprehensive research based upon observations of students in their learning environments. We celebrate scholarly engagement ... when undergraduate School of Nursing students use translational research to improve best practice in the clinical arenas. We celebrate scholarly engagement ... when the School of Nursing graduate students design final projects that pair inquiry and evidence-based practice with focused residencies to improve patient outcomes through quality improvement initiatives.

School of Education

Teaching Civil Rights vs. Black Lives Matters Protests to K-12 Students through a Culturally Responsive Framework

SH412
8:00 a.m.-8:30 a.m.

Presenter(s):
Steven Massey, Robert Sallee

Faculty Sponsor(s):
Dr. Anne Steketee

Abstract/Description:
We will be sharing the results of a student-directed project that explored how we could teach with a culturally responsive framework. We will highlight different types of protests that occurred during the Civil Rights Movement and how these protests connect to the Black Lives Matter movement today. We will also be focusing on how to equip K-12 students to set up peaceful protests so they can be their own change agents in our schools and communities.

Global Citizenship and K-pop

SH303
8:00 a.m.-8:45 a.m.

Presenter(s):
Mario Becerra, Gretchen Gould, Emilie Mineo, Emma Spurgetis

Faculty Sponsor(s):
Dr. Hee Young Choi

Abstract/Description:
Students will present the Global Citizenship Project they developed in the course, IN 305: Global Citizenship and K-pop. The course offered students an opportunity to explore the concepts of global citizenship from theoretical, cultural and political perspectives. At the heart of the course was an interdisciplinary exploration of Korean popular music, which is mostly known as K-pop. Investigating and locating K-pop within the continuously shifting global popular culture became a trendy guide for students to enhance awareness of global citizenship.

Cross-Cultural Experiences of International Students at Millikin University

SH303
8:45 a.m.-9:30 a.m.

Presenter(s):
Seong Hyun Ahn, Yunseo Huh, Yuree Kim

Faculty Sponsor(s):
Dr. Hee Young Choi

Abstract/Description:
Students will present their narrative studies of their study abroad experiences to find the factors that influenced their social identity positioning and adjustment as global citizens. To accomplish these goals, the studies were guided by two primary research questions: 1) What strategies, resources and skills did Korean international students see as critical for their adjustment to the new environment at Millikin University? And 2) Given these students' experiences at Millikin University, how did these students describe their positioning as global citizens over time?

Understanding the Gap between Secondary and Post-Secondary Writing Instruction

SH303
9:30 a.m.-10:15 a.m.

Presenter(s):
Benjamin Kuxmann

Faculty Sponsor(s):
Dr. Kaitlin Glause

Abstract/Description:
This research project explores what is taught in college-preparatory writing classes as well as in first-year collegiate classes. Through an evaluation of writing samples, student surveys and instructor surveys, this project evaluates what skills are emphasized as necessary to be "college-ready" as well as perceptions surrounding college-level writing.

The Importance of Cultural Integration in the U.S.

SH303
10:15 a.m.-11:00 a.m.

Presenter(s):
Bella Benning, Mandy Dulny, Justin Allen

Faculty Sponsor(s):
Dr. Joyce Bezdicek

Abstract/Description:
The importance of cultural integration is important for all professionals no matter what field we work in. What does this mean and what are ways that we can be aware of culture and then integrate it so that our culturally diverse population in the U.S. can be represented? In the course ED 401: Integrating Culture in the Curriculum, education and non-education students explore the meaning of culture and how it can be integrated in our respective fields. For the final project students propose and then develop a Cultural Curriculum Project/Cultural Project where they apply what they've learned to the work they will be doing as future professionals.

Mental Health Matters

SH303
11:00 a.m.-11:30 a.m.

Presenter(s):
April Brown

Faculty Sponsor(s):
Dr. Denice Love

Abstract/Description:
I will present the results from a survey on young adults seeing how mental health can impact their learning.

Exploring Children's Television: Findings from The Street

SH303
1:00 p.m.-2:00 p.m.

Presenter(s):
Science Group: Maddy Bochantine, Katie Curtis, Melina Hall, Aidan Schlichting; Education/Psychology Group: Jacquelin Anderson, Sam Thoong, Lauren Wyatt

Faculty Sponsor(s):
Dr. Georgette Page

Abstract/Description:
Each group, from their individual perspective, will present their findings on what they learned about Sesame Street (from the course HN 350: Exploring Sesame Street). In their discussions, these groups will address issues that confront each aspect of the show's creation, including production, writing and research.

Exercise Science & Sport

Eating Disorders Among Athletes

SH327
1:00 p.m.-1:30 p.m.

Presenter(s):
Hope Limoges

Faculty Sponsor(s):
Dr. Tisha Hess

Abstract/Description:
Eating disorders are more common in today's society than most people would like to believe. Eating disorders can be found in all sorts of individuals, including athletes. Athletes of all ages and genders are affected by eating disorders. Eating disorders start small and can slowly turn into something that is difficult to control for any population, including athletes. This research aims to bring awareness of eating disorders among the athletic community as well as bringing awareness to eating disorders in the general community.

Ankle Taping versus Ankle Bracing: Perspectives from Student-Athletes

SH327
1:30 p.m.-2:00 p.m.

Presenter(s):
Peyton Jackson

Faculty Sponsor(s):
Dr. Tisha Hess

Abstract/Description:
Injuries are extremely prevalent in athletics, and athletic trainers have the important role of providing care based on the best evidence-based research. Ankle injuries are common in certain sports and in everyday life. Common methods of support for ankle injuries include taping and bracing. Research shows the effects of ankle taping versus ankle bracing from the prevention and rehabilitation aspects. The research aims to identify the perspectives of Millikin student-athletes on ankle taping versus ankle bracing. Current literature will be discussed, as well as current data gathered from surveying both the men's and women's basketball teams at Millikin University.

Is Therapeutic Dry Needling Effective in Decreasing Pain and Increasing Range of Motion?

SH327
2:00 p.m.-2:30 p.m.

Presenter(s):
Justin Gionet

Faculty Sponsor(s):
Dr. Tisha Hess

Abstract/Description:
Dry needling is currently a growing therapeutic modality that is used when treating patient injuries. Fine point needles are used and inserted into targeted muscle tissue as the therapeutic intervention to help control pain and increase range of motion. Dry needling is different from other modalities and can be used as another tool that helps provide the best care for patients. The purpose of this research is to analyze the potential benefits of dry needling within the rehabilitation process.

School of Nursing

Patient Education After Sugammadex and Aprepitant Administration to Prevent Unintended Pregnancy

LTSC001
8:00 a.m.-8:45 a.m.

Presenter(s):
David Janisch

Faculty Sponsor(s):
Pamela Laskowski

Abstract/Description:
I will discuss the results of education for multiple hospitals in Central Illinois on the impact that certain anti-nausea and paralytic reversal medications have on hormonal contraceptives in the perioperative period.

Increasing Anesthesia Providers' Knowledge of Utilization of Fresh Frozen Plasma for Patients with Angiotensin-Converting Enzyme Inhibitor-Induced Angioedema (ACEI-IAE)

LTSC108
8:00 a.m.-8:45 a.m.

Presenter(s):
Nathaniel Gibson

Faculty Sponsor(s):
Dr. Jo Carter

Abstract/Description:
The presentation will describe the background, etiology and prevalence of ACEI-IAE. A literature review of current evidence to treat ACEI-IAE will be provided. A description of the project's implementation phase will be provided with statistical results to present the data obtained. The project will describe the nursing theory that supported the overarching framework of the project, along with an implementation model that helped propel the project.

Endotracheal Tube Cuff Pressure Assessments: A Presentation of Evidence-Based Guidelines

LTSC001
8:45 a.m.-9:30 a.m.

Presenter(s):
Jessica Addai

Faculty Sponsor(s):
Pamela Laskowski

Abstract/Description:
A review of closed claims analyses revealed that 6% of the cases reviewed involved damage to the airway and surrounding structures resulting from placement of an artificial airway. In a majority of these cases, the damage to the airway was avoidable. Despite this information, none

of the anesthesia societies have established guidelines for assessing endotracheal tube cuff pressure. One method that anesthesia providers can do to decrease airway trauma is to check the pressure in the endotracheal tube cuff. The purpose of the endotracheal tube cuff is to anchor the artificial airway in place, facilitate positive pressure ventilation and ensure that no oral or gastric contents enters into the lungs. In order to fulfill its purpose, the endotracheal tube cuff has to have the correct amount of pressure to occlude the trachea. If there is too much pressure, circulation to the tracheal tissue and surrounding areas is compromised and can result in injuries ranging from a sore throat to a fistula involving the esophagus. When the pressure is too low, the patient is at risk for aspiration of oral and gastric contents directly into the lungs. There are various methods to assess the amount of pressure in the endotracheal tube cuff to prevent adverse events related to endotracheal tube cuff pressures. Most anesthesia providers prefer to use the pilot balloon palpation method to assess their cuff pressure. This subjective method has shown to be the least accurate assessment method by many studies. The aim of my project is to present anesthesia providers with an evidence-based summary of methods for assessing cuff pressures and each method's accuracy.

New Graduate Nurses' Experiences with Burnout during the Transition to Practice

LTSC108
8:45 a.m.-9:30 a.m.

Presenter(s):
Rachael Croy

Faculty Sponsor(s):
Dr. Jo Carter

Abstract/Description:
Burnout, a phenomenon characterized by exhaustion of physical and/or emotional strength resulting from prolonged stress and frustration, is common to health professions. Increasingly, new graduate nurses are leaving the profession because of the burnout that accompanies their transition to practice. This presentation will examine the factors negatively contributing to the transition of new nurses, as well as strategies to improve transition.

Implementation of an Emergency Manual for use in Emergency Situations

LTSC001
9:30 a.m.-10:15 a.m.

Presenter(s):
Adam Magerl

Faculty Sponsor(s):
Dr. Angela Bentley

Abstract/Description:
Background: The implementation of an approved Emergency Manual (EM) in the operating room gives anesthesia providers ready access to critical information that can be used in decision-making during anesthesia emergencies. EMs are tools that have been demonstrated to be a cost-effective intervention to ensure that anesthesia providers can recognize and intervene during uncommonly seen anesthesia events.

