



“Promoting Interdisciplinary Conversations”

2019 Western Research Day Schedule

Thursday, May 9, 2019

9:00 AM – 10:00 AM	Poster setup
10:00 AM – 11:00 AM	Welcome Remarks and Keynote Speakers Location: Science Building, Room 125
11:00 AM – 1:00 PM	WRD Poster Sessions Location: Science Building Atrium
1:00 PM – 1:30 PM	Announcement of Prize Winners & Concluding Remarks Location: Science Building, Room 125

2019 Keynote Speakers



Lynn Schönbeck is currently pursuing a Master of Arts in the Viking and Medieval Norse Studies program at Háskóli Íslands in Reykjavík, Iceland. Lynn has an interdisciplinary undergraduate background, graduating with a major in History and a minor in Anthropology from WCSU in 2016. For her undergraduate thesis, Lynn focused on how medieval Norse art and Saga literature intersected with the laws and social mores of the time in order to police women's social boundaries. As a graduate student, Lynn is continuing her work on early medieval Scandinavia, shifting her focus to the post-conversional; looking at the transfer and adaptation of continental literature into a Nordic perspective. Upon completion of her Master's, Lynn has the goal of entering a PhD program in Museum Studies with a Norse focus.

The title of her talk will be: **Tale Isolde as Time: A Comparative Analysis of a Key Female Figure Across the Middle High German and Old Norse Tristan Epic**



Linda Dalessio joined the faculty at WCSU as an Assistant Professor in 2014. Linda graduated with her ADN in 1984 from Capitol Community Technical College in Hartford and received her BSN in 1999 from Elsevier College in New York. She went on to receive her MSN in Forensic Nursing at Quinnipiac University, and graduated from St. Louis University in 2005 with a post Master's Degree as an acute care nurse practitioner. Linda has worked as a critical care nurse and nurse practitioner in acute and adult care in many different areas. She recently finished her EdD in Nursing Education with a research focus on how simulation and debriefing pedagogy can affect diagnostic reasoning in nurse practitioner students. She has authored, and co-authored grants obtained from the American Association of Critical Care Nurses and the American College of Chest Physicians. Linda is a member of the American Association of Critical Care Nurses and has been CCRN certified since 1989, the American Nursing Association, Sigma Theta Tau, and the International Association of Simulation and Clinical Learning.

The title of her talk will be: **The Effects of Debriefing on Diagnostic Reasoning Development in Family Nursing Practitioner Students**

Student Participants

1	Atique, Anusha	Characterization of <i>Plasmodium falciparum</i> glutathione reductase and its long term stability
2	Bacon, Brian with: Calebe de Aquino, Andrew Figueroa	Textify: A social media transcription service
3	Baningoso, Kristin A.	Supporting sexuality and gender acceptance (SaGA) through the curriculum: The role of library media specialists
4	Begum, Shomla	What kind of cold-tolerant fungi are also salt-tolerant in CT?
5	Behymer, Samuel	The effects of intergroup bias on voter preference
6	Bethin, Jacob	Invertebrate associations with <i>Podostemaceae</i>
7	Blum, Alexandra	A new language barrier
8	Bower, Erica	Vorticity profiles of Atlantic tropical cyclones
9	Cornwall, Alexander with: Albert Afonso	NCAA player evaluation
10	Curillo, Darcy	A proteomic analysis: Characterizing malaria proteins
11	Dam, Alyssa	Cloning of <i>Plasmodium falciparum</i> DHFR drug resistant mutant
12	Deguzman, Kayla	Satellite tracking of juvenile green, loggerhead, and Kemp's Ridley turtles from rehabilitation centers in southern New England and Long Island, USA
13	Della Penna, Robert	Effective communication within organizations
14	DuFrisz, Katherine with: Haley Schumacher	Decline in high fat food intake in mice due to loss of palatability
15	Feeney, Kyla	The effects of communication and recall on memory
16	Flint, Connor with: Colin Gillap	A case for paying college football players
17	Foertsch, Nicole	Census of exoplanets in the habitable zone of their parent star
18	Fogle, Darius	Businesses using social media to their advantage

19	Fossum, Katherine	Synthesis of metal chelating nucleosides
20	Fragano, Christopher	Urban-enhanced aerosols' impact on convective precipitation: A New York metropolitan area case study
21	Francis, Deon with: Kaylee Goral, Marcus Rodriguez, Kiara Pereira	The effects of personality and gender on likability
22	Gallagher, Molly	Interleukin-6 aids in understanding the relationship between exercise and food intake
23	Gautam, Anju	Calculating market value of NCAA football athletes
24	Geddes, Jessica	Gender differences on memory recall
25	Gordon, Gianna	Facial symmetries effect on attractiveness
26	Green, Ashley with: Gina Lauria, Michelle Luukko	How different genres of movies affect mood
27	Grey, Jasmine	Developing LAMP to be specific for the detection of <i>Pseudogymnoascus destructans</i>
28	Henry, Bernard with: Phoebe Ermert, Kayla Deguzman	An analysis of fecal microbiome changes in lab mice in response to changing diets
29	Horton, Ashley with: Chris Marji	Analysis of toxin genes in cyanobacteria populations from various Connecticut lakes in 2018
30	Hurlbert, Gabrielle with: Genesis Torres, Matt Paternostro, Kevin Brown	Evaluating the misuse and abuse of prescription drugs on campus with the CHOICES program. Be Smart. Don't Start.
31	Kitzmiller, Joseph	The effect of social media platforms on marketing strategies over time
32	Koulogianis, Katie	The effects of domestic violence on women's mental health
33	Kuhn, David	College student confidence for future economic success
34	Lawlor, Michaela with: Sean Clarke, Shawna deHoff, Ryan Koschel	Mindfulness-based stress reduction for WCSU students
35	Lemire, Stephanie	Investigating different methods for finding Earth-like exoplanets

