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SWOSU Research and Scholarly Activity Fair 2023

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The 31st SWOSU Research and Scholarly Activity Fair

April 20, 2023

SWOSU Wellness Center

12:00 p.m. – 3:00 p.m.

Thirty-First Annual SWOSU Research and Scholarly Activity Fair Thursday, April 20, 2023

On behalf of the members of the University Research and Scholarly Activity Committee (USRAC) and the Office of Sponsored Programs (OSP) at Southwestern Oklahoma State University (SWOSU) - **Welcome to the Thirtieth SWOSU Research and Scholarly Activity Fair!** There are **77** poster presentations and **2** oral presentations involving over **130** student and faculty researchers, writers, presenters, artists, collaborators, and faculty sponsors encompassing activities from the SWOSU College of Pharmacy; SWOSU School of Nursing & Allied Health Sciences; and SWOSU Departments of Allied Health Sciences; Art, Communication & Theatre; Biological Sciences; Business; Computer Science; Chemistry & Physics; Engineering Technology; Language & Literature; Mathematics; Music; Pharmacy; Psychology; and Social Sciences.

We wish to extend special thanks to all who played vital roles in making this event happen, particularly: President Diana Lovell and Provost Joel Kendall, for their continued support of research and scholarly activity at all levels throughout the University; Ms. Susan Ellis, Ms. Radonna Sawatzky, and their staff for helping to set up the facilities and providing refreshments. We also recognize the faculty, staff, and administrative sponsors and collaborators who dedicate significant time and effort toward integrating students into various forms of research and scholarly activity. Also, a special thank you to those who took the time to perform poster evaluations that provides useful and constructive feedback which will help with the professional development of our students.

I personally would like to acknowledge Dr. Lori Gwyn, Director of the Office of Sponsored Programs (OSP), Mr. C.J. Smith (OSP Assistant Director), and their team of students for their dedication and hard work to make this event a reality in coordination with the SWOSU University Research and Scholarly Activity Committee.

Student research is an essential ingredient in undergraduate education. It fosters collaboration, critical thinking, and creativity in identifying and working to solve a question, plus it provides the opportunity to communicate results. And, from the student's perspective, there is the added excitement of potentially being the first to make a discovery, understand a problem, provide a solution, and/or make a creative contribution to the world. We hope you will continue to participate in events such as this in sharing SWOSU's research and scholarly activity accomplishments.

Enjoy the Fair!

2023 to 2024 SWOSU URSAC Committee Members

Dr. Jon Henrikson, Department of Chemistry & Physics

Dr. Jieun Chang, Department of Social Sciences

Dr. Jeremy Evert, Department of Business & Computer Science

Dr. Horrick Sharma, Department of Pharmaceutical Sciences

Dr.. Vijay Somalinga, Department of Biological Sciences

Audra Crisp, Student Representative

Mr. Frederic Murray, SWOSU Al Harris Library

Dr. Anne Pate, Department of Allied Health Sciences

Dr. Veronica Aguiñaga, Department of

Dr. Sophia Lee, Department of Music

Dr. Lori Gwyn, Director, Office of Sponsored Programs

Mr. CJ Smith, Office of Sponsored Programs

Things to do during and after the SWOSU Research & Scholarly Activity Fair:

1. **Share Pictures and Videos:** Please post your photos and videos via social media, and tag them with:

#SWOSUResearch

#GoDawgs

@SWOSU

And, feel free to send in your photos by emailing them to osp@swosu.edu

2. **Exit Survey:** Please complete a short, anonymous online survey to provide feedback regarding your experience with the Fair – this will help us to make future events better.

-To access the survey, click here: [SWOSU Research and Scholarly Activity Fair Exit Survey](#)

Or by scanning the **QR code** to the right:

-We also will email this link to you after the Fair.

3. **Report and publish your work:** Check with your mentor about reporting and publishing your poster or oral presentation. Some options include:

-Completing a **Scholarly Activity & Academic Activity Report** for the office of sponsored programs:

[Scholarly Activity and Academic Activity Report](#)

-Publishing your work on **Digital Commons** via the SWOSU Libraries ([SWOSU Digital Commons](#))



**We congratulate you for participating in the Spring 2023 SWOSU
Research & Scholarly Activity Fair,
and we look forward to seeing you next time**

<u>Presentation Number</u>	<u>Name</u>	<u>Abstract Title</u>
Poster - 10	Alcuitas, Joseph	Female amphipods adjust brood sex ratios based on mate choice
Poster - 43	Alexander, Landen	Mental Illness: what are the causes and how does it affect people
Poster - 77	Anderson, Courtney	Structured Language Basics Influence on Phonological Awareness Development
Poster - 12	Aquino, Adreana	SSA_0809 is a homotrimeric, reactive intermediate deaminase A (RidA) from an opportunistic pathogen, Streptococcus sanguinis
Poster - 39	Arauz, Lesly	What Are the Effects of Learning and Adapting to Many New Cultures in the US?
Poster - 27	Atolagbe, Silas	The Biological Concept of Insomnia Among Youths: What Are The Best Coping Mechanisms
Poster - 66	Bonser, Taylor	Prescribed Fire Effects on Ground Cover Among Encroaching Juniper Near Crowder Lake, OK.
Poster - 08	Bosque, Renan Janke	Faculty Mentor
Poster - 60	Bowels, Todd	Anxiety: The Umbrella of Mental Illness in Musicians
Poster - 57	Bowels, Todd	Dissonance in the Life of Musicians: Anxiety, Resolution, and Coping Strategies
Poster - 54	Bradley, Megan	C.H.A.N.G.E. (Cancelling Hunger Adding Nutrition Growth Education) Hunger in Oklahoma: Using C.H.A.N.G.E. to Improve the Current Situation
Poster - 26	Brooks, Nathan	Faculty Mentor
Poster - 38	Bumgardner, Annabelle	The Struggles of LGBTQIA+: Understanding Why Queer Medical Professionals Have a High Dropout Rate
Posters - 67, 68, & 69	Burgess, Stephen	Faculty Mentor
Poster - 56	Byrd, Kylar	Mathematical Analysis of an SEIR Disease Model
Posters - 03, 04, 05, & 06	Castle, Lisa	Faculty Mentor
Poster - 63	Castro, Leticia	Lifted on High: Measuring Music Therapy Effects on Intimate Partner Violence Survivors
Poster - 70	Ceniceros, Antonio	Mind over Matter: Mastering Stress and Anxiety with Mental Techniques.
Poster - 16	Chang, Jieun	Faculty Mentor
Poster - 45	Chang, Wei	Some Positive Effects of Working Out in a Gym
Poster - 40	Chang, Yung	Grand Canyon National Park: What is Its History and What Makes This National Park Popular?
Poster - 21	Childress, Justin	Measuring the Amino Acid Exchange Rate in Ni(II) Complexes
Poster - 74	Clemmons, Jonathan	Internal Communication within an Institution of Higher Education During the COVID-19 Crisis: A Case Study
Poster - 07	Cockrell, Ashton	Difference in Gut Microbiota of Male and Female Bean Beetles
Poster - 10	Cothran, Rickey	Faculty Mentor
Poster - 55	Cowley, Skye	A Roast for Emily: Coded Language in William Faulkner's "A Rose for Emily"
Oral Presentation (pg 78)	Cowley, Skye	The Horror of Creation: A Transgender Interpretation of Frankenstein
Poster - 23	Crisp, Audra	Method development and validation of pKa determination of glycine-metal complexes by NMR.
Poster - 65	Croskey, Skylar	Juniper Stand Structure of Burned vs. Unburned Plots Following a Prescribed Fire Near Crowder Lake, OK.
Poster - 25	Detrick, Emma	Synthesis of amine functionalized cholesterol derivatives for use in metal-complex based imaging agents
Poster - 51	Dillard, Carson	Should High School Sports Need an Athletic Trainer on Staff?
Poster - 65	Dowe, Justin	Juniper Stand Structure of Burned vs. Unburned Plots Following a Prescribed Fire Near Crowder Lake, OK.
Poster - 06	Edsall, Ruby	Improving on Heaven: Benefits of Replacing Trees of Heaven with Native Plants
Poster - 01	Edwards, Jorie	Prevalence of Food Security and Mental Health Resources among SWOSU students
Poster - 18	Eldredge, Samantha	Asymmetric Synthesis of b-Substituted Pyroglutamic Acid Precursors
Poster - 48	Elliot, Ty	The Struggles of Small Farms and How It Affects Consumers?
Posters - 18, 20, 21, & 23	Ellis, Trevor	Faculty Mentor
Poster - 09	Esparza, Colter	UNDERSTANDING THE MECHANISMS OF METABOLIC PLASTICITY IN PANCREATIC CANCER
Poster - 18	Estala, Eric	Asymmetric Synthesis of b-Substituted Pyroglutamic Acid Precursors
Poster - 03	Farnsley, Payden	M.A.R.S.: Manure Accelerated Regolith in Space
Poster - 04	Farnsley, Payden	Microbial Analysis of Regolith-grown Species on Mars
Poster - 07	Flores, Kade	Difference in Gut Microbiota of Male and Female Bean Beetles
Poster - 04	Flores, Kade	Microbial Analysis of Regolith-grown Species on Mars
Poster - 37	Franco, Bryant	Understanding an Endless Frontier: The International Space Station and the Dangers of Space