Objective: The purpose of this study was to evaluate provider confidence on use of EMs and understanding of purpose and use of EMs.

Method: A post-test design was used. Anesthesia providers from three Midwestern hospitals received email education on the use and purpose of the EM and the location of the EM within their respective hospital's operating room. Two weeks later a survey was sent out to assess confidence, intention of use, location and purpose of an EM. The inclusion of the nurse managers in planning and logistics was used to aid implementation of the EM and dissemination of email-based learning to staff.

Results: Data collection ongoing.

Conclusion and Implications: Emergency manuals can increase provider confidence when caring for uncommonly seen events during the delivery of anesthesia. EMs should be available in all places where anesthesia is delivered to ensure the best outcomes for patients and to enhance anesthesia providers' abilities to recognize, treat and diagnosis anesthetic problems that arise quickly.

Safety of Tranexamic Acid in Total Joint Arthroplasty: Current Clinical Practice Guidelines, 2018.

LTSC108
9:30 a.m.-10:15 a.m.

Presenter(s):
Dorothy Mbondo

Faculty Sponsor(s):
Dana Flatley

Abstract/Description:
This project will be presenting the current new clinical guidelines that support the administration of Tranexamic Acid to high-risk patients undergoing total hip and knee arthroplasties.

Infection Prevention Utilizing a Double Gloving Method of Airway Manipulation for the Anesthesia Provider

LTSC108
10:15 a.m.-11:00 a.m.

Presenter(s):
Taylor Hull

Faculty Sponsor(s):
Dana Flatley

Abstract/Description:
This project aims to seek a method of infection prevention to reduce the incidence of healthcare-acquired infections attributable to the anesthesia workstation. A major cause of healthcare-acquired infections is due to a lack of consistent compliance to prevention techniques like hand hygiene. Infection prevention practices lack standardization and application among anesthesia providers. Hand hygiene also proves difficult to perform due to the nature of care provided by anesthesia personnel. Often, after airway instrumentation, the anesthesia workstation becomes contaminated with the airway secretions of the patient, which may contain bacterial pathogens, putting patients at risk for microbial cross-transmission within the intraoperative environment.

Evaluating Obstetric Pain Interventions throughout History

LTSC001
10:15 a.m.-11:00 a.m.

Presenter(s):
Jacqueline Freed

Faculty Sponsor(s):
Teresa Gulley

Abstract/Description:
Labor and delivery is a complicated, individualized experience for each patient. Nurses can benefit by looking at the history of nursing care by evaluating strengths and weaknesses of various pain interventions. Comparing childbirth pain management over time can help evaluate current practices and consider other alternatives available today. The purpose of this project is to explore literature that evaluates both historical and current childbirth pain management interventions. From this, the project will strive to discuss the strengths and weaknesses of various interventions, such as hydrotherapy, birthing balls, essential oils and nitrous oxide.

Standardization of procedural sedation policy within a healthcare system

LTSC108
11:00 a.m.-11:45 a.m.

Presenter(s):
Claire LaTulip

Faculty Sponsor(s):
Dana Flatley

Abstract/Description:
This presentation will focus on the standardization of procedural sedation policy within a large healthcare system in Central Illinois. This will include a discussion on the current societal guidelines on procedural sedation policy by the American Society of Anesthesiologists and the American Association of Nurse Anesthetists. The presentation will include a discussion on current policies and practice within the organizations throughout the healthcare system gathered through surveys and analyses of hospital policy and practice and recommendations to ensure practice aligns with professional guidelines.

Intraoperative Antibiotic Administration

LTSC001
11:00 a.m.-11:45 a.m.

Presenter(s):
Jose Ibarra

Faculty Sponsor(s):
Vicki Caldwell

Abstract/Description:
Anesthesia providers (AP) are responsible for many critical aspects of patient care. AP manage hemodynamics, titrate medications, manage the airway and ventilation, and administer antibiotics. Intraoperative antibiotic administration is essential to suppress bacteria growth at the surgical site when administered at the appropriate dose and time (Peppard et al., 2016). A quality improvement project was implemented in a Central Illinois hospital that includes the most current guidelines on intraoperative antibiotic administration.

Social Media Usage Among Adolescents: A Potential Health Concern and How Nurse Practitioners Can Help

LTSC001
1:00 p.m.-1:45 p.m.

Presenter(s):
Jessica Alumbaugh

Faculty Sponsor(s):
Dr. Elizabeth Gephart

Abstract/Description:
Social media is a big part of today's adolescent culture. Due to their complex, evolving developmental stages and the easy access to the internet and social media platforms, adolescents are at significant risk of suffering adverse effects from their social media usage. Since asking about social media usage is not a standardized practice, this topic can often be overlooked in the short appointment times. The purpose of this project is to create a quality improvement initiative to improve the practice of nurse practitioners regarding social media usage among their adolescent patients. Using evidence-based research, the project

will focus on developing an educational resource for nurse practitioners that focuses on the effects (both good and bad) of social media use on adolescents, recommendations found in the literature and what resources are available to adolescents and their families.

Increasing Anesthetist Competence and Compliance with Personal Protective Equipment Selection and Use During Aerosol Generating Procedures

LTSC108
1:00 p.m.-1:45 p.m.

Presenter(s):
Courtney Janiec

Faculty Sponsor(s):
Dr. Amy Yeates

Abstract/Description:
This presentation will aim to discuss the doctoral nurse anesthesia project "Increasing Anesthetist Competence and Compliance with Personal Protective Equipment Selection and Use During Aerosol Generating Procedures." The presentation will provide background information regarding personal protective equipment and aerosol generating procedures, the role of COVID-19, current recommendations, as well as the current policies in place at the local institution where the project was implemented. The presentation will also examine the aspects of the quality improvement project including but not limited to the framework, implementation process, data collection, results and researcher recommendations.

Establishing the Guidelines on the Use of Ketamine Infusions to Control Pain after Colorectal Surgery

LTSC001
1:45 p.m.-2:30 p.m.

Presenter(s):
Francis Oke

Faculty Sponsor(s):
Dr. Elizabeth Gephart

Abstract/Description:
For patients undergoing surgery, postoperative pain is one of the unwanted experiences. Therefore, it is essential to take an appropriate action to manage this pain to prevent a delay in discharge, lower patient satisfaction and hyperalgesic condition known as persistent postoperative pain (Radvansky et al., 2015). The majority of patients receive opioids such as morphine or fentanyl after surgery. However, opioids are associated with various undesirable effects, including sedation, respiratory depression, hypotension, postoperative nausea and vomiting, acute tolerance, and induced hyperalgesia to mention a few (Choi et al., 2016; Radvansky et al., 2015; Wang et al., 2016). Studies have shown that only a brief exposure to opioids can cause opioid-induced hyperalgesia (Choi et al., 2016). So, the analgesic success of opioids is limited by their related adverse events, and that is why ketamine is a superior substitute.

Practice Guideline Change Proposal for Central Venous Catheters using the Synergy Model

LTSC001
3:15 p.m.-4:00 p.m.

Presenter(s):
Lauren Horve

Faculty Sponsor(s):
Dr. Elizabeth Gephart

Abstract/Description:
This presentation will first cover a summary of current central line best practice guidelines. Following the central line guidelines summary, there will be a discussion about the most recent central line policy at Decatur Memorial Hospital (DMH) and the knowledge that anesthesia staff, including Registered Nurse Anesthesia Interns (RNAIs), have regarding the policy prior to and after a brief educational presentation.

Individualized Cerebral Monitoring: Optimizing Resources Through Education

LTSC001
4:00 p.m.-4:45 p.m.

Presenter(s):
Katharine Strompolis

Faculty Sponsor(s):
Dr. Elizabeth Gephart

Abstract/Description:
Cerebral oxygenation is a critical responsibility of anesthesia care. However, there lacks a gold standard of cerebral monitoring. Cerebral desaturation events may lead to catastrophic patient outcomes in terms of morbidity and quality of life. The brain has inherent protective mechanisms to protect itself, but these mechanisms are altered under anesthesia, advanced age and by common comorbidities such as high blood pressure, obesity, diabetes and atherosclerosis. Common indirect measurements of cerebral perfusion are not adequate in certain surgical procedures or surgical positioning or with certain patient presentations. Near-Infrared Spectroscopy (NIRS) technology is commonly used in cardiovascular surgeries for non-invasive monitoring of cerebral oxygenation. However, the literature has demonstrated an increased incidence with cerebral desaturation events in procedures utilizing the beach-chair position (shoulder surgeries) and carotid endarterectomies which would benefit from closer cerebral oxygenation monitoring. The hospital of implementation owns several NIRS monitors, originally purchased for use during cardiothoracic surgeries. Although the hospital no longer conducts cardiothoracic surgeries, an annual approximate 350 shoulder surgeries in beach-chair position and 20 carotid endarterectomy surgeries are. Despite the equipment being readily available, cerebral oximetry is not utilized. The local county health needs assessment demonstrated that the majority of the population served by this hospital possess multiple risk factors for cerebral desaturation events. Providing competency-based education to utilize existing resources to prevent intraoperative complications is a cost-effective quality improvement project to improve care.

Tabor School of Business

Discover. Innovate. Practice.

In Tabor, students engage in scholarship not only through research, but through putting their ideas and discoveries into practice. Tabor students are engaged in consulting with businesses, building marketing campaigns, developing technology solutions for organizations and starting their own ventures. These are the ways in which Tabor students are building their resumes while at Millikin and demonstrating their ability to perform in their chosen careers. Seeing their work during Celebrations of Scholarship gives us a glimpse into all the work that led up to this moment. Let's celebrate their accomplishments and congratulate them on their good works.

RJ Podeschi M.S., MBA '02
Dean, Tabor School of Business

Educational Attainment and the American Dream of Homeownership: Recent Trends in Illinois

SCO207
1:00 p.m.-1:30 p.m.