36	Liscinsky, Adam	Impact of Connecticut's 2015 drug law changes
37	Lopez, Zachary with: Maribel Ramirez	Police perceptions about the use of body-worn cameras
38	Mammone-Hottes, Zachary with: Heather Repko, Joanna Pitrelli, Vincent Sementilli, Alex Miller, Zachary Conn	Theory-based nutrition intervention for WCSU Students
39	Matteson, Alexander	Exploring magnetic carbon nanotubes as solid phase extraction media for trace metal analysis
40	Mazik, Madisyn	Enhanced whiteboard-style lecture beats PowerPoint
41	McNally, Kerri-Ann with: Shantell Dirskell, Karla Huwae, Heather Morey	The impact of a Health Promotion Program on physical activity and healthy eating among Danbury Middle school students
42	Meksvanh, Timothy	Application of Hückel Molecular Orbital Theory to zigzag carbon nanotubes
43	Meyer, Kaitlyn with: Xiomara Martinez	An analysis of the relationship between diet, appetite and gut microbiota in lab mice
44	Mezidor, Cindy with: Shannon Carney	Effects of appetite on weight regulation
45	Middleton, Jonathan with: Matthew Chastain, Justin Grabowski, Kevin Kelly	ArcPlanner: An interactive planner app
46	Namer, Victor	Exploring the town-gown relationship between WCSU and downtown Danbury
47	Norton, Rebecca	Reduction in sugar transporters of bat fur yeast genome compared to related skin infection and beer yeasts
48	Nyange, Benedi	Effect of freeze-thaw events on denitrification of soil nitrogen
49	Ohrablo, Erica	Who are you to judge? A study examining the stigma surrounding tattoos and piercings
50	Oliveira, Albert	Green product purchase behavior
51	Plouffe, Jessica with: Maura R. Gissen, Brittney Romagna	Mental rotation performance without eye movements

52	Price, Tashai	Evaluation of the Risk Reduction Earned Credit Program in Connecticut
53	Reinoso Vasquez, Michelle	Earthworms improve <i>Crassula ovata</i> growth rate in sterilized soil: A controlled experiment.
54	Rodriguez, Natalie with: Allison Salzo	The blue wall of shame
55	Roessler, Sarah	The effect of attractiveness on positive and negative descriptions
56	Rojas, Maria	How to reach to the peak
57	Sathong, Kittikorn	Can multiple pathways to citizenship for undocumented immigrants be an efficient way to keep the American economy first?
58	Schreiner, Harrison	The effect of depression and anxiety on athletic performance in collegiate athletes
59	Segal, Shawn	Stress and dealing with stress: An evaluation of the resources at the Waterbury Police Department
60	Silvia, William	Colonial frameworks and transgender: Analysis of Twitter discourse around selected keywords
61	Simpson, Maximillian	Development of maltose binding protein purification for cytochrome c
62	Skidmore, Renee with: Samantha Lawlor, Marissa Zabriskie	Step up to the plate: A theory based health promotion program to promote proper nutrition in middle school students
63	Tamberelli, Joseph	Can education and awareness help combat the opioid epidemic?
64	Thompson, Jayme	Exploring white collar crimes in comparison to street crimes
65	Thurmond, Christian	Recidivism
66	Valdes, Layra	Characterization of <i>Babesia Microti's</i> cytochrome c
67	Vargas, Taisha	A replication of the implicit association test: Evaluating sexual orientation bias
68	Waite, Joseph with: Lauren Bradshaw	Compensation for NCAA Division I Student-Athletes

69	Wong, Daniel	Synthesis of the Hexahydrothieno[3,2-b]thiophene Heterocyclic Core
70	Yunga, Edison	An evaluation of the Danbury Police Explorers Program

Faculty Participants

Hasan Arslan	Justice and Law Administration
Carina Bandhauer	Social Sciences
Patrice Boily	Biological & Environmental Sciences
Joshua Cordeira	Biological & Environmental Sciences
Dennis Dawson	Physics, Astronomy & Meteorology
Ronald Drozdenko	Marketing
Terrence Dwyer	Justice and Law Administration
Bernard Gee	Psychology
Nicholas Greco	Chemistry and Biochemistry
Robin Gustafson	Psychology
Krista Heybruck	Health Promotion & Exercise Science
Rondall Khoo	Psychology
Rayda Krell	Biological & Environmental Sciences
Rotua Lumbantobing	Economics
Anna Malavasi	Philosophy and Humanistic Studies
Yuan Mei-Ratliff	Chemistry and Biochemistry
Sean Murthy	Computer Science
Albert Owino	Physics, Astronomy, and Meteorology
Theodora Pinou	Biological & Environmental Sciences
Judith Prieto	Chemistry and Biochemistry
Hannah Reynolds	Biological & Environmental Sciences
Forest Robertson	Chemistry and Biochemistry
Divya Sharma	Justice and Law Administration
Emily Stevens	Health Promotion & Exercise Science
Tricia J. Stewart	Education & Educational Psychology
Edwin Wong	Biological & Environmental Sciences
Yu-Fong Yen	Chemistry and Biochemistry