Poster - 22	Garcia, Jocelyn	Effects of pH on spectral analysis of caffeinated, half-caffeinated and decaffeinated coffee beans from La Magnolia, Tres Rios (Costa Rica).
Poster - 66	Geffre, Mark	Prescribed Fire Effects on Ground Cover Among Encroaching Juniper Near Crowder Lake, OK.
Poster - 56	Ghosh, Swarup	Faculty Mentor
Poster - 56	Giri, Sunil	Faculty Mentor
Poster - 26	Goodwin, Trevor	Trevor Goodwin Capstone Project: Rapidly Deployable Survival Shelter
Poster - 46	Goombi, Roberta	The Psilocybin Mushroom Journey: From Ancient Nahautl Medicine to Modern Day Therapy
Poster - 03	Govind, Ria	M.A.R.S.: Manure Accelerated Regolith in Space
Posters - 58 & 59	Griffeath, Kristin	Faculty Mentor
Poster - 50	Guernsey, Machenzie	Anxiety Disorder: Understanding the What's and How's
Poster - 68	Guthrie, Breanna	Do demographics of adult and child using a tablet predict observer perception of tablet activity?
Poster - 69	Guthrie, Breanna	Do observer demographics predict perception of tablet activity?
Poster - 67	Guthrie, Breanna	Perceptions of e-sports and traditional sports players
Poster - 59	Hanes, Bailey	Diving Deep into an Influential Baroque Classical Era Cantata: A Timeless Reimagination of Barbara Strozzi's "Tradimento!" Explored and Reintroduced.
Poster - 29	Harris, Catlin	The New Human
Poster - 03	Harris, Natalie	M.A.R.S.: Manure Accelerated Regolith in Space
Poster - 08	Hawkins, Annabelle	Diamond Pattern And Predation Rates Of Western Diamond Back Rattlesnake
Posters - 22 & 23	Henrikson, Jon	Faculty Mentor
Poster - 75	Hernandez, Jocelyn	The Influence of Zoo Phonics Multisensory Phonics Instruction on the Development of Letter-Sound Knowledge in Kindergarteners
Poster - 52	Hicks, Jolie	Faculty Mentor
Poster - 05	Howes, Ryan	Food for Thought: Replacing the Invasive Tree of Heaven with Food and Nut Trees
Poster - 62	Huang, Chih	The Impacts of Bullying and Music Therapy Treatment Options
Poster - 03	Hunt, Saraya	M.A.R.S.: Manure Accelerated Regolith in Space
Poster - 64	Hurt, Chris	Using a UAV to Estimate Cover and Fire Impacts at Two Landscape Scales Near Crowder Lake, OK.
Poster - 31	Jennings, Holden	The Future in Energy Solutions
Poster - 20	Jergensen, Audrey	Reaction Rates of Various Ni(II) Complexes of Glycine Under Kinetic Conditions
Poster - 03	Johnson, Courtney	M.A.R.S.: Manure Accelerated Regolith in Space
Poster - 66	Johnston, Bryce	Prescribed Fire Effects on Ground Cover Among Encroaching Juniper Near Crowder Lake, OK.
Posters - 64, 65, & 66	Jones, Zach	Faculty Mentor
Posters - 14, 17, 27, 28, 31 - 51, 53, 54, & 70	Kesnan, Tee	Faculty Mentor
Poster - 31	King, Barrett	The Future in Energy Solutions
Poster - 05	Knabe, Michael	Food for Thought: Replacing the Invasive Tree of Heaven with Food and Nut Trees
Posters - 71, 72, & 73	Kodumthara, Sunu	Faculty Mentor
Poster - 15	Koons, Marshall	Purification and Preliminary Crystallization of SSA_0908, a Putative Substrate-Binding Protein in Streptococcus sanguinis
Poster - 11	Koons, Marshall	Purification and Preliminary Crystallization of SSA_0908, a Substrate-Binding Protein from Streptococcus sanguinis.
Poster - 68	Kudrna, Sebastian	Do demographics of adult and child using a tablet predict observer perception of tablet activity?
Poster - 69	Kudrna, Sebastian	Do observer demographics predict perception of tablet activity?
Poster - 67	Kudrna, Sebastian	Perceptions of e-sports and traditional sports players
Poster - 29	Landrum-Geyer, Denise	Faculty Mentor
Poster - 04	Langstraat, Stevie	Microbial Analysis of Regolith-grown Species on Mars
Poster - 49	Lawrence, Haley	Fast Fashion's Influence on Body Image and Mental Health
Posters - 57, 60, 61, & 62	Lee, Sophia	Faculty Mentor
Poster - 42	Liu, Tsai	Abortion in Oklahoma: Uncovering the History and the Causes and Effects
Posters - 30, 55, & Oral Pres.	Logan, Kelly	Faculty Mentor
Poster - 47	Loza, Yannell	Plant-Based Diet: How it Influences on Athletic Performance and Recovery?
Poster - 02	Macias, Myrical	Breast Cancer: what is next?

Poster - 61	Macon, Tyler	The Scourge of Music: How the Saxophone has Evolved Tonally
Poster - 34	Martinez, Britney	Breast Cancer: Who is more Susceptable to the Disease, and How it Can Be Prevented?
Poster - 02	Martinez, Christopher	Breast Cancer: what is next?
Poster - 70	Martinez, Severiano	Mind over Matter: Mastering Stress and Anxiety with Mental Techniques.
Poster - 25	Martyn, David	Faculty Mentor
Poster - 04	McIntyre, Macayla	Microbial Analysis of Regolith-grown Species on Mars
Poster - 03	Mellott, Chloe	M.A.R.S.: Manure Accelerated Regolith in Space
Poster - 65	Mohamud, Alliyah	Juniper Stand Structure of Burned vs. Unburned Plots Following a Prescribed Fire Near Crowder Lake, OK.
Poster - 28	Moss, Trevor	The Devils Hole Pupfish: Why This Endangered Species Needs to Be Protected
Poster - 72	Neal, Benjamin	Rock Music and Morality Politics
Poster - 05	Newton, Malachi	Food for Thought: Replacing the Invasive Tree of Heaven with Food and Nut Trees
Poster - 25	Nilson, Daniel	Synthesis of amine functionalized cholesterol derivatives for use in metal-complex based imaging agents
Poster - 14	Normile, Madison	Syphilis: The Disgraceful Disease
Posters - 75, 76, & 77	Pankratz, Marla	Faculty Mentor
Poster - 73	Parker, June	Margaret Sanger: Voice of the Birth Control Movement
Poster - 01	Pate, Anne	Prevalence of Food Security and Mental Health Resources among SWOSU students
Poster - 64	Patterson, Thane	Using a UAV to Estimate Cover and Fire Impacts at Two Landscape Scales Near Crowder Lake, OK.
Poster - 07	Paul, Eric	Faculty Mentor
Poster - 68	Pena, Megan	Do demographics of adult and child using a tablet predict observer perception of tablet activity?
Poster - 69	Pena, Megan	Do observer demographics predict perception of tablet activity?
Poster - 67	Pena, Megan	Perceptions of e-sports and traditional sports players
Poster - 09	Powers, Darren	UNDERSTANDING THE MECHANISMS OF METABOLIC PLASTICITY IN PANCREATIC CANCER
Poster - 44	Ray, Christopher	Societal Impacts of the Benefits and Drawbacks in Genetic Engineering
Poster - 35	Rodriguez, Americus	Depression and Anxiety Among College Students Before and After the Pandemic
Poster - 76	Rossetter, Shasta	Baby Doll Circle Time Influence on the Development of Self-Regulation and Empathy
Poster - 17	Sanga, Romeo	The Importance of Sports Agents: Discovering their Responsibilities for Professional Athletes
Poster - 33	Scott, Ashley	Threats to the Great Barrier Reef: Is It Too Late to Save It?
Poster - 09	Sharma, Pragya	Faculty Mentor
Poster - 64	Shumaker, Kelby	Using a UAV to Estimate Cover and Fire Impacts at Two Landscape Scales Near Crowder Lake, OK.
Poster - 30	Siegle, Kayla	My Writing Process
Poster - 58	Smith, Delaney	Manifestations of Mental Illness within Beethoven's Music
Posters - 11, 12, 13, & 15	Somalinga, Vijay	Faculty Mentor
Poster - 53	Stigall, Ashlyn	The Amazon Rainforest: It's Importance, Deforestation, and How We Can Prevent Further Destruction.
Poster - 02	Stuck, Brianna	Breast Cancer: what is next?
Poster - 24	Svebek, Chris	Small Rooftop Research Telescope Setup and Analysis
Poster - 19	Svebek, Chris	Two- Stage High Power Rocketry with UAV Deployment
Poster - 16	Talley, Cole	The Macroeconomics/Industry Analysis of Merrick Drive Storage.
Poster - 24	Taylor, Jaxon	Small Rooftop Research Telescope Setup and Analysis
Oral Presentation (pg 79)	Taylor, Sarah	Coming of Age and Cultural Literacy in Angel of Greenwood.
Poster - 41	Thomas, Dajon	Compensating Student Athletes
Poster - 56	Tracy, Tess	Mathematical Analysis of an SEIR Disease Model
Posters - 19 & 24	Trail, Wayne	Faculty Mentor
Poster - 32	Tsai, Chia	Hip Hop Dancing: How This Art Form Can Help Students Overcome Their Daily Struggles and Challenges on Campus?
Poster - 02	Ubeidat, Muatasem	Faculty Mentor
Poster - 10	Uhlig, Rachel	Female amphipods adjust brood sex ratios based on mate choice
Poster - 04	Uhlig, Rachel	Microbial Analysis of Regolith-grown Species on Mars
Poster - 05	Urquiza, Uzziah	Food for Thought: Replacing the Invasive Tree of Heaven with Food and Nut Trees

Poster - 36	Vasquez, Ruth	Type one diabetes: How New Technology is Positively Affecting Young Adults in the U.S Today?
Poster - 06	Wallace, Alexius	Improving on Heaven: Benefits of Replacing Trees of Heaven with Native Plants
Poster - 13	Wayland, Caitlin	In-Silico Analysis and Over-expression of an α -Carbonic Anhydrase Homolog from the “Brain-Eating Amoeba”, <i>Naegleria fowleri</i>
Poster - 06	Wells, Lindsey	Improving on Heaven: Benefits of Replacing Trees of Heaven with Native Plants
Poster - 71	West, Marleigh	The Humanity of the Soldiers Displayed on D-Day
Poster - 68	Williams, Mariah	Do demographics of adult and child using a tablet predict observer perception of tablet activity?
Poster - 69	Williams, Mariah	Do observer demographics predict perception of tablet activity?
Poster - 67	Williams, Mariah	Perceptions of e-sports and traditional sports players
Poster - 52	Williamson, Ange	The Mx. Mr. Misrepresentation of Trans Individuals in Media
Poster - 06	Yost, Tatum	Improving on Heaven: Benefits of Replacing Trees of Heaven with Native Plants

Schedule of Oral/Musical Presentations

eSports Arena

- 12:15 p.m.** - Musical performance of Newly Composed Work:
Nathaniel Punsack's Racoon's Dance for Flute Choir
- 12:30 p.m.** - The Horror of Creation: A Transgender
Interpretation of Frankenstein - **Skye Cowley**
- 12:45 p.m.** - Coming of Age and Cultural Literacy in Angel of
Greenwood - **Sarah Taylor**

Performance of Newly Composed* Work: Nathaniel Punsack's Racoon's Dance for Flute Choir

***This may be the world premiere, depending on
whether we perform it at the WW Chamber
concert earlier that week**

Student Presenter: SWOSU Flute Choir

Faculty Sponsor: Dr. Shelley Martinson

Abstract

This performance will feature Racoon's Dance by Nathaniel Pundsack. Currently a sophomore music education major and clarinetist at SWOSU, Nathan was recently awarded first prize in the Senior Division of the International Clarinet Association's Clareidoscope 2022 Composition Competition. An active member of the SWOSU Music Department, Nathan regularly collaborates with students and faculty. Dr. Shelley Martinson and the SWOSU Flute Choir commissioned Nathan to compose a work for C flutes, alto, bass, and contrabass flutes, inspiring the creation of Racoon's Dance.

The spring 2023 flute choir includes: Destyne Anderson, Allena Hawthorne, Faith Kinsey, Mallory Jackson, Kris Killsfirst, Riley Lee, Austin Miller, Grace Oliver, and Rose Sprinkle. Nathan Pundsack will conduct the performance.

Prevalence of Food Security and Mental Health Resources among SWOSU students

Presenters: Drs. Anne Pate and Jorie Edwards

Abstract

Food security is an issue that has been studied at the national level, specifically through the U.S. Department of Agriculture (USDA) since 1995. Food insecurity is defined in the 2022 USDA report as a household's

"ability to acquire adequate food is limited by a lack of money and other resources". In 2021 the percentage of U.S. households reporting food insecurity was 10.2% representing approximately 13.5 million households, which was a

decline from previous highs of 14.9% in 2014 and 12.7% in 2015. (Coleman-Jensen 2022). Oklahoma reported an average of 13.8% of households as food insecure between 2019 and 2021, which was a slight increase from the 13.2% of households reporting food insecurity between 2016 and 2018 (Coleman-Jensen 2022).

Food insecurity among college students may impact their ability to thrive mentally, physically, emotionally, academically, and socially (Jamie et al, 2019). College students have been found to be at increased risk of food insecurity due to the competing demands on their time and money, both of which have been established as risk factors for food insecurity among the general population (Patton-Lopez et al, 2014). Based on previous research conducted at SWOSU, levels of food insecurity among SWOSU students have ranged from a high of 40.5% in 2019 to a low of 29.9% in 2021. There is also evidence that food insecurity has a significant association with poorer mental health outcomes such as anxiety and depression (Pourmotabbed et al, 2020). Regardless of food security status, research has found that college students are facing mental health challenges with reports of 41.8% of students who self-reported depression, anxiety or suicide (ideation, plan, or attempt; Broton et al, 2022).