Presenter(s):
Enrique Carrera, Stephie Morene Niyomwungere, Kentina Ishimwe

Faculty Sponsor(s):
Dr. Michael Osei

Abstract/Description:
We examine recent patterns in homeownership rates between college and non-college graduates in Illinois for different demographic groups – gender and race and ethnicity. The trends observed among these different groups can serve as a measure of relative economic progress and valuable indicators of the relative importance of education in homeownership in Illinois. We use data from the American Community Survey (ACS) from 2010 to 2020.

Financial analysis of sports at Millikin

SCO207
2:00 p.m.-2:30 p.m.

Presenter(s):
Reiss Naylor

Faculty Sponsor(s):
Alex Covington

Abstract/Description:
Diving into a few of the smaller sports teams at Millikin and their financial breakdown with recommendations for a more accurate budget.

Legitimization of Micro Venture Through Millikin's Entrepreneurship Program

SCO207
2:30 p.m.-3:00 p.m.

Presenter(s):
Aubrey Staton

Faculty Sponsor(s):
Yuhan Hua

Abstract/Description:
Join me as I talk through the process and challenges of becoming a legal business and see how Millikin's Center for Entrepreneurship and the Entrepreneurship curriculum has allowed and enabled me to do so.

MU Performance Consulting: Project Retrospective

SCO207
3:30 p.m.-4:00 p.m.

Presenter(s):
Laura Atkinson, Brianna Barconi, Shay Buchanan, Madisyn Carpenter, Paige Coleman, Lan Dao, Bushra Ibrahim, Sean Miller, Amanda Noser, Cameron Richardson, Rolande Umuhoza, Isabella Voss, Ethan Zobel

Faculty Sponsor(s):
RJ Podeschi

Abstract/Description:
MU Performance Consulting is a tech-focused, multidisciplinary student-run venture. Students work with clients in the community and on campus to design and deliver technical solutions to business problems ranging from system analysis to web development and hosting. Student consultants will discuss the challenges of working in and on a business in relation to various technical skill sets, team management and knowledge transfer.

Long-Vanderburg Scholars Program

The Long-Vanderburg (LV) Scholars Program honors the first two African American graduates of Millikin University, Fred Long and Marian Vanderburg. In 2010, under the leadership of 1975 Millikin University alumnus and Caterpillar Inc. CEO Doug Oberhelman, the program received a generous gift from Caterpillar Inc. and was renamed the Long-Vanderburg Caterpillar Scholars Program.

The Long-Vanderburg Scholars Program is an honors program that provides historically underrepresented students and those committed to social justice, diversity and inclusion with the opportunity to uphold and contribute to the legacy of academic excellence, leadership and service at Millikin University. Scholastic achievement, civic responsibility, leadership and educational advancement are emphasized through a four-year program offering both curricular and co-curricular activities.

During Celebrations of Scholarship, first-year through senior Long-Vanderburg Scholars will present original research that explores their position in society, their ever-growing leadership models, their professional creeds and their development as citizen-scholars. Join them as they showcase what it means to be Long-Vanderburg Scholars at Millikin University!

Identity: What Cha' Looking At?

SH420
8:00 a.m.-10:00 a.m.

Presenter(s):
Taylor Young, Diana Hernandez, Quinn Perez, Tyrice Hines

Faculty Sponsor(s):
Maire Foxx

Abstract/Description:
Leadership. Greatness. Success. Three words that represent what many wish for and aspire to, yet very few achieve. Within our presentations, you will experience our journeys toward our own understanding of our identities that neither allude nor misdirect. Throughout our year-long journey, we have experienced excitement, anticipation, disappointment and stark reality. Yet, through it all, we have realized that we control our greatness, leadership potential and success. What cha' looking at? Walk through the door and share in our experiences that make all of us unique, qualified and great!

Current Research from First-year LV Scholars

SH420
10:00 a.m.-12:00 p.m.

Presenter(s):
Amelia Ayotte, Braiden Abbott, Itzel Garcia, Ruby GoodmanLee, Luis Guerrero, Joshua Higgins, Abigail Mendoza, Dat Truong

Faculty Sponsor(s):
Dr. Anne Matthews

Abstract/Description:
First-year LV Scholars will share progress on their year-long scholarship from Critical Writing, Reading, and Researching.

Design Your Life Project

SH420
1:00 p.m.-3:00 p.m.

Presenter(s):
Jaydin Anderson, Jasimine Ash, Sydney Griggs, Evalena Hartke, Bushra Ibrahim, Jarius Ingram, Erin Klasing, Scarlett Linares, CJ McCullum

Faculty Sponsor(s):
Dr. Ngozi Onuora

Abstract/Description:
Based on the work of Bill Burnett and Dave Evans, each junior-level Long-Vanderburg Scholar will share a design for their professional life that includes a plan for building a personal life of meaning and value as well as professional success using problem finding and problem-solving.

Long-Vanderburg Scholar Senior Seminar II: Achieving effectively your Personal and Professional Goals, Project II.

SH420
3:00 p.m.-5:00 p.m.

Presenter(s):
Trevor Greenwood, Shelby Jones, Emily Lopez, Nicholas Mho, Oluwafunke Odufuwa, Charlize Pate, Erica Reyes

Faculty Sponsor(s):
Dr. Paul Toure

Abstract/Description:
The intention of these individual presentations is to demonstrate the way LV scholars have achieved their overall personal and, most of all, academic goals. All of us have various purposes in life. As seniors getting ready to graduate, how have we acquired the best people principles that will work for us in our future chosen careers? How have we empowered ourselves with these principles in order to transform our present moment and create a path to life effectiveness? We want to accomplish different goals for ourselves, nurture relationships, serve and contribute to society. Yet, as scholars, we sometimes struggle to determine the exact amount of time and energy we need to set aside in order to reach these goals. Throughout their studies here at Millikin University, these LV Seniors have striven to learn how to prepare themselves in acquiring specific habits and principles that have allowed them to achieve their personal, academic, and prepare for their respective professional goals.

1:00 P.M. - 3:00 P.M.

Poster Symposium

In Honor of Judith & Dr. G. Richard Locke

Now in its 29th year, Millikin's Poster Symposium celebrates the scholarship that results from student-faculty Performance Learning collaborations. Modeling professional research conferences, this annual event was developed by the Office of the Provost to provide students with an opportunity to share their scholarly activities and practice communication skills essential for professional success. Further, the Poster Symposium has been an excellent means of encouraging students to explore and participate in research opportunities at Millikin University. Poster Symposium judges, selected from Millikin retirees and professional alumni and friends, represent a myriad of scientific careers, expertise and accolades.

In 1994, Judith "Judy" and the late G. Richard "Dick" Locke, M.D., began providing financial support for the Poster Symposium prizes awarded to students with the top-rated presentations. Many bright, talented students have benefited from their generosity.

In celebration of the Locke family's unwavering support of Millikin, the University seeks to establish an endowed fund for The Judith and G. Richard Locke Undergraduate Research Poster Awards. Judy Locke has provided a seed gift to create the fund, and we encourage you to consider a monetary gift to this fund in honor of the Locke family. With your help, we can grow this endowment fund to provide prizes in perpetuity for students with notable, high-caliber undergraduate research projects.

To learn more about how you can contribute to the Judith and G. Richard Locke Undergraduate Research Poster Awards fund, visit bit.ly/poster-awards or contact Dan Baker, director of major gifts, at 217.424.3757 or drbaker@millikin.edu.

1

MICROPLASTIC CONTAMINATION FOUND IN AGRICULTURE AND WETLAND AREAS

Biology

Author(s):
Jessi Kreder, Millikin University

Faculty Sponsor(s):
Dr. Laura Zimmerman

Abstract/Description:
Plastic production and consumption have become a common aspect of everyday life for many countries around the world and has led to a dramatic increase in microplastic pollution. Microplastics are small pieces of plastic, usually defined as pieces less than 1-5 mm and can be placed into three different categories: fibres, fragments, and beads. Although microplastics are a known pollutant in aquatic areas, information surrounding microplastic pollution in terrestrial areas is scarce. For the purpose of furthering knowledge on microplastic contamination in soil, during this experiment, density separation was used to extract microplastics from agriculture wetlands and floodplain wetlands and quantified. Soil samples were collected from the floodplain and three wetlands located on the Franklin Research and Demonstration Farm in Lexington, IL. After testing, it was found that larger microplastic were, in total, higher in concentration in each sample location. Additionally, the three samples from the floodplain samples contained more microplastics than the three wetland samples. By furthering research of microplastic pollution, we may one day be able to apply our knowledge to understanding microplastic pollution in affected environments and how it affects organisms and ecosystems. Due to little research involving microplastic pollution, this project can aid us in understanding microplastic contamination in various areas.

2

EFFECT OF LPS ON PHAGOCYTOSIS IN B CELLS OF *TRACHEMYS SCRIPTA ELEGANS*

Biology

Author(s):
Olivia Marquardt, Millikin University;
Dr. Jenna Smith, Millikin University;
Dr. Laura Zimmerman, Millikin University

Faculty Sponsor(s):
Dr. Jenna Smith

Abstract/Description:
The reptilian immune system is composed of the innate and adaptive immune systems, which vary in their responsibilities in keeping the organism healthy. Recent discoveries have found that B cells, which are crucial for producing antibodies, an adaptive immune function, are also capable of phagocytosis, a response typically classified as an innate response. This finding insinuates that there are other characteristics of B cells that are currently unknown. Additional research is needed to understand the process of phagocytosis by B cells and how it is induced in reptiles. To investigate this, the white blood cells of *Trachemys scripta elegans*, the red-eared slider turtle, were either treated with lipopolysaccharide (LPS) to induce an immune response or were left untreated. The cells were counted using microscopy to determine if rates of phagocytosis changed among the two treatments. The results showed that groups treated with LPS had significantly higher levels of phagocytosis compared to groups without LPS, indicating that LPS may serve as a general trigger for this innate response of B cells in reptiles. New findings involving B cells and immunology in reptiles can be applied to research involving humans to assist in the medical field and general knowledge of immunology across different organisms.