Student Abstracts

Listed in alphabetical order by first author

1	<p>Characterization of <i>Plasmodium falciparum</i> glutathione reductase and its long term stability <i>Anusha Atique</i></p> <p>Advisor: <i>Judith Prieto, Chemistry and Biochemistry</i></p> <p>Malaria is caused primarily by protozoan parasite <i>Plasmodium falciparum</i>. Previously, known treatments of malaria involved the use of drugs such as methylene blue. As the parasite develops resistance to current anti-malarial drugs, we must take a different approach to treating the disease by studying the protein that methylene blue is proven to inhibit, glutathione reductase, or PfGR. This homodimeric flavoenzyme is instrumental in defending the parasite against antioxidant related cell damage. In order to understand PfGR and its binding interaction with methylene blue, we sought to acquire and purify this protein in copious yields using the protein purification protocol previously modified by research students. Purified protein is needed in order to understand the relationship between PfGR's allosteric binding site and its function in the parasite using hydrogen/deuterium exchange mass spectrometry. Data showing the conditions needed to keep the protein stable for further study will be presented.</p> <p>Interdisciplinary: No</p>
2	<p>Textify: A social media transcription service <i>Brian Bacon</i> with Calebe de Aquino, Andrew Figueroa</p> <p>Advisor: <i>Sean Murthy, Computer Science</i></p> <p>Social media platforms host a variety of multimedia content including audio, video, and images. However, content other than text is not accessible to people with visual or aural impairments, and even text content is accessible only to those who can read that particular language. Automated content-transformation and language-translation are obvious solutions to this problem. Because the problem- space is very large, we focus on the problem of making images containing text accessible. Our solution is called Textify, a free and open-source system that performs optical character recognition on demand. We have deployed Textify to the popular social media site Reddit where it successfully transcribes screenshots of text. We are currently working on incorporating automated translation of text along with being able to provide a short description of the contents of a photograph. Textify is developed mainly in Python using modern software-engineering tools and methods learned in the WCSU course CS298 DevOps.</p> <p>Interdisciplinary: No</p>

3	<p>Supporting sexuality and gender acceptance (SaGA) through the curriculum: The role of library media specialists <i>Kristin A. Banningoso</i> Advisor: <i>Tricia J. Stewart, Education & Educational Psychology</i></p> <p>Students who identify as lesbian, gay, bisexual, transgender, queer, or questioning, (LGBTQ) face many challenges at school. This qualitative study seeks to understand the ways that library media specialists define inclusive curriculum, how they perceive their role for supporting a curriculum inclusive of sexuality and gender acceptance (SaGA), and the ways in which SaGA-inclusive resources are available in secondary schools' library collections. Using a multiple case study design, data will be collected from three to six public middle schools and three to six public high schools that have a dedicated library space. Semi-structured interviews will be conducted with the full-time school library media specialists at each school.</p> <p>Additional data will include analysis of each schools' library collection and existing relevant documents. Findings will be used to develop an understanding of how library media specialists support an inclusive curriculum, as well as the ways that curriculum resources are made available.</p> <p>Interdisciplinary: No</p>
4	<p>What kind of cold-tolerant fungi are also salt-tolerant in CT? <i>Shomla Begum</i> Advisor: <i>Hannah Reynolds, Biological & Environmental Sciences</i></p> <p>For this project, previously collected soil fungi sample from around New England were tested for salt-tolerance. Previous studies have found links between fungal adaptations for temperature and osmotic stress. Based on the sampled fungi already being cold-tolerant (showing growth at 4°C), we hypothesized that some of these fungi would also display salt-tolerance. Salt tolerance is common in several diverse soil fungi. We tested salt tolerance in Tryptic soy broth (TSB) solution formulated to range from 0.05 M NaCl to 2.0 M NaCl. The fungi categorized as salt-tolerant were able to grow in 1.0 M NaCl or 2.0 M NaCl TSB solution. Out of 48 samples inoculated to date, 9 were found to be salt-tolerant and were isolated, and DNA extraction and PCR of the ITS rDNA was performed. This amplified DNA was then sent off for sequencing to identify the fungi.</p> <p>Interdisciplinary: No</p>
5	<p>The effects of intergroup bias on voter preference <i>Samuel Behymer</i> Advisor: <i>Rondall Khoo, Psychology</i></p> <p>Understanding the issue of intergroup bias is pertinent to understanding the divisiveness of the American political climate in 2018. Importantly, what implications do in-party favoritism and out-party hostility have on the election process? The current study examined the relationship between political party and intergroup bias by focusing on whether participants chose to identify with policy first and foremost, or identified with political party above all else. Contrary to predictions, it was found that participants' opinions of the political candidates presented were dependent solely upon the policy goals the candidates were espousing, and not dependent upon the political party of the candidates.</p> <p>Interdisciplinary: No</p>