This study was determined to be exempt from SWOSU IRB-PHS review. The survey consisted of three components: seven demographic questions, ten food security status questions that reflect the USDA U.S. Household Food Security Survey Module, and five mental health and food resource awareness questions. The survey was distributed to the SWOSU student body through the Assessment Center and available 3/23/2023 – 4/5/2023.

References:

Broton, Katharine M.; Mohebbi, Milad; Lingo, Mitchell; (2022). "Basic Needs Insecurity and Mental Health: Community College Students' Dual Challenges and Use of Social Support," *Community College Review*, 50(4), 456-482. DOI: 10.1177/00915521221111460

Coleman-Jensen, Alisha, Matthew P. Rabbitt, Christian A. Gregory, Anita Singh, September 2022. *Household Food Security in the United States in 2021*, ERR-309, U.S. Department of Agriculture, Economic Research Service.

Jamie B. Daugherty, Matthew Birnbaum & Alena Clark (2019) 'Having Enough': Students' Understanding of Food Insecurity and Campus Food Pantry Use, *Journal of Poverty*, 23:7, 600-620, DOI: 10.1080/10875549.2019.1652721.

Patton-López, M., López-Cevallos, D. F., Cancel-Tirado, D. I., & Vazquez, L. (2014). Prevalence and Correlates of Food Insecurity Among Students Attending a Midsize Rural University in Oregon. *Journal of Nutrition Education and Behavior*, 46 (3). <http://dx.doi.org/10.1016/j.jneb.2013.10.007>

Pourmotabbed, A. et al. Food insecurity and mental health: a systematic review and meta-analysis. *Public Health Nutr.* 23, 1778–90. (2020).

Breast Cancer: what is next?

Presenters: Dr. Muatasem Ubeidat, Christopher Martinez, Brianna Stuck, and Myrical Macias

Faculty Sponsor: Dr. Muatasem Ubeidat

Abstract

Breast cancer is the most common cancer in women in the United States, except for skin cancers. It is about 30% (or 1 in 3) of all new female cancers each year. It mainly occurs in middle-aged and older women. The median age at the time of breast cancer diagnosis is 62 for white women compared to 60 years for black women. This means half of the women who developed breast cancer are 62 years old or younger when diagnosed. A very small number of women diagnosed with breast cancer are younger than 45. Overall, the average risk of a woman in the United States developing breast cancer sometime in her life is about 13%. This means there is a 1 in 8 chance she will develop breast cancer. This also means there is a 7 in 8 chance she will never have the disease. Breast cancer death rates have been decreasing steadily since 1989, for an overall decline of 43% through 2020. Black women have the highest death rate from breast cancer. This is thought to be partial because about 1 in 5 Black women with breast cancer have triple-negative breast cancer - more than any other racial/ethnic group. White and Asian/Pacific Islander women are more likely to be diagnosed with localized breast cancer than Black, Hispanic, and American Indian/Alaska Native women. In this poster, we will explain the types of breast cancer, their symptoms, and treatments. We will also explain the genetics of breast cancer.

M.A.R.S.: Manure Accelerated Regolith in Space

Student Presenters: Payden Farnsley, Saraya Hunt, Chloe Mellott, Ria Govind, Natalie Harris, and Courtney Johnson

Faculty Sponsor: Dr. Lisa Castle

Abstract

Efficient nutrient cycling is key to plant growth and waste management on Earth, and will certainly be critical for human habitation off of Earth, as colonies on extraterrestrial planets become closer to reality. The NASA-affiliated Plant the Moon competition challenges groups to grow food in simulated mars soil (regolith) in an eight-week period. Ten students at Southwestern Oklahoma State University are examining interactions between microbes, Mars regolith, mammal fecal matter, and growth of food plants. We are growing three species of plants (spinach, lettuce, and basil) in simulated Mars regolith that has been enhanced with soil amendments, including rabbit feces, and to which different microbial treatments have been added. In addition to documenting total plant yield, we are monitoring soil pH, seedling germination rates, and chlorophyll content. In our exploration of the effects of different microbial sources (worm castings, purchased soil bacteria, purchased soil fungi, and rabbit droppings) we expect to see differences in growth both above and below ground. In addition to implications for food and waste management on Mars, the results may be beneficial to organic farmers and home gardeners.

Microbial Analysis of Regolith-grown Species on Mars

Student Presenters: Payden Farnsley, Rachel Uhlig, Stevie Langstraat, Kade Flores, and Macayla McIntyre

Faculty Sponsor: Dr. Lisa Castle

Abstract

The NASA Artemis program has goals of humans back on the moon by 2030, undergraduate researchers from Southwestern Oklahoma State University participated in the Plant Mars Challenge hosted by the Institute of Competition Sciences to study how crops grow in non-Earth soils. These researchers are funded by the NASA-affiliated Oklahoma Space Grant Consortium. This team tested how microbial diversity affects overall crop yield. Five different crops—lettuce, carrots, radishes, spinach, and peas—were selected to be grown over a nine-week period with the biomass being measured. Mycorrhizal associations are known to increase surface area of root structures and are hypothesized to favor plant growth by increasing nutrient acquisition and limiting the concentration of pathogenic microbes, this team hypothesized that pots containing a higher microbial diversity would have more biomass than its counterpart. To test this hypothesis, sixteen bottom-wicking pots were used to test Mars-regolith soil versus Earth soil, high versus low microbial diversity, and three selected plants versus another three, with two trials of each treatment. Plant growth was detected in Mars-regolith soil but did not persist. Microbial activity was detected by fluorescein diacetate analysis and microbial load was determined by serial dilution plating using Potato Dextrose Agar (PDA), Sabouraud Dextrose Agar (SDA), and Tryptic Soy Agar (TSA). Earth soil was found to have significantly more microbial activity, suggesting that there was a higher rate of metabolism of microbes within the soil. The team found that there were no significant differences between the microbial load in the Mars-regolith pots and the Earth soil pots regardless of microbial diversity differences. The Mars-regolith pots became visibly waterlogged towards the end of the growth period, and this problem was addressed and troubleshooted by testing different watering methods. We found that time-limited bottom-watering methods worked best.

Food for Thought: Replacing the Invasive Tree of Heaven with Food and Nut Trees

Student Presenters: Ryan Howes, Michael Knabe, Malachi Newton, and Uzziah Urquiza

Faculty Sponsor: Dr. Lisa Castle

Abstract

Fruit and nut trees in residential neighborhoods are an often overlooked source of human food and can also provide aesthetic, ecological, and wildlife benefits. Here we document the existing food trees in Weatherford, Oklahoma, map the invasive plant species Tree of Heaven (*Ailanthus altissima*), and list and quantify the benefits that could be gained if the invasive trees were replaced by food trees.

Improving on Heaven: Benefits of Replacing Trees of Heaven with Native Plants

Student Presenters: Ruby Edsall, Alexius Wallace, Lindsey Wells,
and Tatum Yost

Faculty Sponsor: Dr. Lisa Castle

Abstract

Trees of Heaven (*Ailanthus altissima*) have invaded Weatherford, Oklahoma. These trees, native to Asia, thrive in compacted urban soils, grow quickly, produce allelopathic chemicals, and reproduce vegetatively underground and through seeds produced asexually; this allows them to spread quickly, outcompeting native plants and disrupting functioning ecosystems. Terrestrial Ecology students at Southwestern Oklahoma State University have mapped over 3000 stems invading nearly 100 residential properties in the neighborhoods surrounding campus since 2011. Replacing Trees of Heaven with native species would greatly benefit wildlife, human health, and soil health. Here we document the invasion and quantify the potential benefits and cost of replacing these trees with natives.

Difference in Gut Microbiota of Male and Female Bean Beetles

Student Presenters: Ashton Cockrell and Kade Flores

Faculty Sponsor: Dr. Eric Paul

Abstract

The gut microbiota includes all the microbes that reside in the gastrointestinal tract. These gut microbes are essential for the digestion & absorption of nutrients and the production of vitamins. Gastrointestinal diseases associated with dysbiosis include atopic eczema, coeliac disease, obesity, irritable bowel syndrome, inflammatory bowel disease, and type I and II diabetes. The bean beetle, *Callosobruchus maculatus*, was the model organism used for this research. The bean beetle is an agricultural pest insect of Africa and Asia. The gut microbiota of the bean beetle can be easily manipulated to mimic various disease states, which allows researchers to test different conditions. Our lab studies the effect of various environmental and chemical factors that would influence the gut microbiota. Gut microbes from male and female beetles were plated onto selective, differential and all-purpose media. Differences were observed in the microbiota isolated from male and female bean beetles. The study also examines the effect of transport conditions that might affect the gut microbiota.

Diamond Pattern And Predation Rates Of Western Diamond Back Rattlesnake

Student Presenter: Annabelle Hawkins

Faculty Sponsor: Dr. Renan Janke Bosque

Abstract

Aposematic signaling in animals has been a sector of interest to biologists for many years. An aposematic signal is a signal that an animal will give off to dissuade predators from attacking. This signal is often communicated in the form of bright coloring or patterns. The Western Diamondback Rattlesnake is an animal that has two modes of aposematic signaling. The first mode is the well documented auditory aposematic signal the rattling of the tail. The second mode of signaling by the rattlesnake is the diamond pattern on its back. In this study we sought to observe how the diamond pattern on the snake affects its predation. The Western Diamondback Rattlesnake was chosen for its definitive marking and regional accuracy. To investigate snake predation, models of snakes will be made from clay. The clay models will be the same size but the size of the diamonds in the pattern on the back will vary in size. The models will be placed in the wilderness for a single month and collected. During the experiment the models will be placed onto white backgrounds to remove the natural cryptic effect of the pattern. After collection, the damage on the models will be recorded as predation. For this experiment we hypothesize that the diamond pattern being larger will act as a stronger warning signal to predators. For our results we expect higher predation on snake models with smaller diamonds in their patterns and lower predation on snake models with larger diamonds in their patterns.

UNDERSTANDING THE MECHANISMS OF METABOLIC PLASTICITY IN PANCREATIC CANCER

Student Presenters: Colter Esparza and Darren Powers

Faculty Sponsor: Dr. Pragya Sharma

Abstract

Pancreatic ductal adenocarcinoma is the second leading cause of cancer deaths in the United States, with a survival rate of 3% once metastasized. Although reprogrammed metabolism is a general characteristic of cancer, different cancers show distinct metabolic addictions. The present study aims to identify specific nutrients that fuel and sustain pancreatic cancer cell growth. Using the Seahorse XFp real-time ATP Rate assay, we quantified the rate of ATP produced by the two main bioenergetic pathways, OXPHOS and Glycolysis, in the pancreatic cancer cell line. Cellular oxygen consumption and extracellular acidification rates in the PDAC cell line were used to determine mitochondrial respiration (OXPHOS) and Glycolysis, respectively. Our preliminary data indicate that the Mia-Paca2 cells exhibited an increased glycolytic phenotype. However, mitochondrial oxidative phosphorylation was also active. Cancer cells can tailor their metabolic activities to adapt to hostile environments and thrive under nutritional stress. To determine if Mia-Paca2 cells could exhibit metabolic plasticity, metabolic stress was induced in the cells by inhibiting Glycolysis. Glycolysis was suppressed by switching the glucose to galactose as a carbon source. The decrease in the release of lactate, the final product of Glycolysis, was confirmed using lactate accumulation. Not much change was observed in cell viability, suggesting that cells might adjust to energy-related challenges by switching between Glycolysis and mitochondrial metabolism. Real-time ATP assay revealed that cells shifted towards OXPHOS, followed by galactose treatment. We are currently studying metabolic gene expression associated with Glycolysis, glutaminolysis, and OXPHOS in Mia-Paca2 cells under nutritional stress conditions using RT-PCR and western blot analysis.