3

EFFICACY OF P. OSTREATUS, S. RUGOSOANNULATA, AND A. SUBRUFESCENS MYCOFILTERS FOR REMEDIATION OF SIMULATED AGRICULTURAL RUNOFF

Biology

Author(s):
Katharine Baumann, Millikin University;
Dr. Alicia Knudson, Millikin University;
Dr. Kyle Knust, Millikin University

Faculty Sponsor(s):
Dr. Alicia Knudson

Abstract/Description:
In this experiment, we were interested in learning if the use of fungal mycelium in mycofilters is effective in filtering nitrate from simulated agricultural runoff. Mycofilters are burlap bags filled with straw and fungal mycelium. Citizen scientists have applied this method on a larger scale, attempting to use the mycelium for bioremediation to filter out contaminants in agricultural runoff entering bodies of water. However, this method has not been tested in a lab setting to determine its effectiveness. Specifically, we investigated if P. ostreatus, S. rugosoannulata, or A. subrufescens would be effective in filtering nitrate from water and if so, which species is more effective. We poured 200 mL of 75 ppm NO_3^{-1} solution through a mycofilter from each species, using a Büchner funnel and vacuum filtration. The post-filtration solution was combined with cadmium reagent and then tested using UV-Vis spectroscopy. The resulting ppm calculations were inconclusive due to the NO_3 ppm being higher than initial 75ppm NO_3^{-1}, which does not make sense given that the initial solution was 75ppm NO_3^{-1}. We hypothesize this complication is due to the coloration of the complex organic matrix of the solution post-filtration through the burlap, straw, and mycelium. This ongoing project is currently investigating the application of mycofilters in stationary bodies of water.

4

ASSOCIATIONS BETWEEN INTERFERON GAMMA (IFN-ɣ) LEVELS AND IVERMECTIN TREATMENT ON AVIAN MALARIAL PARASITE LOADS

Biology

Author(s):
Jenna Thelen, Millikin University; Dr. Travis Wilcoxen, Millikin University; Leah Fowler, Millikin University; Jacques Nuzzo, Illinois Raptor Center; Jane Seitz, Illinois Raptor Center; Beth Chan, Illinois Raptor Center

Faculty Sponsor(s):
Dr. Travis Wilcoxen

Abstract/Description:
The role of interferon gamma (IFN-ɣ) as a primary immune response towards intracellular parasitism within avian species is obscure. Additionally, ivermectin is a widely accepted endectocide, but its effect on intracellular parasitism in avian species is underrepresented. Paired blood smear samples from avian raptor species located at the Illinois Raptor Center (IRC) were analyzed in addition with enzyme-linked immunosorbent assays to determine the relationship between IFN-ɣ and avian malarial parasite load. Furthermore, ivermectin was used in a four-group blind study to observe its effect on intracellular parasite load. Contrary to what has been discovered in other mammalian species, we did not observe a significant relationship between IFN-ɣ and avian malarial parasite load. Ivermectin, however, did significantly reduce intracellular parasite load. Furthermore, reducing parasite load did not have an effect on IFN-ɣ levels, however, we did observe a time-dependent influence on IFN-ɣ levels between admission and release samples that was not dependent on ivermectin; avian IFN-ɣ levels were significantly higher at the time of release. In an attempt to address this mechanism, an additional corticosterone enzyme-linked immunosorbent assay was completed to determine the role of stress, injury, and/or trauma at the time of admission on INF-ɣ levels. Plasma corticosterone (as a measure of stress) had a significant negative correlation with plasma IFN-ɣ levels. Overall, the primary immune response towards malaria in avian species can be further explored and ivermectin is effective at reducing intracellular parasites and thus has more potential use in a broader range of infections for various host species.

5

SEROPREVALENCE OF TOXOPLASMA GONDII IN BIRDS OF PREY IN CENTRAL ILLINOIS

Biology

Author(s):
Jazmin Brown, Millikin University;
Dr. Travis Wilcoxen, Millikin University

Faculty Sponsor(s):
Dr. Travis Wilcoxen

Abstract/Description:
Toxoplasma gondii is an obligate intracellular protozoan parasite. It can affect most species of warm blooded animals, including birds. Toxoplasmosis can be clinically severe for avian species, but because common prey species for raptorial birds, such as white-footed mice, are known reservoirs of T. gondii, the parasite may be particularly important in disease ecology of birds of prey. We used a direct enzyme-linked immunosorbent assay (ELISA) procedure with plasma samples from birds admitted to the Illinois Raptor Center to determine the prevalence of T. gondii in a community of raptors. We analyzed samples from 440 birds of 8 species, with an overall prevalence of 20.2%. There is much variation in prevalence among species, with species for which rodents are the primary food source having the greatest prevalence.

6

EFFECT OF EXPOSURE TO MALE FLIES ON THE LIFESPAN OF FEMALE ADULT *DROSOPHILA MELANOGASTER* (DIPTERA: DROSOPHILIDAE).

Biology

Author(s):
Elexis Richardson, Millikin University;
Dr. Marianne Robertson, Millikin University

Faculty Sponsor(s):
Dr. Marianne Robertson

Abstract/Description:
Energy is a limited resource that is used in reproduction, growth, and maintenance. For organisms to reproduce, energy may be transferred from maintenance to reproduction. We studied the effect of a single mating period on adult lifespan in *Drosophila melanogaster* to examine whether exposing female *D. melanogaster* to 0, 1, 2, or 6 male(s) for a 48-hour time interval would impact lifespan while also examining how the male competition would impact lifespan. We assigned females (n=20) to one of four above treatments and exposed them to the designated number of males for a 48-hr time period, and we then isolated both males and females and monitored them daily for survival. There were no significant differences in the number of days survived between treatments. These results suggest that lifespan is not affected by the number of mates a female is exposed to or the number of competitors a male is exposed to.

7

THE EFFECT OF VITAMIN B12 ON THE INNATE AND ADAPTIVE IMMUNITY OF CUBAN TREE FROG (OSTEOPILUS SEPTENTRIONALIS) TADPOLES

Biology

Author(s):
Hannah C. Warfel, Millikin University;
Dr. Travis Wilcoxen, Millikin University

Faculty Sponsor(s):
Dr. Travis Wilcoxen

Abstract/Description:
Vitamin B12 is a micronutrient required by a variety of organisms for healthy cellular functioning. In spite of the systemic effects observed in cases of B12 deficiency, little is known about how vitamin B12 affects immune health. In this study, we tested how supplementing an algae-only diet with B12 affects the innate and adaptive immunity of Cuban tree frog (Osteopilus septentrionalis) tadpoles. We found that innate immunity, as measured by a bacterial killing assay, was significantly more robust in B12-fed tadpoles than control tadpoles, but no significant differences were found in natural antibody production or hematocrit between groups. Adaptive immunity, as measured by Aeromonas hydrophila-specific IgY antibodies, was significantly greater in tadpoles challenged with A. hydrophila and supplemented with B12 than in control tadpoles, those only challenged with A. hydrophila, and those only given B12.

8

AVOIDANCE BEHAVIOR BY WINGLESS *DROSOPHILA MELANOGASTER* OF A FOOD SOURCE INFECTED WITH LIPOPOLYSACCHARIDES

Biology

Author(s):
Sydney Kehrmann, Millikin University;
Dr. Marianne Robertson, Millikin University

Faculty Sponsor(s):
Dr. Marianne Robertson

Abstract/Description:
Information on how pathogens are controlled once entering a population is abundant, but little is known about how hosts avoid initial infection by pathogens. Individuals conserve energy through pathogen avoidance by preventing costly immune responses. Lipopolysaccharides (LPS) are gram-negative bacterial endotoxins that institute an immune response without causing infection. We tested male and female wingless *Drosophila melanogaster* using an LPS concentration of 1.0 mg/ml. The control group was not pre-exposed to any LPS, and only pre-exposed flies to a food source containing LPS in the experimental group. We placed an individual fly into an arena that contained a healthy food source and an infected food source. For each control (n=30) and experimental (n=30) fly, we recorded how many times the fly landed on each food source, and also the duration of time spent on the food source. There were no significant differences in number of visits or time spent on the infected food source of control flies. Male flies pre-exposed to LPS spent significantly less time on the infected food source and had significantly less visits to any food source. Female flies pre-exposed to LPS had no significant differences in time spent on the infected food source but had significantly more visits to the infected food source. These data support the hypothesis that male *D. melanogaster* will show avoidance of a food source infected with LPS, but do not support this hypothesis for females. These differential results between male and female flies demonstrate sex-specific behaviors following exposure of an endotoxin.

9

SERUM AMYLOID A LEVELS RELATIONSHIP TO A LONG-LIVED VERTEBRATE, THE RED-EARED SLIDER TURTLE.

Biology

Author(s):
Victoria Stuart, Millikin University;
Dr. Laura Zimmerman, Millikin University

Faculty Sponsor(s):
Dr. Laura Zimmerman

Abstract/Description:
Inflamm-aging is the dysregulation of immune response that occurs as organisms age. In a healthy individual a pathogen triggers inflammation, but with inflamm-aging this inflammation occurs chronically and worsens the individual's ability to maintain homeostasis. For humans, chronic inflammation causes increased risk for many diseases. Turtles, like humans, are long-lived and thus provide an interesting model system for aging of the immune system. However, few immune assays are available for use in turtles. Serum amyloid A (SAA) is a protein involved in the inflammation response of organisms' innate immune response and is highly conserved in vertebrates. SAA has been found to be upregulated in inflammatory conditions and in early bacterial infection stages. We collected blood samples from red-eared slider turtles to measure levels of serum amyloid A (SAA) using a chicken SAA assay. Plastron length was measured as a proxy for age. We were able to measure the SAA levels in the red-eared slider turtles using the chicken SAA ELISA and we found variation in SAA levels. A significant relationship between high levels of serum amyloid A in older individuals would have indicated inflamm-aging. However, we did not find any significant relationship between serum amyloid A and plastron length, and thus no evidence of inflamm-aging. Our study shows a lack of immunosenescence in the innate system, and a previous study found no immunosenescence in the adaptive system, pointing to a lack of immunosenescence in red-eared sliders. Future studies will be conducted studying SAA levels in red-eared sliders with known infections.