6	<p>Invertebrate associations with <i>Podostemaceae</i> <i>Jacob Bethin</i> Advisor: <i>Rayda Krell, Biological & Environmental Sciences</i></p> <p>The <i>Podostemaceae</i> are aquatic vascular plants that can be found in tropical and subtropical locations, sometimes in relatively small geographic areas in rivers or waterfalls. Many species are currently considered threatened. These plants are an important food source for many animals, including invertebrates, but there is little research on invertebrate diversity and associations with these plants. We cataloged invertebrates from <i>Podostemaceae</i> samples collected in 2006 and 2007 and preserved in alcohol. We investigated four <i>Podostemaceae</i> plant specimens from two different genera, <i>Rhyncholacis</i> and <i>Apinagia</i>. We identified 11 different insect orders and over 800 individual specimens from a single sample. To our knowledge, this represents the most orders described from a single <i>Podostemaceae</i> sample.</p> <p>This research provides a foundation for future exploration of the types of invertebrates and their interactions on this unusual plant, which could provide useful information for conservation.</p> <p>Interdisciplinary: No</p>
7	<p>A new language barrier <i>Alexandra Blum</i> Advisor: <i>Anna Malavisi, Philosophy & Humanistic Studies</i></p> <p>Communication is a powerful tool and too often, taken for granted. Working in the medical field, you become immersed in another language, and the once new terms and phrases become innate. It is not recognized that there is a language barrier between every nurse and patient, which creates a gap in patient care. The job of the nurse is to provide the best patient care possible, but if there is a gap in communication and our patients feel confused or anxious about their care, is that really the best possible care? Evaluating the patient and family's education level, and understanding of the medical field, in order to best communicate their condition and treatment to them, is vital to providing good patient care. This project will use an interdisciplinary approach, integrating the disciplines of nursing and communication to help us better understand this problem.</p> <p>Interdisciplinary: Yes (Nursing and Communications)</p>
8	<p>Vorticity profiles of Atlantic tropical cyclones <i>Erica Bower</i> Advisor: <i>Albert Owino, Physics, Astronomy, and Meteorology</i></p> <p>Tropical cyclones (TC's) have received attention in the United States over the past several years. While track forecasts have improved greatly, TC intensity and genesis forecasting are still lacking the precision to protect the infrastructure of the US. Many studies have investigated intensity cycles of TC's by examining lightning and infrared signatures. This study uses GFS model forecasts of absolute vorticity at several vertical pressure levels to discover patterns in both the magnitude of the vorticity maxima associated with several TC's as well as in the vertical gradients of the vorticity over the lifetime of TCs. Trends in the gradients illustrate the effects of land interaction on a TC. Changes in the magnitude of vorticity indicate strengthening or weakening of the storm. Finally, the vertical depth of the vorticity maximum is related to the inertial stability of the TC. These elements could potentially be applied to the operational forecasting of TC's.</p> <p>Interdisciplinary: No</p>

9	<p>NCAA player evaluation <i>Alexander Cornwall</i> with Albert Afonso Advisor: <i>Rotua Lumbantobing, Social Sciences</i></p> <p>College athletics has always been considered “amateur” sports therefore players get no contribution from the incredibly profitable market. The NCAA declares themselves as a non-profit and use excuses to keep not paying players who often spend 50 hours a week just practicing while teams often have left over profit. We determined a reasonable value to pay players specifically playing in the Big 10 Conference. First we took total revenue of each football team from all conferences, and compared this to each statistic in order to determine the correlation of each statistic to the team's revenue. To understand how much to pay a player, we looked at a player's individual statistics and their team's revenues and compared them to the team's statistics to determine how much a player should be paid for their contribution.</p> <p>Interdisciplinary: No</p>
10	<p>A proteomic analysis: Characterizing malaria proteins <i>Darcy Curillo</i> Advisor: <i>Helena Prieto, Chemistry and Biochemistry</i></p> <p>Apoptosis is a highly regulated process that is necessary for normal cell development and occurs as a defense mechanism. The apoptosis pathway has been identified in multicellular organisms but remains ambiguous in unicellular organisms. The evolution of apoptotic-like programmed cell death has been reported as a survival strategy related to drug sensitivity in the protozoan <i>Plasmodium</i>. This includes <i>Plasmodium falciparum</i>, which is one of the deadliest species that causes malaria in humans. Outbreaks of malaria have been relatively small, and currently there are antimalarial drugs such as chloroquine used to treat or prevent the disease. However, drug-resistant parasites have increased in cases. This study aims to characterize proteins associated with apoptosis and those involved in vesicle formation in <i>P. falciparum</i>. Such proteins are known to be upregulated in the presence of chloroquine. The investigation was carried out by analyzing the protease activity at 40, 80, and 160 nM of chloroquine.</p> <p>Interdisciplinary: No</p>
11	<p>Cloning of <i>Plasmodium falciparum</i> DHFR drug resistant mutant <i>Alyssa Dam</i> Advisor: <i>Helena Prieto, Chemistry and Biochemistry</i></p> <p>Malaria to date is an incurable disease caused by transmission via a mosquito of the parasite <i>Plasmodium falciparum</i>. Anti-malarial drugs have been shown to be effective, until the parasite becomes resistant under drug pressure. Dihydrofolate Reductase (DHFR) is an enzyme which has been the target of anti-malarial drugs, such as pyrimethamine. This enzyme has a few functions, but the most notable is its role in DNA formation by managing an organic molecule known as folate. Inhibiting this molecule ultimately inhibits DNA synthesis as well as amino acid synthesis which renders the parasite unable to grow and replicate. I aim to compare the drug resistant mutant and wild-type structure to determine how the mutations interact with the inhibitor and cause such resistance, but more interestingly, how the mutations lower the enzyme activity. Data will be presented on the steps to clone the protein and express it recombinantly.</p> <p>Interdisciplinary: No</p>