Female amphipods adjust brood sex ratios based on mate choice

Student Presenters: Joseph Alcuitas and Rachel Uhlig

Faculty Sponsor: Dr. Rickey Cothran

Abstract

Theory predicts even sex ratios because parents always benefit from producing the rarer sex. However, deviations in nature may occur to maximize reproductive success. On an individual brood basis, females may allocate resources to the offspring sex that returns the most fitness. We hypothesized that choosy females bias sex ratio of broods in favor of sons. Amphipods (*Hyaella* sp.) were used as it's possible to identify chosen mates because they physically pair for a short period before copulation. We collected mating pairs and a background sample of amphipods from a freshwater spring. Half of the females were separated and re-paired with their original mate—i.e. they chose their mate. The other half of the females were separated and assigned a new male randomly from the background sample. Each pair was placed in a jar inside of an environmental chamber. We checked the pairs three times weekly and recorded offspring sex ratios. As predicted, choosy females produced a higher proportion of sons in their broods than females mated at random. This strategy allows females to maximum fitness by investing in sons only when high quality mates are present in a mating system characterized by strong sexual selection on males.

Purification and Preliminary Crystallization of SSA_0908, a Substrate-Binding Protein from *Streptococcus sanguinis*

Student Presenter: Marshall "Julius" Koons

Faculty Sponsor: Dr. Vijay Somalinga

Abstract

Streptococcus sanguinis is a pathobiont that is the leading cause of subacute infective endocarditis (SIE) in humans. Blood transit and attachment to cardiac vegetation is a prerequisite for SIE pathogenesis. While numerous studies have identified cell-surface adhesins in *S. sanguinis*, many suggested to be involved in SIE remain uncharacterized. One being SSA_0908, a putative ABC-transporter substrate binding proteins (SBP) with homology to CD0837, a SBP from *Clostridiodes difficile* implicated in host colonization and aromatic amino acid transport. Sequence analysis showed that residues involved in aromatic amino acid ligand binding is highly conserved in SSA_0908. Homology modeling of SSA_0908 revealed a type 1 periplasmic SBP fold with two a-b-a sandwich domains connected via a hinge-loop. The ligand binding pocket at the interface of the sandwich domains shows active site architecture similar to other aromatic amino acid SBP's. Sequence and structural homology of SSA_0908 to other characterized aromatic amino acid transporters indicated that this protein may be involved in similar function in *S. sanguinis*. In order to further characterize SSA_0908, we have successfully over-expressed and purified this protein using affinity chromatography. Preliminary crystallization trials resulted in microcrystals in several conditions. We are currently optimizing crystallization conditions to grow diffraction quality crystals.

SSA_0809 is a homotrimeric, reactive intermediate deaminase A (RidA) from an opportunistic pathogen, *Streptococcus sanguinis*

Student Presenter: Adreana Aquino

Faculty Sponsor: Dr. Vijay Somalinga

Abstract

Reactive intermediate deaminase A (RidA) is a low-molecular weight protein in YjgF/YER057c/UK114 superfamily. The archetypal RidA subfamily is involved in amino acid metabolism and shown to catalyze the neutralization of toxic 2-amino acrylate (2AA) intermediates produced during amino acid catabolism. In *Salmonella enterica*, mutants lacking *ridA* exhibit physiological defects from the antagonistic interaction of 2AA with pyridoxal phosphate (PLP)-dependent enzymes. The importance of RidA and the incomplete understanding of metabolic networks affected by RidA led us to investigate its role in *Streptococcus sanguinis*, an opportunistic pathogen and the leading cause of subacute infective endocarditis in humans. BLAST analysis of *S. sanguinis* genome revealed a protein SSA_0809 with 50% identity to RidA from *S. enterica*. Biochemical studies on *S. sanguinis* SSA_0809, henceforth SsRidA, revealed its capacity of accelerating 2AA neutralization to pyruvate. To better understand SsRidA activity, the first crystal structure in a holoenzyme confirmation was solved at 1.97Å. The overall structure of SsRidA revealed a homotrimeric arrangement with active sites formed at the monomer interfaces, typical for this family. Active site electron density revealed the presence of ligand in only one active site leaving two active sites unoccupied. This incomplete ligand occupancy in SsRidA is still under investigation.

In-Silico Analysis and Over-expression of an α -Carbonic Anhydrase Homolog from the “Brain-Eating Amoeba”, *Naegleria fowleri*

Student Presenter: Caitlin Wayland

Faculty Sponsor: Dr. Vijay Somalinga

Abstract

Naegleria fowleri is a free-living amoeba and the etiological agent of primary amoebic meningoencephalitis in humans. Treatment consists of repurposed antimicrobials, which are ineffective, leading to high mortality rates. Therefore, identification of new drug targets is important. Studies have indicated that fatty acid utilization is vital for *N. fowleri* growth, and a central enzyme in this process is a bicarbonate requiring carboxylases. Carbonic anhydrases (CA) catalyze the reversible hydration of CO₂ into bicarbonate, which is then utilized by carboxylases for fatty acid metabolism. Using BLAST analysis, we identified a protein, FDP41_009806 from *N. fowleri* that has a 25% identity with a human α -CAII. Multiple sequence alignment showed the presence of metal coordinating histidine residues and other catalytic residues conserved in other α -CA's. Phylogenetic analysis showed the protein to be distinct despite the conserved regions. The sequence and structural homology led us to hypothesize that FDP41_009806, hereafter NfCA1 α , is an uncharacterized α -CA in *N. fowleri*. To characterize NfCA1 α , protein overexpression was performed using the full-length NfCA1 α and truncated NfCA1 α . Although over-expression was successful, none of the constructs produced soluble protein. Currently, we are in the process of fine-tuning over-expression conditions to obtain soluble NfCA1 α for biochemical and structural analysis.

Syphilis: The Disgraceful Disease

Student Presenter: Madison Normile

Faculty Sponsor: Ms. Tee Kesnan

Abstract

In her presentation, Madison will discuss the basic facts about syphilis, who it most affects, how it is spread, and how it is treated. She hopes to raise people's awareness and help destigmatize the discussion around STDs. The presenter also hopes to inform her audience members about the importance of knowing how not to become a statistic.

Purification and Preliminary Crystallization of SSA_0908, a Putative Substrate-Binding Protein in *Streptococcus sanguinis*

Student Presenter: Marshall "Julius" Koons

Faculty Sponsor: Dr. Vijay Somalinga

Abstract

Streptococcus sanguinis is a pathobiont that is the leading cause of subacute infective endocarditis (SIE) in humans. Blood transit and attachment to cardiac vegetation is a prerequisite for SIE pathogenesis. While numerous studies have identified cell-surface adhesins in *S. sanguinis*, many suggested to be involved in SIE remain uncharacterized. One being SSA_0908, a putative ABC-transporter substrate binding proteins (SBP) with homology to CD0837, a SBP from *Clostridiodes difficile* implicated in host colonization and aromatic amino acid transport. Sequence analysis showed that residues involved in aromatic amino acid ligand binding is highly conserved in SSA_0908. Homology modeling of SSA_0908 revealed a type 1 periplasmic SBP fold with two a-b-a sandwich domains connected via a hinge-loop. The ligand binding pocket at the interface of the sandwich domains shows active site architecture similar to other aromatic amino acid SBP's. Sequence and structural homology of SSA_0908 to other characterized aromatic amino acid transporters indicated that this protein may be involved in similar function in *S. sanguinis*. In order to further characterize SSA_0908, we have successfully over-expressed and purified this protein using affinity chromatography. Preliminary crystallization trials resulted in microcrystals in several conditions. We are currently optimizing crystallization conditions to grow diffraction quality crystals.

The Macroeconomics/Industry Analysis of Merrick Drive Storage.

Student Presenter: Cole Talley

Faculty Sponsor: Dr. Jieun Chang

Abstract

This is a macroeconomic and industrial analysis of Merrick Drive Storage, a family-owned and operated storage facility located in Ardmore, Oklahoma, will be presented in this research presentation. We will investigate the effects of the larger economic environment on the demand for and performance of Merrick Drive Storage by assessing critical macroeconomic metrics like GDP growth, inflation rates, and interest rates. Also, we will perform an industry analysis to determine how the storage facility sector and Merrick Drive Storage's position within it are affected by the competitive environment, regulatory environment, and technological changes. The presentation will end with suggestions on how Merrick Drive Storage can build on its advantages and manage new problems to maintain market success and growth.

The Importance of Sports Agents: Discovering their Responsibilities for Professional Athletes

Student Presenter: Romeo Sanga

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During his research presentation, Romeo Sanga will discuss the educational qualifications required in order to become a sports agent. The presenter will also inform his audience members the responsibilities that come with this fascinating career.

Asymmetric Synthesis of β -Substituted Pyroglutamic Acid Precursors

Student Presenters: Samantha Eldredge and Eric Estala

Faculty Sponsor: Dr. Trevor K. Ellis

Abstract

The aim of this project is focused on the development of innovative synthetic methodologies for the synthesis of unnatural amino acids. It would be difficult to overstate the biological importance of α -amino acids, the building blocks of life, and perhaps the most studied class of organic compounds. Besides their primary function as structural units of peptides and proteins, α -amino acids also serve countless biological functions in most living things. Nature's exceptional utility of this unique family of compounds has inspired research into the development of novel synthetic variations of these structures for use in pharmaceutical, agricultural, and food industries. Despite developments in the study and application of these vital biological molecules, very few advances have been made in the fundamental science of their synthesis. However, a new Ni(II) complex of a protected glycine will be introduced and its utility demonstrated. This new nucleophilic glycine derivative was prepared to minimize steric interactions with substituents being introduced to the methylene unit of the glycine moiety. The system was evaluated for its utility through Michael Addition Reactions that asymmetrically introduce a new group to glycine. Disassembly of the Ni(II) complex is expected to yield new β -substituted pyroglutamic acids.

Two- Stage High Power Rocketry with UAV Deployment

Student Presenter: Chris Svebek

Faculty Sponsor: Dr. Wayne Trail

Abstract

Our goal is to launch two stage-high power rocket in excess of 9,000 above ground level and have a deployable UAV payload that can hold a golf ball. This is in preparation for the Argonia cup rocketry competition. Our UAV is a unique custom manufactured quadcopter design that fits into a 2.6 inch diameter rocket. We have been able to test the rocketry part of our system successfully and have reached altitudes near 15,000 above ground level. We hope to test the entire system in the summer.

Reaction Rates of Various Ni(II) Complexes of Glycine Under Kinetic Conditions

Student Presenter: Audrey Jergensen

Faculty Sponsor: Dr. Trevor K. Ellis

Abstract

α -amino acids remain at the forefront of modern scientific research due to their diverse application in pharmaceutical, agricultural, and food industries. However, despite these applications, the synthetic preparation of these materials remain a challenge. While many synthetic methodologies have been introduced, none have proven general or effective toward the preparation of all examples within the class. However, among these methods the alteration of the methylene group of a properly protected glycine equivalent remains at the forefront of the field. Specifically the metal coordinated imine derived Schiff bases of glycine. As a result a number of versions of these Ni(II) complexes have been described in which the physical characteristic of the materials can be controlled. However, few advances have been made toward modifying the pK_a of the complexes. Therefore, a series of Ni(II) complexes of glycine with strategically placed electron withdrawing groups will be described. Additionally, the reactivity of these complexes will be compared. Drawing on observations from NMR, structural features, and experimental reactivity results, a more complete description of their application and limitations will be presented.