10

PREVALENCE OF FRANCISELLA TULARENSIS IN RAPTORS: A ROLE FOR HAWK FLIES?

Biology

Author(s):
Morgan Rockwell, Millikin University;
Dr. Travis E. Wilcoxen, Millikin University; Jane Seitz, Illinois Raptor Center; Jacques Nuzzo, Illinois Raptor Center

Faculty Sponsor(s):
Dr. Travis Wilcoxen

Abstract/Description:
North American raptors can be infected by a gram-negative coccobacillus, Francisella tularensis, or tularemia. F. tularensis can be transferred to a host via direct contact, ingestion, inhalation, or contamination of water. Raptors can be parasitized by Hippoboscidae flies, but it is unknown if they can transmit tularemia. In this study, we explored potential modes of transmission of tularemia within raptors and Hippoboscid flies by determining the prevalence of the pathogen in hosts with direct ELISA and indirect IgM ELISA. A direct ELISA was used to detect the presence of the pathogen in flies and in the plasma of birds hosting flies An indirect ELISA for IgM against F. tularensis LPS was used for birds to detect the prevalence of antibodies in the plasma. The highest prevalence of F. tularensis was in larger predators (GHOW, RTHA, & TUVU). The higher prevalence may occur because these raptors have a diet high in rabbits, or other mammals, putting them at a higher risk. The birds that had tested positive for tularemia in the direct and IgM indirect ELISA had shown that they had illness and symptoms when submitted to the rehabilitation center. The symptoms corresponded to the birds that had tested positive. Birds that were sprayed by skunks had a high probability of testing positive for tularemia. Further studies could also test raptors caught in the wild, rather than birds admitted into the rehabilitation center, and we could use IgY ELISA to test for antibodies signaling a history of exposure to tularemia.

11

ANALYSIS OF CYTOKINE EXPRESSION AFTER EXPOSURE TO LIPOPOLYSACCHARIDES BASED ON GENE EXPRESSION IN *TRACHEMYS SCRIPTA ELEGANS*

Biology

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Dr. Laura Zimmerman, Millikin University

Faculty Sponsor(s):
Dr. Jenna Smith

Abstract/Description:
The immune system is vital for protecting the body from pathogens and fighting infection but loses some of its ability to regulate with age, resulting in chronic inflammation that can lead to many age-related conditions. Reptiles can carry various diseases, seemingly without feeling the effects of chronic inflammation. We used quantitative reverse transcription polymerase chain reaction (RT-qPCR) to measure cytokine responses based on gene expression in red-eared slider turtles, *Trachemys scripta elegans*. The study specifically tested for the expression of IL-1, an inflammatory cytokine, and IL-10, an anti-inflammatory cytokine to determine how reptiles regulate the inflammatory response. Leukocytes were isolated from whole blood and resuspended either into a control group or a group treated with lipopolysaccharide (LPS) to elicit an immune response. The samples were incubated for 12 hours with the cells being collected and preserved for gene expression analysis at various timepoints. The RNA was isolated then underwent reverse transcription to generate complementary DNA (cDNA). The cDNA was amplified using RT-qPCR. The qPCR did not produce any quantifiable data in terms of cytokine expression because IL-1 and IL-10 showed either minimal or no detection by qPCR during the time course. The LPS treated groups showed lower cytokine expression than the control group, and the amount of RNA in the samples showed a general decline in both groups. The results of the study are indicative of cell death; therefore, modifications need to be made for the incubation and the immune challenge used for future studies.

12

CONVERSION OF CH 152 LAB TO INCLUDE INDUCTIVELY COUPLED PLASMA-OPTICAL EMISSION SPECTROSCOPY

Chemistry

Author(s):
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Faculty Sponsor(s):
Dr. Kyle Knust

Abstract/Description:
In the Millikin chemistry curriculum, flame atomic absorption spectroscopy (flame-AA) was previously used for the analysis of iron, and titration was employed for the analysis of potassium in student synthesized samples of potassium tris(oxalato)ferrate (III) trihydrate (KTOF). The Department of Chemistry recently acquired an inductively coupled plasma-optical emission spectroscopy (ICP-OES) instrument to replace the flame-AA. ICP-OES is a modern analytical instrument for elemental analysis that is commonplace in labs worldwide. In this research, we developed an ICP-OES method to simultaneously quantify the iron and potassium present in synthesized KTOF samples. This work allows us to introduce General Chemistry II students to ICP-OES, while also improving the efficiency of this analysis. Results acquired by General Chemistry II students will be presented.

13

ANALYSIS OF COMMON PRIMARY AEROSOLS WITH OPTICAL TWEEZERS

Chemistry

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Faculty Sponsor(s):
Dr. Timothy Guasco

Abstract/Description:
Aerosols that form in the atmosphere have significant effects on the climate and natural atmospheric processes. There is still much to learn about what the specific effects are, however. Increasing the understanding of the effects of these particles will also increase our knowledge of the atmosphere and its processes. Using optical tweezers to hold an aerosol in place, we can analyze its properties and draw conclusions about its effects. The purpose of this research project is to build an optical tweezers for this purpose as well as for future research projects.

14

SIMPLE METHOD FOR PREPARING CUSTOMIZABLE PYROLYZED PHOTORESIN CARBON ELECTRODES USING 3D PRINTING

Chemistry

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Faculty Sponsor(s):
Dr. Kyle Knust

Abstract/Description:
Three-dimensional (3D) printing is an emerging technology that enables the fabrication of novel devices and microfluidic analytical systems. In this project, stereolithography (SLA) 3D printing was used to fabricate customizable photoresin electrodes which were then pyrolyzed. Pyrolyzed photoresin electrodes (PPEs) are known to exhibit similar electrochemical behavior as commercial glassy carbon electrodes (GCEs), which are widely used in electrochemistry due to their chemical inertness and low electrical resistance. To prepare PPEs, only a desktop 3D printer and a tube furnace were required. Without the need for specialized equipment, this simple method improves accessibility and requires less resources to make PPEs. Analytical techniques including cyclic voltammetry, optical microscopy, Raman spectroscopy, and X-ray photoelectron spectroscopy were employed to characterize the fabricated PPEs and compare them with GCEs.

15

ANALYSIS OF METALS IN WATER SAMPLES USING INDUCTIVELY COUPLED PLASMA - OPTICAL EMISSION SPECTROSCOPY

Chemistry

Author(s):
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Faculty Sponsor(s):
Dr. Kyle Knust

Abstract/Description:
Using inductively coupled plasma - optical emission spectroscopy (ICP-OES), the elemental makeup of tap and well water samples was analyzed. The main goal of this research was to ensure elemental levels in water samples were at or below concentrations allowed by the Environmental Protection Agency's (EPA) National Primary Drinking Water Regulations. EPA method 200.7 was the basis for this research, with modifications made to suit the available equipment. Following the collection of grab samples, solutions were filtered, acidified, and then acid digested prior to analysis with ICP-OES to ensure potable water samples meet EPA regulations.

16

POTENTIALLY SUBSTANDARD OR COUNTERFEIT PHARMACEUTICAL ANALYSIS BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Chemistry

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Dr. Kyle Knust, Millikin University

Faculty Sponsor(s):
Dr. Kyle Knust

Abstract/Description:
Resource-limited countries experience a higher rate of substandard and counterfeit pharmaceutical production and distribution due to poorly funded regulatory agencies. Suspicious samples from Kenya and Malawi were tested on-site using paper analytical devices (PADs) by the University of Notre Dame. The flagged samples were then sent to Distributed Pharmaceutical Analysis Laboratory (DPAL) partner organizations such as Millikin University for further testing. Using high performance liquid chromatography (HPLC), a gradient method was developed with reversed phase HPLC to analyze amoxicillin tablets for potency. To demonstrate our ability to perform this analysis accurately and precisely, DPAL's system suitability tests were completed. These tests included linearity, precision, accuracy and range, accuracy via spike recovery, and accuracy via specificity using amoxicillin tablets. After system suitability tests were passed, flagged real world pharmaceutical samples from Kenya and Malawi were analyzed for their amoxicillin content.

17

SIZE-CONSISTENCY IN QUANTUM CHEMICAL CALCULATIONS

Chemistry

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Faculty Sponsor(s):
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Abstract/Description:
Size-consistency indicates the ability of a computational model to properly describe the potential energy surface of a system, especially when a chemical bond is being broken. Although many correlated wavefunction computational methods feature size-consistency, commonly used density functional techniques are not able to achieve this, with some exceptions. As a result, the potential energy of certain molecular systems cannot be accurately represented by density functional theory. In this research, we examine the systems of Ne2+ and LiF using exponential-ansatz density functional theory (DFT-eXp). We show that, unlike traditional DFT methods, the DFT-eXp method is size-consistent and will produce accurate potential energy surfaces for the dissociation of these molecules. Additionally, we investigate how the perturbative approximation to the t-amplitudes is carried out in the Python code, and how these amplitudes are iteratively updated using a quasi-Newton method.

18

PREVENTION OF STAINING OF TOOTH ENAMEL BY COLORED BEVERAGES

Chemistry

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Faculty Sponsor(s):
Dr. George Bennett

Abstract/Description:
Physical appearance is a lucrative market and cosmetic dentistry has been growing in popularity over the last several years. It is well known that soft drinks and colored dye found in sports drinks and fruit drinks stain the tooth enamel. The tooth enamel is the hardest substance in the human body. This study will be conducted in hopes of developing an additive that will reduce the highly acidic contents found in these drinks since the acidity causes degrading of the enamel. This causes the enamel to become porous, thereby enabling staining. A Trubyte Shade Guide will assist in analyzing color changes of the teeth after various times spent in solutions of colored beverage solutions. It was determined that approximately 0.0500 g of sodium carbonate (NaCO3) mixed with 2 mL of distilled water significantly reduced staining in all beverages. Additionally, it was found that raising the pH of the liquid lessened the staining effect of dark colas and sports drinks.