12	<p>Satellite tracking of juvenile green, loggerhead, and Kemp's ridley turtles from rehabilitation centers in southern New England and Long Island, USA <i>Kayla Deguzman</i> Advisor: <i>Theodora Pinou, Biological & Environmental Sciences</i></p> <p>The northeast coast of the USA hosts important seasonal foraging habitats for several species of sea turtle, including green (<i>Chelonia mydas</i>), loggerhead (<i>Caretta caretta</i>), and Kemp's ridley (<i>Lepidochelys kempii</i>) turtles. However, seasonal declines in water temperatures in the post-summer months means that most turtles must move to warmer waters either further south or off-shore to avoid the risk of becoming cold-stunned. Several organizations dedicate substantial resources to rehabilitating these cold-stunned turtles, yet the real conservation impact of these efforts depends on whether these rehabilitated animals can resume typical foraging and seasonal migratory behavior. To assess whether cold-stunned sea turtles are able to resume typical behavior after rehabilitation, we deployed satellite transmitters onto 31 juveniles. The objective of this study is to determine whether or not rehabilitation of juvenile sea turtles has been effective based on their movements and migrations after they have been released.</p> <p>Interdisciplinary: No</p>
13	<p>Effective communication within organizations <i>Robert Della Penna</i> Advisor: <i>Anna Malavisi, Philosophy and Humanistic Studies</i></p> <p>Communication is an essential part of being human and the elements of a good communicator often replicate their ability to confidently and comfortably transfer sources of information to another. Effective skills of communication such as public speaking and effective listening are common in individuals who perform with confidence and comfort when processing information in a business setting. The significance of this study is to better understand the impact of effective communication on business outcomes. This study will explore the areas of business and communication using an interdisciplinary approach. To understand this complex problem, this approach is essential, one that connects the elements from both disciplines. Effective communication skills within organizations will improve the efficiency and productivity of employees in any business structure. This research will show organizations who practice effective communication styles within their business structure will result in a more consistent and effective work environment.</p> <p>Interdisciplinary: Yes (Business & Communication)</p>
14	<p>Decline in high fat food intake in mice due to loss of palatability <i>Katherine DuFrisz</i> with Haley Schumacher Advisor: <i>Joshua Cordeira, Biological & Environmental Sciences</i></p> <p>Results from previous studies revealed that high-fat food (HFF) intake was highest when food was first provided to the mice. We hypothesized that this reduction was because the palatability of HFF declined with time. Prior to testing, multiple-day old HFF was placed on both sides of the cage for 24 hours to assess any baseline side preference. Mice were provided with 6-day old food on one side of the cage, and newly-thawed food on the other. Food intake was measured for 24 hours to determine any preference. This procedure was repeated with 1-day old food on one side of the cage, and freshly-thawed food on the other. We observed a clear preference of freshly-thawed HFF, which indicates that palatability is time sensitive. The results of these experiments investigating the ideal frequency of changing HFF are important because they can inform the design of future studies related to diet- induced obesity.</p> <p>Interdisciplinary: No</p>

15	<p>The effects of communication and recall on memory <i>Kyla Feeney</i> Advisor: <i>Rondall Khoo, Psychology</i></p> <p>Research has shown that there is a difference between types of visual communication on memory recall. Numerous studies have shown that pictorial information is recalled more than words. Research has also shown that there is a difference between the types of recall used, many times drawing a picture of the referent of a word produces considerably better recall and recognition of that word compared to repeated writing of the word. Undergraduate students will be shown either a list of twenty words or a list of twenty pictures. They will then be asked to recall as many pictures/words as they can by either writing the words/pictures or drawing the words/pictures. It is expected that more pictures will be recalled than words, and that drawing will have a greater recall than writing. This data will be analyzed using a between-subjects ANOVA.</p> <p>Interdisciplinary: No</p>
16	<p>A case for paying college football players <i>Connor Flint</i> with Colin Gillap Advisor: <i>Rotua Lumbantobing, Economics</i></p> <p>The purpose of this project is to analyze and make a case for the payment of college football players. Individual performance statistics for players in the SEC can be used to determine the amount of money a player will earn in a given season, in this case 2018. Data was collected based on position group, therefore, quarterbacks will have different relevant statistics than defensive backs, wide receivers, etc. Every player will earn a different income because no player is the same. Players with more yards for example, will earn more than a player with fewer yards in that statistical category. Using this guideline ensures that each player that meets a statistical threshold (minimum amount of TDs, Yards, etc.) gets paid, but the best players with the most contribution will earn the most.</p> <p>Interdisciplinary: No</p>
17	<p>Census of exoplanets in the habitable zone of their parent star <i>Nicole Foertsch</i> Advisor: <i>Dennis Dawson, Physics, Astronomy & Meteorology</i></p> <p>As far as is currently known, life could exist in the orbital range around a star called the Habitable Zone. Therefore, planets in this range tend to be the most compelling to observe in exoplanetary research. Many different types of exoplanets exist so being able to investigate any patterns to what kinds are found in the Habitable Zones of their parent stars would be beneficial for future research. Data from NASA's public archives of the Kepler mission identifies the planetary systems observed by Kepler that have confirmed exoplanets in the Habitable Zone of their star. Cross referencing that data with NASA's New World Atlas supplies specific characteristics of each exoplanet. Knowing these different characteristics such as the type of star it orbits, or the type of exoplanet it is, can allow percentages to be calculated to see where majorities lie when getting a general understanding of where certain exoplanets orbit.</p> <p>Interdisciplinary: No</p>

18	<p>Businesses using social media to their advantage <i>Darius Fogle</i> Advisor: Anna Malavasi, Philosophy and Humanistic Studies</p> <p>Before the use of social media, businesses used traditional marketing strategies to market their product to consumers. With the use of social media, this has changed dramatically and leads to the following question: How has social media impacted the marketing strategies of businesses? This project seeks to answer this question. Advertising companies encourage people to buy their products by using famous internet celebrities. Marketing through social media can be advantageous for any type of business. Companies take advantage of the current generation being "tech savvy". This research project will analyze examples of the ways companies use social media, in particular celebrities, to market their products. An interdisciplinary approach will be used to understand this phenomenon.</p> <p>Interdisciplinary: Yes (Interdisciplinary Studies Major)</p>
19	<p>Synthesis of metal chelating nucleosides <i>Katherine Fossum</i> Advisor: Nicholas Greco, Chemistry and Biochemistry</p> <p>Since the discovery of the double helix, scientists have been modifying the structure of the native nucleotides in order to modulate their properties. Nucleotide modifications have focused on synthetically modifying the sugar, backbone or nucleobase. The novel structures of these modified nucleobases have been utilized to probe duplex formation, protein activity, small molecule binding, polarity of the various grooves in DNA, requirements for enzymatic incorporation, etc. Of recent, a number of nucleobases were modified to bind metals through the chelation of two or more nucleobases within a DNA double helix or quadraplex. The current research lacks the ability to chelate various metals within one nucleobase outside the double helix of DNA, thereby allowing natural biological function while generating a unique emission response for each metal. These novel nucleosides are created by attaching a chelating ligand to the 5-position of 2'-deoxyuridine.</p> <p>Interdisciplinary: No</p>
20	<p>Urban-enhanced aerosols' impact on convective precipitation: A New York metropolitan area case study <i>Christopher Fragano</i> Advisor: Albert Owino, Physics, Astronomy, and Meteorology</p> <p>Urban-enhanced aerosols' impact on precipitation, from convective systems, has been of interest in recent years because of increased industrialization. Urban- enhanced aerosols can affect convective precipitation over and downwind of an urban center, due to changing certain microphysical processes within the clouds. These fundamental results were shown in a June 8, 1999 case study in St. Louis, Missouri. This research project comprehensively discusses the synoptic/mesoscale dynamical features that were present on June 14, 2017 in the New York Metropolitan area, as well as investigating how urban-enhanced aerosols impacted downwind convective precipitation. The June 8, 1999 St. Louis study will be used as a point of reference for comparison with my June 14, 2017 case study for the New York metropolitan area.</p> <p>Interdisciplinary: No</p>