Measuring the Amino Acid Exchange Rate in Ni(II) Complexes

Student Presenter: Justin Childress

Faculty Sponsor: Dr. Trevor K. Ellis

Abstract

Non-canonical α -amino acids continue to play a pivotal role in the advancement of human health and well-being. Unfortunately, access to these materials remains limited. Of the synthetic methods developed for their production the manipulation of Ni(II) complexed glycine imines remains at the forefront. Utilizing this method has allowed for the preparation of sterically constrained glycine derivatives, β -substituted pyroglutamic acids and prolines, as well as optically pure α -amino acids through dynamic resolution of racemic mixtures. Despite the utility of these metal complexes, various aspects have yet to be explored. One such aspect is the potential for amino acid exchange of the metal complex which would open new avenues for the efficient production of optically active non-canonical α -amino acids. Therefore the hypothesis of this project is that the steric demand and electronic nature of the aromatic groups surrounding the imine carbon should effect the exchange rate of the amino acid of the Ni(II) complex. In order to test this hypothesis a series of glycine and phenyl alanine Ni(II) complexes derived from benzophenone, acetophenone, and benzaldehydes which contain various electron withdrawing groups were prepared. The glycine derived complexes were subjected to basic methanolic conditions in the presence of phenylalanine and samples were extracted from the mixture at predetermined times. These samples were processed and analyzed by reversed phase HPLC to determine the ratio of the glycine to phenylalanine complex. This data was used to establish the rate of amino exchange of each complex. In conclusion, the rate of amino acid exchange is accelerated by decreasing the steric demand and introducing electron withdrawing groups. Specifically, the electron withdrawing groups had the greatest effect if they were in a position of resonance with respect to the imine carbon.

Effects of pH on spectral analysis of caffeinated, half-caffeinated and decaffeinated coffee beans from La Magnolia, Tres Rios (Costa Rica).

Student Presenters: Jocelyn Garcia and Jon Henrikson

Faculty Sponsor: Dr. Jon Henrikson

Abstract

This work is aimed to study the differences in the metabolomic profile of coffee beans from the Tres Rios Coop under unbuffered and buffered pH conditions. The water-soluble compounds of roasted and unroasted coffee beans will be analyzed in buffered and unbuffered conditions. Principal components analysis (PCA) will be used as an evaluation process to see if there is any effect in the metabolite profiles due to pH within the individual samples, as well as the different levels of caffeination. The hope is that this will provide insights of how pH may affect changes in the observed relationships through statistical analysis.

Method development and validation of pKa determination of glycine-metal complexes by NMR.

Student Presenters: Audra Crisp, Dr. Trevor Ellis, and Dr. Jon Henrikson

Faculty Sponsor: Dr. Jon Henrikson

Abstract

The use of natural and unnatural amino acids has many biomedical applications, including methods of pharmaceutical development and delivery, tissue engineering and mutagenesis. However, there is a challenge the efficiency of synthetic methods. One synthetic method relies on metal complexation of a glycine Schiff's base to protect the amino and carboxyl groups of the glycine. While there have been several modifications of the ligand system employed by this method, recent alterations have included the incorporation of various electron withdrawing groups. These alterations are hypothesized to increase the acidity of the C-H bond on the α -carbon of the glycine, thus allowing for milder conditions thus increasing the generality and efficiency of the method. In our previous work, we have determined the pKa's of the α -carbon of a series of glycine metal complexes through UV-Vis spectrophotometric methods of analysis in non-aqueous solvent conditions. While UV-Vis analysis was a method that could be used to monitor changes in equilibrium in our system, we recognized that there may be examples where a chromophore may not be present in the sample and other methods would be needed for analysis. We have worked on developing a method of analysis using ^1H -NMR to monitor the changes in equilibrium and as a means for determination of the pKa of the complex. Challenges in the method development process and current results will be discussed in this poster.

Small Rooftop Research Telescope Setup and Analysis

Student Presenters: Chris Svebek and Jaxon Taylor

Faculty Sponsor: Dr. Wayne K. Trail

Abstract

We have assembled a small research telescope which we have located on the roof of the physics building. With the help of the SWOSU Physical Plant and IT department we have access to power and ethernet ports allowing the telescope to be accessed from the Internet. The telescope and its cameras are controlled by a ZWO ASI AIR Plus computer, which can be programmed from an app on a smart phone. This allows students to program the telescope and camera in the early evening and have the images taken overnight, obviating the need for the student to stay up late at the observatory. We are in the process of assembling a second such telescope, which will provide a much narrower field of view. We are using these telescopes for astrophotography, photometry, variable star observing, and other astrophysical applications.

Synthesis of amine functionalized cholesterol derivatives for use in metal-complex based imaging agents

Student Presenters: Emma Detrick, Daniel Nilson, and Dr. David Martyn

Faculty Sponsor: Dr. David Martyn

Abstract

Cholesterol and cholestanediol were converted into nitrogen-substituted cholesterol derivatives using several methods with varying degrees of success. The methodologies included Mitsunobu-type reaction, oxidation, imine-formation and imine reduction. Successful reactions resulted in cholesterol derivatives with nitrogen bearing nucleophilic substrates replacing the original alcohol substituents. Infrared and NMR spectroscopy studies confirmed the success of these reactions. In the IR, disappearance of the O-H band and appearance of N-H and N-C absorbance bands support transformation. Additional evidence supporting substitution of the alcohol with the nitrogen bearing nucleophilic substrates came from a distinct shift in the alpha-hydrogen NMR signal. The chemical shift of the alpha-hydrogen on the cholesterol starting material is 3.54 ppm. Reactions using aniline and sodium azide, for example, resulted in a 0.2 to 0.3 ppm shift from the original. Future work will use the N-substituted derivatives synthesized in the development of a metal complex-based cholesterol-derived tetraazamacrocyclic which can potentially serve as an anticancer agent and cancer diagnostic agent.

Trevor Goodwin Capstone Project: Rapidly Deployable Survival Shelter

Student Presenter: Trevor Goodwin

Faculty Sponsor: Mr. Nathan Brooks

Abstract

Packable survival shelters are great tools for one to two people stuck in a woodland environment. These shelters are simple, easy to use, and cost effective due to the shelter frame being solely a strand of paracord tied between two trees. However, what is a person to do if they are not in a woodland environment with no trees available to anchor this paracord? My solution is a lightweight telescopic tube to allow for the available paracord to sit and form an open triangular tent frame. This shelter base is intended for environments with low vegetation, such as: tundras, grasslands, arctic, locations above the tree line, or any place with semi-soft ground. While this solution will be slightly less cost effective, the marginal price increase will be counteracted by versatility and the ability to rapidly deploy in harsh environments.

The Biological Concept of Insomnia Among Youths: What Are The Best Coping Mechanisms

Student Presenter: Silas Atolagbe

Faculty Sponsor: Ms. Tee Kesnan

Abstract

Silas Atolagbe's research study is about insomnia and the different coping mechanisms for insomniacs. He has employed primary research and secondary research to conduct his study. He has examined the current understanding of the natural progression of insomnia, including its occurrence, frequency, and clinical evolution. His work will also explore the main theoretical viewpoints on insomnia, with the objective of identifying the factors that cause the progression of this condition.

The Devils Hole Pupfish: Why This Endangered Species Needs to Be Protected

Student Presenter: Trevor Moss

Faculty Sponsor: Ms. Tee Kesnan

Abstract

In this research presentation, Trevor Moss will provide information on the Devils Hole Pupfish, a unique fish species that is currently facing the threat of extinction. Mr. Moss will raise awareness about the destruction of the pupfish's fragile habitat due to factors such as water depletion, climate change, and human activities. The Devils Hole Pupfish serves as a symbol for the importance of protecting endangered species and maintaining biodiversity for the health of ecosystems and human well-being. This research presentation will also shed light on the urgency of biodiversity conservation for the health of our ecosystems and society.

The New Human

Student Presenter: Catlin Harris

Faculty Sponsor: Dr. Denise Landrum-Geyer

Abstract

With the evolution of the automaton and other non-humans in media, the de-evolution of humanity follows. After analyzing the trends of science fiction stories over the centuries (from Mary Shelley's 1818 novel *Frankenstein* to the 2018 video game *Detroit: Become Human*), a very clear pattern of non-humans (aliens, cryptids, androids, etc.) becoming heavily anthropomorphized and humanized emerges. These non-humans were once viewed as monsters or villains but have become heroes and even love interests in recent media; meanwhile the humans are now often painted in a very unflattering light, becoming the villains or monsters of these stories. This research seems especially relevant with the rise of advanced AI technology and a polarizing social climate that challenges what makes something alive, and what a decent human being looks and acts like.

My Writing Process

Student Presenter: Kayla Siegle

Faculty Sponsor: Dr. Kelly Logan

Abstract

This is a review and reflection on the process of a creative I wrote and revised over the course of two creative nonfiction workshops.

The Future in Energy Solutions

Student Presenters: Barrett King and Holden Jennings

Faculty Sponsor: Ms. Tee Kesnan

Abstract

In their research presentation, Ronald Barrett King and Holden Lee Jennings hope to inform the audience about the benefits of nuclear energy. They've found that nuclear energy is a very viable option for the U.S. and the rest of the world, and that it's currently one of the best carbon-free energy sources. However, its use has been in steady decline for fifty years following several meltdowns and widespread distrust of the industry. By showing the new safety measures and improved technology of the nuclear industry to their audience members, the presenters hope to lower distrust about nuclear energy in the community.

Hip Hop Dancing: How This Art Form Can Help Students Overcome Their Daily Struggles and Challenges on Campus?

Student Presenter: Chia Ling Tsai

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Chia-Ling Tsai will address how hip-hop dancing can be decompressing to college students. She will utilize primary research, which includes an interview, and secondary research, to conduct her study. Chia-Ling hopes to share the results of her research findings with her audience members. She also hopes to inform other students about the ways in which hip-hop dancing can help them decompress in a fun way.

Threats to the Great Barrier Reef: Is It Too Late to Save It?

Student Presenter: Ashley Scott

Faculty Sponsor: Ms. Tee Kesnan

Abstract

In her presentation, Ashley Scott will inform her audience about the importance of the Great Barrier Reef. Scott was able to conduct an interview with a professor who specializes in fish ecology and has also used secondary research for her study. The presenter hopes to spread awareness about the importance of the Great Barrier Reef by explaining what the Great Barrier Reef is, why it's important, and how we can help maintain its health.

Breast Cancer: Who is more Susceptable to the Disease, and How it Can Be Prevented?

Student Presenter: Britney Martinez

Faculty Sponsor: Ms. Tee Kesnan

Abstract

In her research presentation, Britney Martinez will explain what breast cancer is, who is susceptible to getting this disease, and how this disease can be prevented. The research student has used primary research and secondary research. The presenter hopes to raise breast cancer awareness so that people can take steps to avoid this disease.

Depression and Anxiety Among College Students Before and After the Pandemic

Student Presenter: Americus Rodriguez

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Americus Mariah Rodriguez will address why depression and anxiety are increasing among college students. The presenter will also discuss why parents feel the need to have high expectations of their children as well as why mental health problems are stigmatized in the United States. By the end of her presentation, Americus hopes to raise her audience members' awareness about the rise in anxiety and depression before and after the onset of the pandemic. Additionally, she will explain why parents feel compelled to be firm with their children.