19

IN 35-45 YEAR OLD PATIENTS WITH HYPERTENSION, HOW DOES MEDICATION ADHERENCE COMPARED TO MEDICATION NON-ADHERENCE INFLUENCE MYOCARDIAL INFARCTION OCCURRENCE OVER 1 TO 2 YEARS FROM INITIAL DIAGNOSIS?

Nursing

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Faculty Sponsor(s):
Travis Whisman

Abstract/Description:
Background: The chance of a myocardial infarction increases following a diagnosis of hypertension. With the help of medication adherence, chances of myocardial infarction can be reduced. Without medication adherence, patients can potentially experience a heart attack within the first two years of their initial diagnosis. Patients need education by nursing practices on the importance of medication adherence to decrease chances of experiencing myocardial infarction following new diagnosis of hypertension.

Purpose: The purpose of this paper is to compare if medication adherence hypertension diagnosis decreases the chance of myocardial infarction opposed

to non-adherence within the first two years of hypertension diagnosis.

Methods: In this paper, we will be looking at articles from CINAHL, PubMed and ACOG. We will be searching for literature that has been published within the past five to ten years that evaluates and discusses medication adherence post hypertension diagnosis.

Results: Our literature search continues; more information is forthcoming.

Implications for practice: By researching medication adherence following a new diagnosis of hypertension, we hope to gather information about possible complications for non-adherence such as MI. We hope to educate patients on the importance of medication adherence after they been diagnosed with hypertension to prevent future myocardial infarction.

20

DO ONCOLOGY PATIENTS ON ACTIVE CHEMOTHERAPY WHO PARTICIPATE IN HATHA YOGA EXPERIENCE FEWER SIDE EFFECTS THAN THOSE WITH NO HATHA YOGA INTERVENTION?

Nursing

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Faculty Sponsor(s):
Travis Whisman

Abstract/Description:
Chemotherapy can be associated with harsh side effects that may affect more than just a patient's physical body. Cancer can affect an individual's perceptions of personal relationships, cause financial strains, and increase emotional distress. Contemporary medicine may not fully consider that each patient is an individual with unique perceptions and needs. There is a great need for research to further understand how patients with cancer experience many side effects related to chemotherapy and ways to decrease their side effects outside of contemporary medicine.

21

IN POSTPARTUM PATIENTS, HOW DOES SKIN TO SKIN CONTACT COMPARED TO DRYING AND SWADDLING BENEFIT BOTH MOM AND BABY WITH BONDING DURING THE FIRST MONTH?

Nursing

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Faculty Sponsor(s):
Travis Whisman

Abstract/Description:
Background: Skin to skin contact between mother and baby occurs everyday around the world in hospitals. This process is a mother's choice and involves a lot of effort from labor and delivery nurses to educate the benefits and disadvantages of this technique. While there could be disadvantages, skin to skin contact can be an intervention to improve initial bonding between mother and baby.

Purpose: The purpose of this paper is to determine the benefits and disadvantages of skin to skin contact.

Methods: In this paper, we will be looking at articles from CINAHL, AWHONN, and Durham & Chapman. Our inclusion criteria for articles include articles that were published within the last 5-7 years and that have been peer reviewed. Our exclusion criteria for skin to skin contact are non-credible websites, articles published beyond 10 years ago, and articles written by individuals not in the obstetric field of medicine.

Results: As our research continues, more information on this topic will be forthcoming.

Implications for practice: By looking at the benefits and disadvantages of skin to skin, we hope to gather information on whether this technique is beneficial for mother and baby. With this information, we hope to educate new mothers on the effectiveness of this technique so that they can implement the most effective technique to help with improving mother and baby relationship.

22

ADDRESSING THE INCIDENCE OF POSTOPERATIVE NAUSEA & VOMITING (PONV) IN HIGH-RISK PATIENTS DUE TO VOLATILE ANESTHETICS

Nursing

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Faculty Sponsor(s):
Julie Kennedy

Abstract/Description:
The purpose of this project is to educate anesthesia staff on a novel device capable of reducing the occurrence of Postoperative Nausea & Vomiting (PONV) and the manifestations associated with the condition following the use of volatile anesthetics given during the intraoperative period. Residual inhaled anesthetic agents that remain in the patient's system during the post-operative period are among the leading causes of PONV. The Anecare device has been proven to rapidly remove residual inhaled anesthetics during emergence. Thus, Anecare provides the benefit of providing a fast, smooth anesthesia recovery, lowers the risk of complications, increases operating and postanesthesia performance, and lowers the cost of patient care This doctoral project aims to provide anesthesia providers education regarding the safe and proper use of the Anecare device to prevent or minimize the incidence of PONV, its additional benefits, and cost-effectiveness.

23

ANIMAL - ASSISTED THERAPY IN CHILDREN WITH AUTISM SPECTRUM DISORDER: A REVIEW OF LITERATURE

Nursing

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Faculty Sponsor(s):
Pam Laskowski

Abstract/Description:
Problem: Social impairment in children with Autism Spectrum Disorder (ASD).

Purpose and Aims: To summarize major findings related to animal - assisted therapy (AAT) in children with ASD and answer the following question: In children with Autism Spectrum Disorder does the use of animal - assisted therapy compared to no animal therapy increase positive social interactions?

Theoretical Background: Kolcaba's theory of holistic comfort is used as a framework to support the use of AAT in children with ASD.

Method: Data was collected through the CINAHL database. Keywords used in the database search include "autism or asd or autism spectrum disorder" and "animal assisted therapy or pet therapy or animal therapy or animal intervention or animal assisted activity." These key phrases were mentioned in 99 articles within the U.S., Australia, Greece, Spain, Netherlands, Italy, and other countries.

Findings: Therapy dogs promote verbal and nonverbal behaviors in children with ASD. Other common themes include decreased anxiety, decreased negative behaviors, increased social interaction, and improved mood.

Conclusion: Articles with higher levels of evidence, larger sample size, and increased generalizability and statistical power are needed to determine treatment effectiveness and differences in treatment outcomes.

Key words: Autism, ASD, Autism Spectrum Disorder, animal - assisted therapy, pet therapy, animal therapy, animal intervention, animal - assisted activity

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ASSESSMENT TOOLS UTILIZED IN PATIENTS WITH ALCOHOL USE DISORDER TO REDUCE READMISSION RATES

Nursing

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Faculty Sponsor(s):
Dr. Angela Bentley

Abstract/Description:
Relatively few patients are screened for alcohol abuse and a small percentage of those patients seek treatment. Lack of screening results strain on the healthcare system as patients seek multiple hospital visits or repeat admissions due to alcohol consumption. The goal of this project is to assess the strengths and predictability of alcohol use screening questionnaires to determine the patients' potential chance of readmission. A systematic literature review of journal articles published from 2011-2021 on alcohol assessment tools was conducted. CINHAL Complete, PubMed, and ProQuest Nursing & Allied Health were utilized in obtaining resources for this literature review, resulting in 32 articles. Six specific alcohol assessment tools were identified, compared, and analyzed based upon their usability, predictability, age sensitivity, and limitations. The results indicate that AUDIT is a validated tool for all age groups, but its major limitation is the length of the assessment tool. The shortened assessment tools are validated, but if patients screen positive, a more in-depth assessment and evaluation of alcohol use should be utilized for an accurate treatment plan or referral. Alcohol assessment tools deduce risky or harmful drinking behavior but are not to be used as a diagnostic tool. Alcohol assessment tools can be utilized to determine need for interventions or referral to treatment. More research is needed to determine if alcohol screening tools can be utilized for patient prediction of readmission rates to the hospital relating to the patients' alcohol consumption.

25

NEW GRADUATE NURSES' EXPERIENCES WITH BURNOUT DURING THE TRANSITION TO PRACTICE

Nursing

Author(s):
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Faculty Sponsor(s):
Dr. Jo Carter

Abstract/Description:
Introduction: The aim of this review is to explore the positive and negative factors affecting the transition to practice of new graduate nurses and how those factors may contribute to the development of burnout.

Methods: CINAHL Complete, ProQuest, and PubMed databases were searched using the Boolean search terms "burnout" AND "new nurse OR new graduate nurse OR newly licensed nurse OR new registered nurse." Articles were reviewed for their relevance to the search criteria. Then, themes were identified based on the articles' findings of contributors to a positive or negative transition experience for new graduate nurses.

Results and Discussion: Common contributors to a negative transitional experience included incongruence between expectations and reality, perceptions of poor leadership support, workplace environment, interpersonal relationships, and intrapersonal factors. Themes promoting a positive transitional experience included authentic leadership, resilience, and comradery.

Conclusions: A negative transition as a new graduate nurse enters practice can contribute to the development of burnout. Attempts to mitigate this have mostly focused on the role of authentic leadership and resiliency development programs. The solution to burnout may involve looking upstream at the antecedent factors associated with it in order to design strategies to mitigate or ease their effects.

26

UTILIZATION OF EMOTIONAL INTELLIGENCE IN PATIENT-CENTERED CARE OF POST-TRAUMATIC STRESS DISORDER RELATED TO SEXUAL ASSAULT

Nursing

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Faculty Sponsor(s):
Julie Kennedy

Abstract/Description:
Background: There is a recent uprise of sexual assaults and misconducts on university and colleges campuses. The mental health of sexual assault victims is often significantly impacted and to ensure optimal patient outcomes a trusting nurse-patient relationship is required. To guide this review of literature Hildegard E. Peplau's Theory of Interpersonal Relations was used.

Objective: The purpose of this review of literature is to identify and integrate evidence-based research on the utilization of emotional intelligence and empathy in the development of trust and effective therapeutic relationships in sexual assault victims.

Methods: In this review of literature, a systematic search of keywords such "emotional intelligence, empathy, and sexual assault" was used. The twenty-six articles used were published in databases including CINAHL, ProQuest Nursing & Allied Health Source, PubMed, PsycARTICLES, PsycINFO, and the Cochrane Library.

Results: The analysis revealed research in sexual assault care is limited; however, four common attributes in caring for sexual assault victims were discovered: (1) emotional intelligence (2) empathy; (3) therapeutic patient-provider relationships; and (4) barriers to sexual assault care. Each attribute contributes to the nurse's ability to utilize their own emotions and the emotions of others to care for sexual assault patients.