21	<p>The effects of personality and gender on likability <i>Deon Francis</i> with Kaylee Goral, Marcus Rodriguez, Kiara Pereira Advisor: <i>Rondall Khoo, Psychology</i></p> <p>A study was conducted to determine the effects of gender and personal biographies on likeability. Participants were categorized by gender (male, female) and asked to read short personal biographies (positive, negative or no biography). Each participant was asked to read one of the three personal biographies before viewing the same picture of a female. Participants were then asked to rate the female based on likeability by using a five item Likert scale. Experiment results can be explained by the Over-Sexualization Effect and the Halo Effect on likability. The researcher hypothesis derived from these theories predicts that males will rate the female higher on the likability whether they read positive, negative or no biographies. The researcher hypothesis also predicts that females will rate likability higher when reading the positive biography and lower when reading the negative biography.</p> <p>Interdisciplinary: No</p>
22	<p>Interleukin-6 aids in understanding the relationship between exercise and food intake <i>Molly Gallagher</i> Advisor: <i>Joshua Cordeira, Biological & Environmental Sciences</i></p> <p>Interleukin-6 (IL-6), a pro-inflammatory cytokine, is released in large quantities from skeletal muscles during exercise. IL-6 signaling can also decrease food intake. We hypothesized that increased IL-6 signaling was the cause of a decrease in food intake we observed in mice that exercised for 30 minutes per day. By administering an anti-IL-6 antibody, we attempted to block IL-6 signaling while measuring food intake for 3, 6, and 24 hours after exercise. Rather than block a decrease in food intake post-exercise, we were surprised to instead find that anti-IL6 treatment further decreased food intake at 6 and 24 hours post-exercise. These results did not initially appear to support our hypothesis. Future experiments will address the possibility that a paradoxical increase in IL-6 signaling occurred after anti-IL6 administration, as others have shown. These studies are important because IL-6 and its signaling partners may serve as pharmacological targets for obesity intervention.</p> <p>Interdisciplinary: No</p>
23	<p>Calculating market value of NCAA football athletes <i>Anju Gautam</i> Advisor: <i>Routa Lumbantobing, Economics</i></p> <p>Most of the revenue made by Division I colleges comes from football and basketball teams, however the athletes are not paid a single dollar of that revenue. Using recent performance data of the Big 12 Conference teams, we calculated the market value of each individual player in the Division I NCAA football teams. For our study, we ran a multiple regression on team performance data in the Big 12 Conference and applied that to the athletes to establish a reasonable interval of earning potential.</p> <p>Interdisciplinary: No</p>

24	<p>Gender differences on memory recall <i>Jessica Geddes</i> Advisor: Rondall Khoo, Psychology</p> <p>The primary purpose of the present study is to determine whether gender differences exist for memory based on gender-directed words when presented to all genders. Gender schema theory has been proposed to explain gender differences in memory recall. The gender schema theory suggests that gender stereotypes have a large impact on memory. My hypothesis is that females will have a higher success rate recalling all three categories of words. Participants will view a PowerPoint and then recall the words.</p> <p>Interdisciplinary: No</p>
25	<p>Facial symmetries effect on attractiveness <i>Gianna Gordon</i> Advisor: Rondall Khoo, Psychology</p> <p>This study is designed to determine if attractiveness ratings of people can be influenced by facial symmetry. To perform this study participants will be randomly assigned to be presented with a likert scale question on the importance of physical attractiveness and either 6 photos from the high-symmetry section of an existing facial data base, or 6 photos from the no-symmetry section. Participants will be asked to rate these photos on attractiveness, measured on a scale of 1-5.</p> <p>Interdisciplinary: No</p>
26	<p>How different genres of movies affect mood <i>Ashley Green</i> with Gina Lauria, Michelle Luukko Advisor: Rondall Khoo, Psychology</p> <p>Different types of movies evoke a wide range of emotional reactions. With this in mind, the purpose of our study was to examine how short clips from different genres of movies affect mood. We hypothesized that participants who watched a positive movie clip would have a higher level of happiness compared to those who watched neutral or negative movie clips. Participants were randomly assigned to one of the three movie conditions (positive, neutral, or negative). They filled out a survey that measured happiness before watching the clip, and then took the same survey after watching the clip. We hope to find a significant difference between the happiness of those who watched the positive clip compared to those who watched the other conditions.</p> <p>Interdisciplinary: No</p>