Type one diabetes: How New Technology is Positively Affecting Young Adults in the U.S Today?

Student Presenter: Ruth Vasquez

Faculty Sponsor: Ms. Tee Kesnan

Abstract

Diabetes is a very common disease that many people know little about. There are a variety of life-threatening risks and many ways to manage them. Scientists are always coming out with new technologies. Ms. Vasquez will discuss different ways of treating diabetes, and provide statistics that show how the cost to treat this illness is substantial. In addition, she will show how people of all ages are learning to live with this diagnosis. It is manageable, and there are always people around to help whether it is family member,s or friends, or even a local caretaker. Through this research about Type 1 diabetes, she will show how people all over the world are finding ways to manage the disease.

Understanding an Endless Frontier: The International Space Station and the Dangers of Space

Student Presenter: Bryant Franco

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During his research presentation, Bryant Franco will discuss the history of the International Space Station (ISS) and the biological effects caused by space on the human body. The presenter will use both primary and secondary sources for his study. His sources will include journals, books, and a documentary film based on an interview with former astronaut, Chris Hadfield. While the study originally started with research about how the human body maintains homeostasis. Mr. Franco will also share the ways in which the National Aeronautics and Space Administration (NASA) has developed ways to counter health risks that occur while in space. The presenter also hopes to educate his audience about the ISS and to interest individuals in the study of biology or astronomy.

The Struggles of LGBTQIA+: Understanding Why Queer Medical Professionals Have a High Dropout Rate

Student Presenter: Annabelle Bumgardner

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Annabelle Bumgardner will address how queer medical professionals have a harder time being accepted than their heterosexual peers. The student uses several secondary sources with two of them being studies by professionals in the field. Annabelle hopes to share her research findings and provide information on the advantages of having queer medical professionals and what their struggles are in the profession. She will provide reasons why they are needed in medical facilities.

What Are the Effects of Learning and Adapting to Many New Cultures in the US?

Student Presenter: Lesly Alvarado-Arauz

Faculty Sponsor: Ms. Tee Kesnan

Abstract

In her research, Lesly will be talking about three main points. The first main point is "Why do people leave their country". The second point is "How it takes a long time to adapt to a new lifestyle". The third point is "What are the effects of leaving everything behind and learning something new". During the presentation, Lesly will be talking about a family and their journey moving to a new country. The presenter will help the audience to understand why people make the change so as to have a better future.

Grand Canyon National Park: What is Its History and What Makes This National Park Popular?

Student Presenter: Yung-Han Chang

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Yung-Han Chang will introduce and discuss the history of the Grand Canyon National Park. The student had used both primary and secondary research to conduct her study. The presenter also hopes to raise her audience members' awareness on how to protect this beautiful national park.

Compensating Student Athletes

Student Presenter: Dajon Thomas

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During his research presentation, Dajon Thomas will address why all student athletes should be paid a salary and how NIL (Name Image and Likeness) can make a difference in student athletes' financial aid. This student had used secondary research to conduct his study. He hopes to raise awareness among his audience members some of the challenges students athletes face and the hard work and the long hours these athletes put in every day in order to get compensated.

Abortion in Oklahoma: Uncovering the History and the Causes and Effects

Student Presenter: Tsai-hsuan Liu

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Sherry (Tsai-hsuan, Liu) will address why Oklahoma has banned abortion. She will discuss the arguments between the two groups of people that are called “Pro-choice” and “Pro-life”. The presenter had used primary research and secondary research to conduct this study. Sherry also hopes to raise awareness among her audience members the causes and effects of abortion on women.

Mental Illness: what are the causes and how does it affect people

Student Presenter: Landen Alexander

Faculty Sponsor: Ms. Tee Kesnan

Abstract

Mental illness is a major problem that needs to be recognized by people in our society. During his research presentation, Landen Alexander will discuss the causes that negatively affect people's mental health. The presenter had used secondary research to conduct his study. He hopes to raise awareness among his audience members the variables that can lead to mental illness. He will also address the signs and symptoms and educate how to seek the necessary help, when needed.

Societal Impacts of the Benefits and Drawbacks in Genetic Engineering

Student Presenter: Christopher Ray

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During his research presentation, Christopher Ray will address how genetic engineering could affect everyday life, both positively and negatively. The student had used primary research, which includes a survey of his peers at Southwestern Oklahoma State University. Ray had also used secondary research to conduct his study. Ray hopes to share the results of his research findings to raise awareness among his audience members the impact genetic engineering could have on the world around us. The presenter will shed some light on the benefits and drawbacks of his findings as well.

Some Positive Effects of Working Out in a Gym

Student Presenter: Wei Chang

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During his research presentation, Wei Chang will discuss how working out in a gym can benefit college students on campus. The research presenter had used both primary and secondary research to conduct his study. The presenter also hopes to raise awareness among his audience members the benefits of having a healthy body, which would lead to a healthy mind.

The Psilocybin Therapy: From Ancient Nahautl Medicine to Modern Day Therapy

Student Presenter: Roberta Goombi

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Roberta Goombi will address the legalities in the United States pertaining towards the psychedelic psilocybin mushroom, the spiritual practices of this entity in history, and its medicinal therapeutic trials in current times. The presenter has used both primary and secondary research to conduct her study, including an interview with an Army Veteran's experience with the positive impact psilocybin has had towards their P.T.S.D. The presenter will also discuss how moral fear has persecuted these mushrooms throughout history. The student hopes to enlighten her audience members on how and why this fungi is currently being utilized in research therapy in the United States.

Plant-Based Diet: How it Influences on Athletic Performance and Recovery?

Student Presenter: Yannell Loza

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Yannell Loza will address what are the main differences from plant-based and omnivorous diets that influence athletic performance. The student had used secondary research, based on previous studies following athletes with distinct nutrition regimens to show its relationship with intense trainings performance. She wants to show the science behind the digestion of specific nutrients that help to muscle recovery. Yannell hopes to share many unknowns of plant-based diets and to break wrong believes about it. She will provide some advice learned from her research that any athlete can apply to improve their fitness results and performance on sports through their diet.

The Struggles of Small Farms and How It Affects Consumers?

Student Presenter: Ty Elliot

Faculty Sponsor: Ms. Tee Kesnan

Abstract

In this presentation, the presenter will inform the audience about small farms' importance and why they continue to dwindle. He also warned consumers about the effects this has on them. The student conducted an interview along with various forms of secondary research. He showed evidence to support the idea of having more food made in our country. The student hopes to encourage his audience to think twice about where their food comes from.

Fast Fashion's Influence on Body Image and Mental Health

Student Presenter: Haley Lawrence

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Haley Lawrence will be addressing the impact fast fashion can have on a young women's mental health and body image. The presenter has used secondary research to find studies and shocking information about how one can be affected by this industry. Whether it be the ideal image fast fashion has created or that sizing is not always the same for clothing brands, this research student will hope to raise awareness among her audience members the negative impact it can have on young female consumers.

Anxiety Disorder: Understanding the What's and How's

Student Presenter: Machenzie Guernsey

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During Machenzie Guernsey's research presentation, she will address what anxiety is, how it can be treated, and what effective ways it can be coped with. The presenter used both primary and secondary research to conduct her study. This research was conducted in hopes that others will speak up and seek help for themselves.

Should High School Sports Need an Athletic Trainer on Staff?

Student Presenter: Carson Dillard

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Carson Dillard will address why high school sports should have an athletic trainer on staff, how high schools are currently affected by not having an athletic trainer on staff, and what the ratio of schools with athletic trainers to schools without athletic trainers on staff is like today. The presenter has used both primary and secondary research to conduct her study. She will also discuss why high school sports should have athletic trainers on staff and the benefits that come along with having these trainers.

The Mx. Mr. Misrepresentation of Trans Individuals in Media

Student Presenter: Ange Williamson

Faculty Sponsor: Dr. Jolie Hicks

Abstract

In the United States alone, 1.6 million people identify with a gender different from their assigned sex at birth. Those who identify as transgender tend to be younger with the most significant percentages existing in both the 13-17 and 18-24 age range. With the increasing numbers of individuals identifying as transgender, there is a newfound increase in the necessity of representation for these identities. As the growing push for LGBTQ+ diversity continues, trans individuals often find themselves left out in the inclusion, or worse, they are diminished to nothing but negative stereotypes. This research seeks to find the root of the exclusion by examining already published research and media representation in hopes of finding a way to encourage a push for positive representation for the trans community.

The Amazon Rainforest: It's Importance, Deforestation, and How We Can Prevent Further Destruction.

Student Presenter: Ashlyn Stigall

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During her research presentation, Ashlyn Stigall will inform her audience on the Amazon Rainforest, specifically- its importance, its destruction, and how we can prevent any further deforestation or stop it in its tracks now. The student has used both primary and secondary research, including an interview with Dr. Boggs, a biology professor here at SWOSU, and online credible websites. Ashlyn hopes to inspire people to inform themselves and others more about the forest and influence them to make changes in their lives in order to help it. She will create an interesting power point to show the audience her shocking statistics and to hold attention.

C.H.A.N.G.E. (Cancelling Hunger Adding Nutrition Growth Education) Hunger in Oklahoma: Using C.H.A.N.G.E. to Improve the Current Situation

Student Presenter: Megan Bradley

Faculty Sponsor: Ms. Tee Kesnan

Abstract

Oklahoma is the fifth hungriest state in our nation. During her research presentation, Megan Bradley will address hunger, not only in Oklahoma, but also right here in Weatherford. The presenter will also provide additional information on how her audience members can help make a positive change to our great state!

A Roast for Emily: Coded Language in William Faulkner's "A Rose for Emily"

Student Presenter: Skye Cowley

Faculty Sponsor: Dr. Kelly Logan

Abstract

Taking communion is a meaningful ritual for several different denominations of Christianity. The consumption of the body and blood of Christ is symbolic and is meant to honor and worship the Lord. Bread stands in for the flesh while wine stands in for the blood. Catholics refer to the transformation from bread into the body of Christ as transubstantiation. Christian symbolism and biblical allegories appear throughout William Faulkner's "A Rose for Emily." Faulkner uses coded language to weave these allegories into his narrative. When deciphered, the coded language in "A Rose for Emily" reveals that the practice of transubstantiation is being taken to the literal extreme.

Mathematical Analysis of an SEIR Disease Model

Student Presenters: Tess Tracy and Kylar Byrd

Faculty Sponsor: Drs. Swarup Ghosh and Sunil Giri

Abstract

Mathematical modeling can be useful in helping us to understand disease dynamics. Epidemiological models consist of differential equations with variables and parameters defined to portray these dynamics. We will be presenting the mathematics involved in formulating and analyzing a model for a disease such as influenza. We will first explain a simple SIR model, and then we will introduce our model. We will be looking at an SEIR model that incorporates the use of an exposed class as well as parameters such as death and birth rate that result in a nonconstant population. Using the linearization procedure, we find the threshold value, reproduction number and explore the local stability of disease-free equilibrium under different cases of reproduction number.