Conclusion: Four identified factors are essential to successful patient outcomes of sexual assault victims. In addition, the review has provided evidence that there is an insufficient amount of literature on sexual assault and sexual assault care thus indicating a further need for research.

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MUSIC THERAPY: EFFECTIVENESS IN STROKE REHABILITATION

Nursing

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Faculty Sponsor(s):
Travis Whisman

Abstract/Description:
Background: This study compares the difference in recovery and rehabilitation of stroke patients who utilize music therapy versus patients who do not use music therapy. The significance of this study is to educate healthcare professionals on how music therapy can assist the patients in the rehabilitation phase following an event such as a stroke.

Purpose: The purpose of this paper is to explore literature comparing stroke patients who utilized music therapy versus those who did not utilize music therapy during recovery and rehabilitation

Methods: Data were collected using the following: CINAHL, PubMed, Proquest Allied Health, and The Cochrane Library. Many variations of search terms were used to collect the results.

Results: Our search for literature is in the process of acquiring forthcoming information.

Implications for practice: By looking at the comparison between the presence of music versus the absence of music implicated in practice, this paper will examine the effectiveness that music therapy may have on the recovery of patients who have suffered from a cerebrovascular accident (CVA) or stroke. Nurses can utilize this potential intervention to help in improving practice related to the recovery of stroke patients in active rehabilitation.

28

PERCEPTION OF MATERNAL CARE BY EXPECTING AFRICAN AMERICAN MOTHERS

Nursing

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Faculty Sponsor(s):
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Abstract/Description:
In today's diverse world, every expectant mother deserves to feel welcomed and trusting that they are receiving the best care for themselves and their baby. Oftentimes, marginalized individuals are not presented with the same resources and opportunities for treatment. To improve the experience for the women in question, action must be taken to ensure the same level of care for all expecting mothers involved. This poster is going to be used to illustrate common views and understandings of the American healthcare system, through the eyes of expecting African American women.

29

IMPACT OF A BREASTFEEDING EDUCATION INTERVENTION ON OBSTETRIC NURSE BREASTFEEDING KNOWLEDGE AND CONFIDENCE

Nursing

Author(s):
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Faculty Sponsor(s):
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Abstract/Description:
Background: Breastfeeding is recognized as the optimal source of nutrition for infants during the first six months of life. There are numerous health benefits from breastfeeding for both mothers and infants. Nurses are in a position to provide breastfeeding education and hands-on support in the immediate postpartum period, helping to set patients up for a successful breastfeeding journey. The goal of this project using Nola Pender's Health Promotion Model was to determine if an educational intervention utilizing breastfeeding resources from the Association of Women's Health, Obstetric, and Neonatal Nurses increased nurses' knowledge level and confidence providing breastfeeding education.

Methods: An educational intervention with pre-test and post-test design for comparison was used. Results were compared and analyzed using descriptive statistics.

Results: 22 obstetric nurses (N=22) completed pre-tests and received breastfeeding education. 17 post-tests were returned (return rate 77.3%). Pre-test scores revealed a mean score of 67%. Post-test results revealed a mean score of 88.2%. Nurse confidence providing breastfeeding support prior to the educational intervention averaged 4.09 (out of five). Nurse confidence providing breastfeeding support post-intervention increased to an average of 4.53 (out of five).

Conclusion: The education intervention was successful in improving obstetric nurse breastfeeding knowledge and confidence providing breastfeeding support to patients. It is recommended based on the evidence that obstetric nurses undergo regular breastfeeding education to maintain current knowledge and build confidence providing breastfeeding support to patients.

30

USE OF A FITNESS APP TO REDUCE STRESS-EATING AMONG NURSING STUDENTS

Nursing

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Faculty Sponsor(s):
Dr. Amy Yeates, Dr. Angela Bentley

Abstract/Description:
Nursing students are subject to a variety of stressors, including academic demands and challenges related to transitioning to the professional nursing role. In response to stress, nursing students may engage in stress-eating, which can contribute to the development of serious health issues. An evidence-based practice (EBP) project was implemented to reduce stress-eating among nursing students by implementing a fitness app. The following PICOT question served as the foundation for the EBP project: Among nursing students (P), does the use of a fitness app (I) compared to not using a fitness app (C) reduce stress-eating (O) over a one-month period (T)? Orem's self-care deficit nursing theory (SCDNT) provided the conceptual framework for the EBP project. The Plan-Do-Study-Act (PDSA) framework was used to guide project development, implementation, and evaluation. Participants included graduate nursing students (N = 5) from a small, private university in the midwestern United States. Data collection involved administration of a Stress-Eating Survey that incorporated Cohen's perceived stress scale. Results indicated use of a fitness app was associated with a decrease in stress-eating among nursing students. Recommendations include encouraging nursing students to engage in use of a fitness app that includes personal goal settings, activity and macronutrient trackers, and a barcode scanner. Research is recommended to develop a reliable, valid tool for use in measuring stress-eating behaviors. To promote sustained use of a fitness app to decrease stress-eating, continuing education and support from leadership are necessary.

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THE USE OF SIMULATED NEONATAL RESUSCITATIONS: THE IMPACT ON KNOWLEDGE RETENTION AND SKILL PERFORMANCE OF NEONATAL INTENSIVE CARE UNIT NURSES

Nursing

Author(s):
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Faculty Sponsor(s):
Dr. Gail Fyke

Abstract/Description:
Purpose: The purpose of the study was to examine the relationship between participation in a simulated neonatal resuscitation on neonatal intensive care unit (NICU) nurses' knowledge of the Neonatal Resuscitation Program (NRP) guidelines and accuracy of the psychomotor skills required during resuscitation. Design: An educational project design was used. Method: NICU nurses employed at a regional hospital in central Illinois were asked to complete a short online survey, participate in a simulated resuscitation, and then complete the same online survey as before. Answers from before and after the simulation were compared and evaluated for knowledge of NRP. Resuscitation skill performance was assessed during the hands-on session. (N = 10). Findings: Prior to participation in the simulated neonatal resuscitation, 90% of NICU nurses did not have complete knowledge of NRP guidelines (N=9). During the simulated resuscitation, one out of ten NICU nurses required correction on providing ventilation per NRP guidelines. After the hands-on portion of this project, only one of the then NICU nurses did not answer all NRP based questions correctly. Conclusions: Participation in simulated neonatal resuscitation improves NICU nurses' knowledge of NRP and provides a safe place to practice and improve on resuscitation skills. Participation in simulated resuscitations should be implemented more frequently on nursing units to improve life-saving skills.

Keywords: neonatal intensive care unit, Neonatal Resuscitation Program, simulated neonatal resuscitation

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CAREGIVER STRESS

Nursing

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Faculty Sponsor(s):
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Abstract/Description:
Caregiver stress of individuals caring for a person with Alzheimer's disease is a well-researched topic. Alzheimer's disease affects 5.8 million people in the United States (Alzheimer's Association, 2020). In Illinois, there are an estimated 587,000 informal caregivers of individuals with Alzheimer's disease (Alzheimer's Association, 2020). Prolonged states of caregiver stress can result in onset of chronic illness in the caregiver. Caregiver stress, as defined by Ekberg et al., as emotional, and physical manifestations of exhaustion, negative attitude, and low self-esteem that decreased the ability to care for others (1986). The following PICOT question serves as the foundation for this poster: Do caregivers of people with moderate to severe Alzheimer's disease (P), who receive educational interventions, (I) compared to caregivers of people without moderate to severe Alzheimer's disease (C) experience a decrease in caregiver stress when they receive educational interventions (O) on a monthly basis (T)?

Nurses can meet the needs of a caregiver of an individual with Alzheimer's disease with a thorough assessment process, recommendation of resources, and spiritual nursing interventions. Caregivers of people with Alzheimer's disease experience a decrease in caregiver stress when they participate in educational interventions. Effective nursing interventions for caregivers use interdisciplinary resources that address the caregiver's emotional and physical needs. Educational interventions used by the nurse that decrease caregiver stress include the New York University Caregiver Intervention, Community REACH, and REACH II. All educational interventions used by the nurse target symptoms of stress to increase the quality of life in caregivers.

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MEASURING THE EFFECTIVENESS AND EDUCATIONAL OUTCOMES OF COLLEGE PREPARATORY PROGRAMS IN KYRGYZSTAN

Tabor School of Business

Author(s):
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Faculty Sponsor(s):
Dr. Laura Dean

Abstract/Description:
This poster examines educational outcomes from participatory action research as a U.S. Department of State EducationUSA College Prep Club mentor and intern in Kyrgyzstan. Educational outcomes for this program are measured with observations from weekly educational sessions with high achieving youth in Bishkek and Osh, Kyrgyzstan. The research also uses quantitative survey data analyzing the effectiveness and student perceptions of the program based on two student surveys from the beginning of the program and the mid-year evaluation. The results include observations from the program as a whole, teaching methodologies, and an analysis of the end-goal educational outcomes. The findings reveal that college preparatory programs are effective but certain areas including classroom delivery and student persistence need improvement.

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HUMAN TRAFFICKING ADJUDICATION IN CENTRAL ILLINOIS

Political Science

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Dr. Laura Dean, Millikin University

Faculty Sponsor(s):
Dr. Laura Dean

Abstract/Description:
This poster focuses on the adjudication of human trafficking cases in the state of Illinois. Since the adoption of the Trafficking Victims Protection Act in 2000, the focus of most research has been on federal human trafficking cases but the proliferation of human trafficking laws on the state level have spurred state level cases. Previous research suggests that federal level prosecutors don't always charge the trafficking statute, but plead to a lower statute such as pimping, solicitation, or child pornography, and our research seeks to determine if this happens on the county level as well. We examine both arrest and court records in 16 counties of Central Illinois to examine the case from arrest to sentencing. We coded the cases for type of trafficking, victim characteristics, and demographic background of defendants, as well as their charge and sentencing details, if available. This allowed us to investigate the types of arrests for human trafficking related crimes, the resolution of the case in Central Illinois, and identify areas with more and less effective adjudication processes. We formulated these data into descriptive statistics on victims and perpetrators, types of trafficking cases, sentencing information, and then map the cases across the state identifying gaps across Central Illinois. Most existent research focuses on federal crimes so county level adjudication analysis for human trafficking cases adds to the literature and can influence the work of police and prosecutors across the state.