27	<p>Developing LAMP to be specific for the detection of <i>Pseudogymnoascus destructans</i> Jasmine Grey Advisor: Hannah Reynolds, Biological & Environmental Sciences</p> <p><i>Pseudogymnoascus destructans</i> (Pd) is a fungus that is causing the White-nose syndrome epidemic in bats in the United States and Canada. We are developing a reliable and cheap detection system called loop-amplification mediated PCR (LAMP) to identify Pd on infected bats and cave surfaces. The advantage of using LAMP over other PCR techniques is that it uses isothermal conditions (one temperature), which lowers the cost and makes it field ready. I have tested 10 different primer sets for commonly studied molecular markers. My results show that these loci are too conserved within <i>Pseudogymnoascus</i> to be optimal for LAMP primers. Therefore, I am comparing the genomes of Pd and 20 <i>Pseudogymnoascus spp.</i> to maximize nucleotide differences for new primer sets. My research goal is to develop LAMP to be faster, more specific, and more accessible than current methods for the detection of Pd.</p> <p>Interdisciplinary: No</p>
28	<p>An analysis of fecal microbiome changes in lab mice in response to changing diets Bernard Henry with Phoebe Ermert, Kayla Deguzman Advisor: Patrice Boily, Biological & Environmental Sciences</p> <p>Although the human body is well-regulated to maintain homeostasis via negative feedback systems, fat storage is an exception. The body stores fat from the diet to an almost unlimited degree, rather than down-regulating. Diet has been studied in relation to mass gain and fat accumulation, however it is also a strong predictor of microbiome composition. Previous studies have investigated the relationship between diet and gut bacteria by experimentally changing the diet (Hildebrandt et al 2009) or comparing the microbiome of obese and lean individuals (Goffredo et al. 2016). The objective of this study is to determine collective and individual microbiome changes in response to changes in diet from standard carbohydrate to high fat, then returning to standard. We used 16s rRNA barcoding to identify bacterial compositions associated with high and low obesity during diet transitions.</p> <p>Interdisciplinary: No</p>
29	<p>Analysis of toxin genes in cyanobacteria populations from various Connecticut lakes in 2018 Ashley Horton with Chris Marji Advisor: Edwin Wong, Biological & Environmental Sciences</p> <p>Cyanobacteria blooms have become an increasingly important health issue for lake communities in the summer months because they are capable of producing various toxins hazardous to humans and animals. We were interested in investigating whether 2018 cyanobacteria populations were dangerous or benign by determining if toxin producing genes were present in the populations. Here we have tested DNA samples of cyanobacteria from Candlewood Lake, Lake Zoar, and Beseck Lake for microcystin and saxitoxin genes. Microcystin is a liver toxin, while saxitoxin is a neurotoxin. We used qPCR to quantify the percentage of these toxin genes in the populations we sampled. Our data supports the idea that these genes are present in our cyanobacteria DNA samples.</p> <p>Interdisciplinary: No</p>

30	<p>Evaluating the misuse and abuse of prescription drugs on campus with the CHOICES program. Be Smart. Don't Start.</p> <p><i>Gabrielle Hurlbert</i> with Genesis Torres, Matt Paternostro, Kevin Brown Advisor: <i>Emily Stevens, Health Promotion & Exercise Sciences</i></p> <p>The purpose of this study was to evaluate the ability of a health promotion intervention to raise awareness about the dangers of abusing prescription drugs. Prescription drug abuse has become a problem across college campuses nationwide. Upon completing a needs assessment on campus, we found a need for more programming at WCSU to raise awareness about this issue. We created an "UnLearn" Wall so that students could write words of encouragement, share stories, or messages to bring students together in recognizing the magnitude of this health issue. We held an informational table at the annual health fair, we displayed the UnLearn Wall and a tri-fold poster with informational facts about prescription drug abuse on campus, CHOICES contact information and prevention strategies.</p> <p>Using a pretest, post-test design, we evaluated the ability of the program to effectively measure all components of self-efficacy and awareness to ensure a successful intervention.</p> <p>Interdisciplinary: No</p>
31	<p>The effect of social media platforms on marketing strategies over time</p> <p><i>Joseph Kitzmiller</i> Advisor: <i>Anna Malavisi, Philosophy and Humanistic Studies</i></p> <p>Marketing is essential to selling products and services but some companies don't focus on their marketing department as much as they should. Studying history provides one a chance to see which mistakes were made in the past in order to avoid them going forward. It also provides a guideline on what has worked in the past and helps companies study trends in their field. Businesses can only benefit from studying marketing trends over time in order to have better knowledge on aspects like their marketing strategy and target market. Many companies in today's business world do not properly utilize this information. Social media platforms have rapidly improved businesses over time and the way they market creating more opportunities for success. This project will use an interdisciplinary approach, integrating the disciplines of marketing and history to help us better understand this problem.</p> <p>Interdisciplinary: Yes (Marketing & History)</p>