Dissonance in the Life of Musicians: Anxiety, Resolution, and Coping Strategies

Student Presenter: Todd Bowels

Faculty Sponsor: Dr. Sophia Lee

Abstract

Musicians whether they are playing in an orchestra, teaching an ensemble, composing a piece, or beginning their journeys as musicians are experiencing high rates of anxiety. The following study was taken on 18 creative individuals and here's the results: "The impact of COVID-19 on the mental health of this sample of creative young adults was by and large negative. Twelve of the 18 participants (66.7%) identified that the pandemic has had a negative impact on their mental health. Twelve participants (66.7%) disclosed that others who are close to them would agree with their mental health self-assessment."1 (Kerr, et. al., 2021). Musicians are searching different mechanisms for the stress, sickness, and exhaustion caused by the pressures of being a musician in today's society. What are effective coping strategies dealing with the anxiety triggered by consciousness and concerns of musicians now passed COVID-19 Pandemic? I will recruit four college musicians with upcoming juries and recitals and ask them the following questions: Which of the anxiety relieving methods benefited you the most? Or what did you do to combat them? Participants will choose their strategy and will determine effectiveness using Mazzarolo Performance Anxiety Scale before and after their performances.

Footnote Kerr BA, Birdnow M, Wright JD and Fiene S (2021) They Saw It Coming: Rising Trends in Depression, Anxiety, and Suicidality in Creative Students and Potential Impact of the COVID-19 Crisis. *Front. Psychol.* 12:611838. doi: 10.3389/fpsyg.2021.611838

Manifestations of Mental Illness within Beethoven's Music

Student Presenter: Delaney Smith

Faculty Sponsor: Dr. Kristin Griffeath

Abstract

Many of Ludwig van Beethoven's compositions contain manifestations of his repeated episodes of depression and suicidal ideation. Examination of documents from his lifetime, particularly the posthumously published Heiligenstadt Testament, reveals that Beethoven struggled with intense feelings of despair, hopelessness, and humiliation throughout his lifetime that nearly drove him to suicide. In fact, Beethoven's narrative within the Heiligenstadt Testament suggests that he decided against suicide only so he could continue creating art, which he viewed as his purpose for living. This understanding of Beethoven's mindset explains a dark motif personifying "Fate" as pursuant entity, intentional violations of typical sonata form, and juxtaposition of an arioso dolente with a statement from his "Dona Nobis Pacem" translated as artistic manifestations of his mental illness.

Diving Deep into an Influential Baroque Classical Era Cantata:

A Timeless Reimagination of Barbara Strozzi's "Tradimento!" Explored and Reintroduced.

Student Presenter: Bailey Hanes

Faculty Sponsor: Dr. Kristin Griffeath

Abstract

Throughout human history, music has evolved through many periods, though its deep impact on the world remains constant. One of which, however, was the Baroque era. Occurring from the 1600's to the mid 1700's, the Baroque musical era was particularly influential in its creation of timeless and innovative pieces of classical music. From dedicated musicians. Barbara Strozzi is one of these musicians whose name is now deeply etched into Baroque history due to her virtuosic and articulate compositions. This research project hones in on a particular composition of hers from *Diporti di Euterpe*, Opus 7: "Tradimento!". This project delves deep into the text, stylistic components, story, basso continuo, as well as the newly arranged piano realization of this composer's influential work of art. This project's creation and drive stems from Strozzi's inspirational journey through her life and music composition.

Anxiety: The Umbrella of Mental Illness in Musicians

Student Presenter: Todd Bowels

Faculty Sponsor: Dr. Sophia Lee

Abstract

Musicians whether they are playing in an orchestra, teaching an ensemble, composing a piece, or beginning their journeys as musicians are experiencing high rates of anxiety. Could this be from a competitive drive, striving for perfection at all times, coming back into real performances from a COVID restricted time or the rise in Artificial Intelligence being able to do everything human musicians can do in a fraction of the time? Musicians everywhere are looking into different coping mechanisms for the stress, sickness, and exhaustion caused by the pressures of being a musician in today's society.

The Scourge of Music: How the Saxophone has Evolved Tonally

Student Presenter: Tyler Macon

Faculty Sponsor: Dr. Sophia Lee

Abstract

Patented in 1846, the saxophone has been the subject of popularity and controversy. The saxophone has been cited both as sounding heavenly and as being a tool of Satan. However, as we move into the 20th and 21st centuries, the saxophone has become widely accepted in the musical world, from jazz to popular music to classical music. The flexibility the instrument displays allows it to blend into any ensemble. However, the tonal concept of the saxophone has undergone large changes over the years. This paper aims to identify three pioneers of classical saxophone and discuss how the tonal concept of classical saxophone has evolved since. These three pioneers, being Marcel Mule, Sigurd Rascher, and Larry Teal, all had widely different sounds. The regional diversity of these three players, one from France, one from Germany, and one from the United States, is evident in their playing. As we move further into the era of technology, sound concepts have begun to blur and mix, creating a universal sound concept that is highly sought after.

The Impacts of Bullying and Music Therapy Treatment Options

Student Presenter: Chih-Chi Huang

Faculty Sponsor: Dr. Sophia Lee

Abstract

This poster presentation intends to first summarize the facts of bullying, including its definition, statistics, subcategories, varieties, causes, epidemiology, etc., as well as its impacts. Different theoretical frameworks supporting the treatment strategies are compared for their pros and cons, and a closer discussion is on the pros and cons of proposed music therapy interventions for school-age bullies and victims by Shafer and Silverman (2013). Derived from the Social Learning Theory and Orff's Music Education philosophy, the interventions intended to improve peer relationships, self-management, and social skills by integrating strategies of these interventions into their daily lives and creating behavioral coping strategies for psychological distress. Due to the fact that the proposed interventions in the study were not incorporated into a protocol, a pilot study is proposed to investigate the effectiveness of the proposed music therapy interventions for school-age bullies and victims. Sixteen participants the age of 10-18 self-identified via Adolescent Peer Relation Instrument with the experiences of bullying or being bullied with parental consent and their own assent will be recruited and randomly assigned to two groups for ten weeks. The participants in the experimental group will receive music therapy treatment consisting of rhythm chanting with body percussion "Just Walk Away" and "Stop and Breathe," lyric analysis, lyric replacement songwriting, and role-play. The participants in the control group will receive standardized care for their experiences of bullying. Qualitative data such as the self-reflection of participants, as well as program surveys by teachers, and administrators, and quantitative results of the music therapy group versus the control group outcome comparison will be incorporated for the mixed-method study.

Lifted on High: Measuring Music Therapy Effects on Intimate Partner Violence Survivors

Student Presenter: Leticia Marie Castro

Faculty Sponsor: Dr. Sophia Lee

Abstract

The proposed study is to develop an assessment conceptually quantifying the effects of Feminist-informed music therapy practices supporting the empowering components of Spirituals on women surviving intimate partner violence (IPV). The clinical application of feminist music therapy and culturally significant music has grown over the past couple of decades as the music therapy profession evolves with the societal issues of mental health and social justice. However, the publications of this work are often set in a qualitative format to describe the dynamic nature and effects of the music-making process. A quantitative measuring tool to capture the effects of Feminist-informed music therapy practices will help conceptualize the progress of the participants. A critical interpretive analysis will be utilized to synthesize the qualitative criteria of articles that contain clinical applications of feminist music therapy practices containing methodologies with qualitative criteria used to measure the progress of the clients. The empowering components of Spirituals will also be examined as additional or supportive material of qualitative criteria. Proposed is a measuring tool to present quantitative results of client progress in areas of empowerment, client engagement, and cultural responses. Areas are set along a Likert scale format to measure the effect of engagement in empowering, culturally significant music-making and enhance the accuracy of viewing a client's progress through assessment, treatment, and evaluation of future clinical applications. Sub-areas will assess the researcher's observation of a client's affect and behavior and the client's self-report of self-concept, emotional state, and behavior.

Using a UAV to Estimate Cover and Fire Impacts at Two Landscape Scales Near Crowder Lake, OK.

Presenters: Dr. Zach Jones, Kelby Shumaker, Thane Patterson, and Chris Hurt

Faculty Sponsor: Dr. Zach Jones

Abstract

Prescribed burns are integral management tools that can maintain grassland ecosystems over time. During the last 150 years, fire suppression and overgrazing have favored the encroachment of woody species into native grasslands. Prescribed fire, along with grazing and browsing, are being used in a practice known as Pyric Herbivory to more cost-effectively produce grazing forage for livestock, and native grassland assemblages and structure for wildlife communities. In our study, we used an Unmanned Aerial Vehicle (a RC drone) to assess fire impact at two scales: at 30-m radii plots and at the 500-m radius of the overall burn management. Our primary hypothesis was that the two scales of sampling would produce differing results because of the unpredictability of fire behavior in any prescribed burn. In this project, the impact of the fire was not as great at the larger spatial scale, while the results were in the same direction (reduced woody and increased grass cover). Apparently, scale does play a role in fire behavior and how effective a prescribed burn ultimately is at causing juniper mortality in a grassland where it is invading.

Juniper Stand Structure of Burned vs. Unburned Plots Following a Prescribed Fire Near Crowder Lake, OK.

Presenters: Dr. Zach Jones, Justin Dowe, Skylar Croskey, and Alliyah Mohamud

Faculty Sponsor: Dr. Zach Jones

Abstract

Prescribed burning is a management tool used in Pycnic Herbivory that can assist maintenance of native grassland communities by bringing nutrients to the topsoil, removing shade competitors of grasses, and providing stimulus for restorative growth. One of the primary woody invaders affecting our regional native grassland systems is the Eastern Red Cedar. In this project we evaluated plots both pre- and post-fire to better understand the ways in which tree stand structure affects prescribed fire success in killing junipers that are invading into surrounding grasslands. Our hypothesis was that tree stand attributes will affect whether a prescribed fire kills or leaves trees alive. Primary differences between our post-fire burned and unburned plots were that burned plots tended to have 1) more trees of older age and larger sizes, 2) trees with wider spacing intervals, and 3) trees of smaller diameter and higher lowest-branch heights. Taken together, these data suggest that prescribed fires with higher juniper mortality rates are more likely to occur in stands where critical space is allowed for air movement during a fire.

Prescribed Fire Effects on Ground Cover Among Encroaching Juniper Near Crowder Lake, OK.

Presenters: Dr. Zach Jones, Taylor Bonser, Bryce Johnston, and Mark Geffre

Faculty Sponsor: Dr. Zach Jones

Abstract

Prescribed burns are integral management tools that can maintain grassland ecosystems over time. They can make grass cover more abundant and introduce a mix of different covers by releasing nutrients, removing overstory, and stimulating grazing activity. During the last 150 years, fire suppression and overgrazing have favored the encroachment of woody species into native grasslands. Prescribed fire, along with grazing and browsing, are being used in a practice known as Pyric Herbivory to produce grazing forage more cost-effectively for livestock while promoting native grassland assemblages and suitable habitat structure for wildlife communities. Our primary hypothesis was that ground cover following prescribed fire will show different responses at plots that burned versus unburned plots. Plots that were burned in the prescribed fire had less duff, more bare ground, more litter, and slightly more grass cover. Moreover, sampling points on burned plots were less likely to be under a tree pre-fire and post-fire understory vegetation on burned plots was of taller average height.

Perceptions of e-sports and traditional sports players

Student Presenters: Mariah Williams, Breanna Guthrie, Megan Pena, and Sebastian Kudrna

Faculty Sponsor: Dr. Stephen Burgess

Abstract

With the increasing popularity and movement into mainstream culture of video games, the competitive play of video games has also increased and become more mainstream (Trotter et al., 2020). Esports teams have also increased in public schools and universities. For example, approximately 60 high schools offered esports in OK in one organization (<https://okse.org/53864>, June, 2022). Much research has examined the relations of video game play to physical, cognitive, attitudinal and behavioral outcomes, but relatively little research has examined the demographics and perceptions of those who play and coach esports. Increased knowledge of how coaches and players perceive themselves and how others perceive esports players in relation to traditional sports players will be useful in efforts to understand the potential challenges and advantages of playing sports. 120 participants completed a questionnaire containing questions related to demographics, perceptions of esports in relation to traditional sports, perceptions of esports players in relation to traditional sports players, sports playing experience, and video game playing experience. Statistical analyses will be presented describing the relations between perception of esports players and traditional sports players and how this varies by sports playing experience and video game playing experience and demographics such as gender and age of the participant.