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EFFECT OF GLUCOSE INGESTION ON INHIBITORY CONTROL

Psychology

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Faculty Sponsor(s):
Dr. James St. James

Abstract/Description:
One aspect of executive control is the ability to inhibit a response to irrelevant stimuli; this study aims to examine the real-world application of acute ingestion of a standard-size dose of glucose in reducing participants' inhibitory control. Participants were asked to consume 12 oz. of Coca-Cola or Coca-Cola Zero, allowing a twenty-minute rest period for glucose digestion before being administered the Spatial Stroop task (Stroop, 1935). In the Stroop task, participants name the colors in which sets of letters (i.e., XXXX, or GREEN) are printed on a sheet of paper. In the formed word condition, participants must inhibit the automatic response to read the word, which competes with their ability to say the name of the color in which the word is printed. Data collection is ongoing, but we hypothesize that glucose will have adverse effects on inhibitory control shown by an increase in reaction times between the two Stroop conditions. Our goal is to replicate carefully controlled studies that found the effects of glucose to reduce executive functioning; however, our study focuses on the generalizability of glucoses' effects on daily life.

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THE IMPACT OF SOCIAL MEDIA ON BODY IMAGE AND SELF-ESTEEM

Psychology

Author(s):
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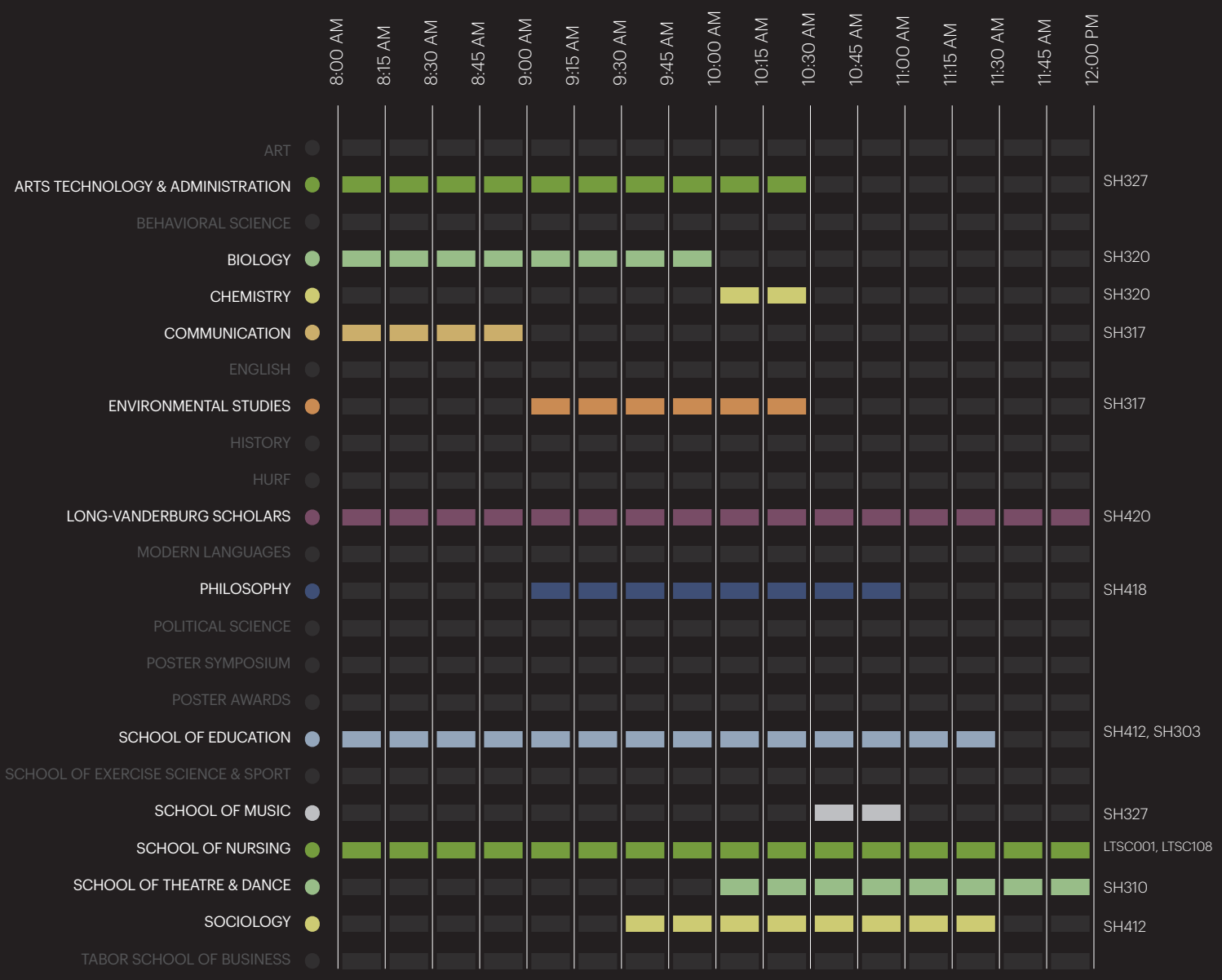
Faculty Sponsor(s):
Dr. Melissa Scircle

Abstract/Description:
Participants in this study were given a survey asking about their average daily time spent on social media, using the screen time application on their iPhones, and completed the Appearance Anxiety Inventory, Rosenberg Self Esteem Scale, and COVID-19 mental health-related questions. Most of the participants attend Millikin University, 71% are women, and 87% are Caucasian. No relationship was found between the participants' time on social media, and their scores on the surveys. Participants, on average, agreed that their feelings of stress loneliness had increased, and mental health had worsened since the beginning of the pandemic. The findings of this study suggest that the amount of time spent on social media has no correlation to appearance anxiety and self-esteem. However, appearance anxiety and self-esteem levels do have a relationship to an increase in stress and loneliness, and a worsening mental health, during the COVID-19 pandemic.

Presentation Schedule

MORNING



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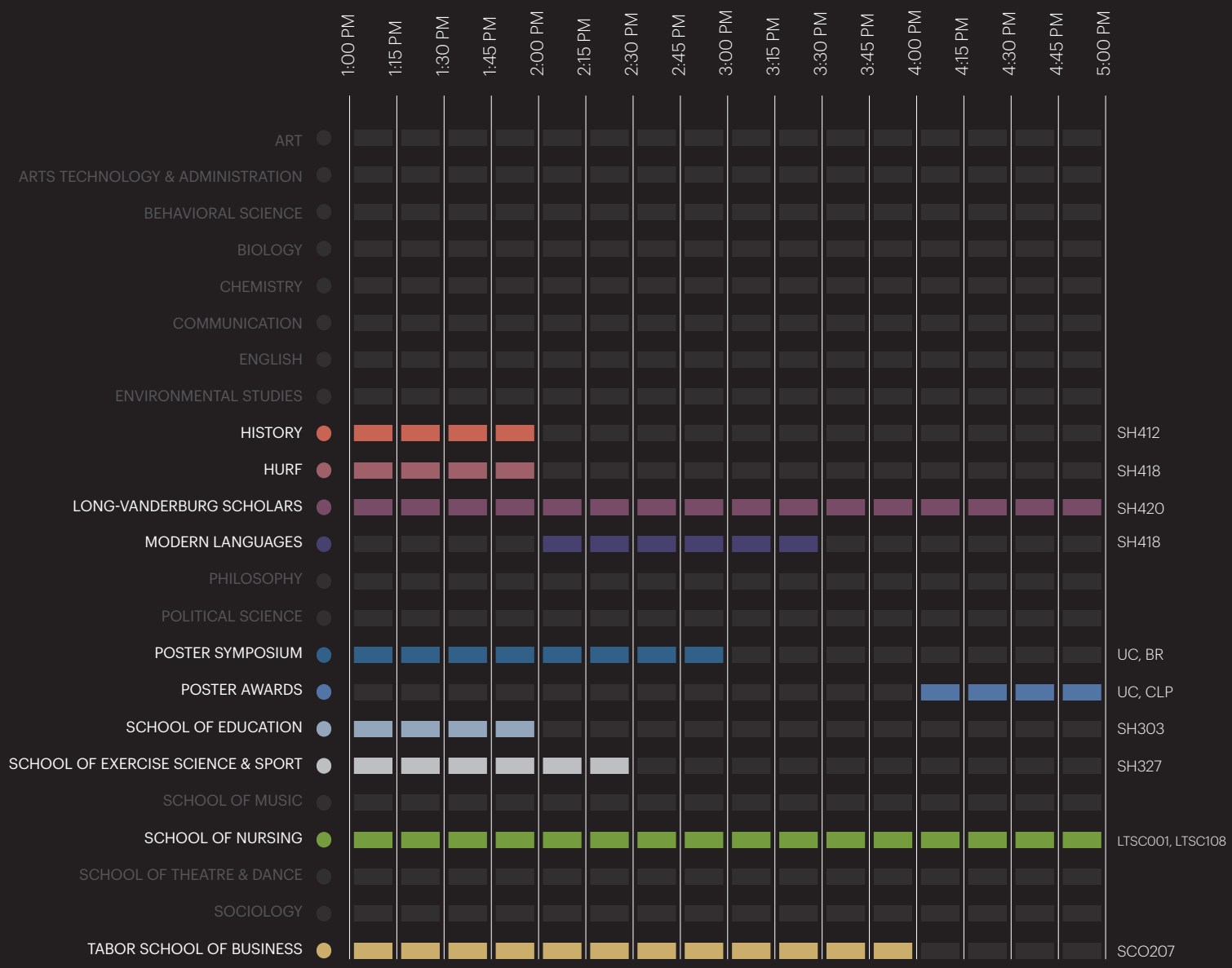
CLP - Doug & Diane Oberhelman Center for Leadership Performance • **SCO -** ADM-Scovill Hall

AFTERNOON



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