Do demographics of adult and child using a tablet predict observer perception of tablet activity?

Student Presenters: Megan Pena, Breanna Guthrie, Mariah Williams, and Sebastian Kudrna

Faculty Sponsor: Dr. Stephen Burgess

Abstract

The increase in use of e-devices and a corresponding decrease in use of traditional print sources may it more difficult for a child or other observer to know what someone is doing. Social learning theory predicts this may reduce the information provided to the observer available from the modeler of the behavior. Observing the modeling of reading behaviors is thought to contribute to the development of attitudes about literacy as a leisure and information activity (Burgess et al, 2002). As e-devices become more common, it may become more difficult for observers to determine what behaviors the user of the e-device is doing. For example, is the user reading a book, playing a game or using social media? The present study is designed to explore whether several factors predict the behaviors observer think the user of an e-device is doing. Situational factors such as setting and characteristics of the models (e.g., gender, race, wearing of glasses) will be examined. Participants (N = 125) viewed a photo of an adult and a child looking at a tablet that varied by race, gender, and age of those pictured. Then they provided their first and second impressions of what those pictured were doing. They then rated the likelihood of activities that can be done using a tablet, provided demographic information and completed questions related to their reading dispositions and behavior. Statistical analyses will be reported to describe whether perception of the likelihood of different activities being done with the tablet differed by demographics of those using the tablet. Results will be discussed in terms of implications for efforts to increase reading motivation in children.

Do observer demographics predict perception of tablet activity?

Student Presenters: Breanna Guthrie, Megan Pena, Mariah Williams, and Sebastian Kudrna

Faculty Sponsor: Dr. Stephen Burgess

Abstract

Using Social Learning Theory as a framework, the modeling of literacy behaviors has been proposed as a way to improve attitudes towards literacy use for leisure and information (Burgess et al., 2002; Moats, 2012). For example, adults could be encouraged to point out models engaging in literacy related behaviors. A similar example would be the use of athletes and other celebrities to encourage healthy habits such as drinking milk. However, as e-devices become more popular it may become more difficult for observers to determine what behaviors the user of the e-device is doing. For example, is the user reading a book, playing a game or using social media? The increase in use of e-devices and a corresponding decrease in use of traditional print sources may make it more difficult for a child or other observer to know what someone is doing. This may have implications for how attitudes towards literacy are formed and maintained as it become more difficult to know what behavior is being modeled by adults in the home and other places. There are also differences in how literacy is used and valued associated with different demographics. For example, females report reading more often for fun and seeing reading as more important than males (Jabbar & Warraich, 2022). Both females and males report that peers are important in shaping their literacy attitudes and behaviors. The present study is designed to explore several factors that may influence and predict what behaviors the observer thinks the user of an e-device is doing. Participant characteristics such as gender, whether own a tablet and liking to read for fun will be examined. 110 adult participants viewed a photo of an adult and a child looking at a tablet that varied by race, gender, and age of those pictured. Then they provided their first and second impressions of what those pictured were doing. They then rated the likelihood of activities that can be done using a tablet, provided demographic information and completed questions related to their reading dispositions and behavior. Statistical analyses will be presented to describe whether perception of the likelihood of different activities being done with the tablet differed by observer demographics. Results will be discussed in terms of implications for efforts to increase reading motivation in children.

Mind Over Matter: Mastering Stress and Anxiety with Mental Techniques

Student Presenters: Antonio Cenicerros and Severiano Martinez

Faculty Sponsor: Ms. Tee Kesnan

Abstract

During the research presentation, Antonio Cenicerros and Severiano Martinez will address their research findings on different studies that were done on stress and anxiety. The presenters have used secondary research to carry out their study. These presenters hope to raise their audience's awareness on ways to cope with stress and anxiety by providing some solutions and recommendations.

The Humanity of the Soldiers Displayed on D-Day

Student Presenter: Marleigh West

Faculty Sponsor: Dr. Sunu Kodumthara

Abstract

Edward Barnes, a veteran of D-Day, recounted the first time he came across an American soldier that had passed away. Despite the hostile conditions of the invasion, Barnes wrote down the man's name and his dog tag number in the hopes of informing the man's family of his passing. After all, if it had been Barnes who died, he would want his own family to have the peace of knowing that someone would do the same for him. This one act is just a small example of the selflessness the soldiers that were involved in the invasion of Normandy did for each other. Though they were engaged in one of the bloodiest battles in history, and would have to commit acts that many would consider heinous, they did not lose their humanity.

Rock Music and Morality Politics

Student Presenter: Benjamin Neal

Faculty Sponsor: Dr. Sunu Kodumthara

Abstract

Rock was the popular new style of music in the 1950s and 1960s, but many major figures still received heavy criticism from traditionally minded listeners. Music critics often accused popular singers of faking their own voices and decried the chaotic sounds of rock. However, much of the criticism came from social concerns and not from the music itself. Listeners often deemed the lyrics and performances to be too inappropriate and Cold Warriors suspected that musicians held communist or un-American views. Overall, rock was viewed as detrimental to society. As a result, bands struggled with constant censorship or other forms of public backlash. The back and forth between musicians and their critics often reflected a Cold War mentality that prioritized conformity and led to modern morality politics.

Margaret Sanger: Voice of the Birth Control Movement

Student Presenter: June Parker

Faculty Sponsor: Dr. Sunu Kodumthara

Abstract

In 1921, When Margaret Sanger was told that she was prohibited from speaking at New York City town hall after she had booked the venue for the final meeting of her the National Birth Control Conference, she snuck inside and was pushed onstage by her supporters, who were desperate to hear her speak. Sanger's forceful arrest and removal by New York policemen caused a public outrage. The denial of Sanger's First Amendment rights no doubt enraged Americans of varying political beliefs and provides just one example of how Sanger was able to make her message appeal to politicians on both sides of the American political spectrum, whether purposefully or inadvertently. In Margaret Sanger's fight for accessible birth control, she utilized her ability to appeal to both the liberal and conservative sides of the American political spectrum. Her strategies in gaining support from political individuals and group organizations showed just how determined Sanger was to reach her goals.

Internal Communication within an Institution of Higher Education During the COVID-19 Crisis: A Case Study

Presenter: Dr. Jonathan Clemmons

Mentor: Dr. Chris Broadhurst, University of New Orleans

Abstract

The purpose of this study was to understand the role internal communication played in shaping perceptions among stakeholders during a major crisis event happening on a university campus. The main question that this study sought to answer was: how did formal and informal communication during the COVID-19 pandemic affect the perception and adoption of changes related to the pandemic? This case study utilized interviews and document analysis to understand both the change process and its accompanying communication. Workplace Social Network Exchange was the guiding theoretical framework utilized to fully understand the professional lives of participants. Four major themes were identified in this study; these themes highlight the perception of preparedness for the crisis, the rigid structure for communication, the disconnection associated with technology while working remotely, and the organizational saga around communication. The implications of this study provide actionable considerations for future crisis events. Practitioners in higher education should consider updating their crisis plans to reflect the lessons learned during the COVID-19 pandemic. Plans should include protocols for conducting regular drills to assess the campus's readiness for moving to remote operations. Additionally, planning activities should include considerations for fostering informal communication during remote operations to lessen feelings of disconnection among faculty and staff. This study contributes to literature focused on crisis management, communication, and organizational theory in higher education. As one of the few studies on internal communication within higher education during a crisis event, this study begins to build a foundation for future research.

The Influence of Zoo Phonics Multisensory Phonics Instruction on the Development of Letter-Sound Knowledge in Kindergarteners

Student Presenter: Jocelyn Hernandez

Faculty Sponsor: Ms. Marla Pankratz

Abstract

Phonics is the instructional method that focuses on letter-sound associations. Zoo Phonics is a multisensory phonics program using a "phono" (hearing), "oral" (speaking), "visual" (seeing), "kinesthetic" (moving), and tactile (touching) whole brain approach. This action research study examines the effectiveness of Zoo Phonics on the development of letter-sound knowledge of pre-k students in a midwestern public school.

Baby Doll Circle Time Influence on the Development of Self-Regulation and Empathy

Student Presenter: Shasta Rossetter

Faculty Sponsor: Ms. Marla Pankratz

Abstract

Optimal child development is dependent on healthy relationships with adults. Finding the one-on-one time needed to foster meaningful relationships is challenging in childcare settings. Baby Doll Circle Time is an approach that strengthens attachment, attunement, and social play. Baby Doll Circle time is a time when the children and teachers gather in a circle and do different rituals that encourage empathy, impulse control/ emotional regulation, self-regulation, and other social-emotional skills, with a baby doll. This research explores Baby Doll Circle Time's influence on the development of impulse control/ emotional regulation, empathy, and self-regulation in a Head Start classroom in a midwestern urban city.

Structured Language Basics Influence on Phonological Awareness Development

Student Presenter: Courtney Anderson

Faculty Sponsor: Ms. Marla Pankratz

Abstract

For all students, high-quality early education in phonological awareness is critical to ensuring their long-term academic success in literacy. This research examines the effectiveness of phonological awareness instruction in a first-grade general education classroom using the Structured Language Basics curriculum for phonological awareness. Structured Language Basics is a multisensory scripted reading curriculum designed to meet the needs of a variety of students.

The Horror of Creation: A Transgender Interpretation of Frankenstein

Student Presenter: Skye Cowley

Faculty Sponsor: Dr. Kelly Logan

Abstract

There has always been a vacuum where Queer narratives should be. In this vacuum, Queer people have to look for themselves in the subtext. There is more Queer representation in media now than there has ever been, but there is still a wide gap in the stories that are being told. Transgender people, for example, are still critically underrepresented in the media. Coded language allows for transgender characters and transgender narratives to be found within various forms of media, but especially literature. As a genre, horror is particularly appealing to Queer people wanting to find a connection to themselves. So many horror stories deal with the “other,” which is where Queer people are able to find a way into the narrative. Mary Shelley’s *Frankenstein* deals with themes such as “otherness,” creation of self, and rejection. Analyzing *Frankenstein* through a Queer lens reveals transgender narratives in both Victor and his creation.

Coming of Age and Cultural Literacy in Angel of Greenwood.

Student Presenter: Sarah Taylor

Faculty Sponsor: Dr. Kelly Logan

Abstract

Coming of age is a unique experience for different genders, sexes, and cultural identities. Many cultures celebrate the shift from adolescence to adulthood with ceremonies such as quinceaneras and bar mitzvahs. Even with these celebrations, there is a lack of literature discussing these coming-of-age stories for marginalized ethnic groups. *Angel of Greenwood* breaks this mold. This Young Adult novel tells the story of two Black adolescents, Isaiah and Angel, who grow up in Greenwood's community and survive the Tulsa Race Massacre. The novel follows their stories as they come of age, swapping between the point of view of Angel and Isaiah for much of the book. This method allows the audience to understand the pressures they face, not only from the outside world but also from peers and the community. This pressure can be seen from both perspectives but has a specific hold on Angel. While she figures out her budding romance, she also has the pressure to be more than herself for her community. These pressures affect her coming-of-age. *Angel of Greenwood* demonstrates that culture and community pressures affect coming-of-age, specifically with adolescent Black females.