32	<p>The effects of domestic violence on women's mental health <i>Katie Koulogianis</i> Advisor: <i>Anna Malavisi, Philosophy and Humanistic Studies</i></p> <p>Domestic violence is prevalent on a global scale and has a detrimental impact on women’s health, particularly on their psychological well-being. Depression, mood disorder, anxiety disorder, substance abuse disorder, and post-traumatic stress disorder are all mental health disorders that are associated with repeated victimization. Psychological impacts of domestic violence can be life-long. Studying the effects of domestic violence on women’s mental health through an interdisciplinary lens will yield greater understanding of this issue and allow for possible solutions to this complex problem. One discipline alone cannot explain the effects of domestic violence on women’s mental health. In order to identify the mental health disorders associated with this type of victimization, we must incorporate the study of psychology but also the study of Justice and Law Administration, specifically criminology. This is necessary to study the impact of victimology and the ways to prevent domestic violence.</p> <p>Interdisciplinary: Yes (Interdisciplinary Studies Major)</p>
33	<p>College student confidence for future economic success <i>David Kuhn</i> Advisor: <i>Rotua Lumbantobing, Social Sciences</i></p> <p>My research intends to study the confidence of college students as they prepare to enter the workforce. The question: Are students optimistic about their economic futures? Plenty of studies have been conducted by policy, educational, and business groups into this subject but few have examined trends in student attitudes over time in conjunction with the elements that may contribute to those attitudes. To attempt to fill this gap in knowledge, I have conducted a meta-analysis of the most relevant available studies and considered factors such as student behavior, economic trends, and institutional policies within colleges. The expected conclusion is that, even though attitudes may have brightened somewhat since the 2008 Recession, students are still pessimistic about their futures. This is likely due to growing student debt and lack of career preparation by students themselves.</p> <p>Interdisciplinary: No</p>
34	<p>Mindfulness-based stress reduction for WCSU students <i>Michaela Lawlor</i> with Sean Clarke, Shawna deHoff, Ryan Koschel Advisor: <i>Emily Stevens, Health Promotion & Exercise Sciences</i></p> <p>The purpose of this project was to evaluate the ability of a web-based program to reduce stress among students at WCSU. The project used the Mindfulness Based Stress Reduction (MBSR) technique as a framework for the project. The program consisted of three stress reducing modules, including guided meditation activities, delivered through a web-based platform designed for the project. The online portion was supplemented by a chocolate meditation activity at the WCSU Health & Wellness Fair. Stress levels of students were measured and evaluated with a pretest and a post-test. Changes in constructs from The Health Belief Model (HBM) and The Transtheoretical Model (TTM) were also examined to evaluate the efficacy of the intervention. The overall goal was to expand the use of mindfulness-based stress reduction among WCSU students in order to provide stress-reducing techniques that could be used within everyday life.</p> <p>Interdisciplinary: No</p>

35	<p>Investigating different methods for finding Earth-like exoplanets <i>Stephanie Lemire</i> Advisor: <i>Dennis Dawson, Physics, Astronomy, and Meteorology</i></p> <p>Exoplanets are planets that orbit stars besides our Sun. Astronomers are especially interested in finding Earth-like exoplanets that could possibly support life. This research will investigate which method of exoplanet finding is most successful in finding Earth-like planets by comparing the four most prominent methods: transit, radial velocity, microlensing and direct imaging. The research will compare the number of confirmed Earth-like exoplanets found by each method, as detailed in various data archives, to discern which method is the most reliable in finding these exoplanets. As a result, more focus can be placed on using that method to find exoplanets.</p> <p>Interdisciplinary: No</p>
36	<p>Impact of Connecticut's 2015 drug law changes <i>Adam Liscinsky</i> Advisor: <i>Divya Sharma, Justice and Law Administration</i></p> <p>This research evaluates Public Act 15-2 Section 1 (subsections a, c, and d) that relates to the possession of controlled substances in Connecticut. It examines the elimination of mandatory minimum sentencing for narcotic possession and its impact on drug abuse violations. This research makes use of the data available in the Uniform Crime Reporting Program in Connecticut and supplements it with information available in scholarly sources. It examines data in the cities of Bridgeport, New Haven, and Hartford, as well as the suburban towns of Newtown, Litchfield, and Mansfield. The research found that drug abuse violations increased in 5 of the 6 areas examined with Hartford being the exception, and the drug abuse violations doubled in New Haven and Bridgeport.</p> <p>Interdisciplinary: No</p>
37	<p>Police perceptions about the use of body-worn cameras <i>Zachary Lopez</i> with Maribel Ramirez Advisor: <i>Divya Sharma, Justice and Law Administration</i></p> <p>This research explores police perceptions of body-worn cameras in Danbury and New Milford police departments. The body-worn cameras are recording devices worn by police officers to record their interactions with the public. The need for body-worn cameras has increased due to allegations of abuse of authority by police officers in some locations and the resultant public mistrust. Though many studies have focused on public view of these tools, there are few that have systematically studied police perceptions. Therefore, this research focuses on the police perspective of the policy implementation, privacy, public interaction, and clearing ambiguity about the use of body-worn cameras. The findings presented here are based on the primary data collected from officers at the police departments in Danbury and New Milford across varying shifts.</p> <p>Interdisciplinary: No</p>

38	<p>Theory-based nutrition intervention for WCSU Students <i>Zachary Mammone-Hottes</i> with Heather Repko, Joanna Pitrelli, Vincent Sementilli, Alex Miller, Zachary Conn Advisor: <i>Emily Stevens, Health Promotion & Exercise Sciences</i></p> <p>The purpose of this study was to design, implement, and evaluate a theory-based health intervention focused on nutrition behavior to combat the prevalence of obesity on college campuses. Research has shown that obesity is a problem among college age students in the United States. College students face barriers that prevent them from eating healthy during their college career. Three programs were designed to reach both residential and commuter students at WCSU. They included a dining hall event, a social media campaign, and an informational table presented at the annual health and wellness fair. The program was evaluated using a pretest, post-test design with self-report measures to assess changes in fruit and vegetable consumption, sugar-sweetened beverage consumption, as well as theoretical constructs related to healthy eating. The ability of the intervention to impact targeted variables will be discussed.</p> <p>Interdisciplinary: No</p>
39	<p>Exploring magnetic carbon nanotubes as solid phase extraction media for trace metal analysis <i>Alexander Matteson</i> Advisor: <i>Yuan Mei-Ratliff, Chemistry and Biochemistry</i></p> <p>A method for extracting, purifying, and concentrating trace metal ions was explored. Instead of the conventional solid phase extraction cartridges, an iron oxide magnetic core was functionalized first with silica, then further functionalized with octadecyl alkene chains in order to promote van der Waals interactions with functionalized carbon nanotubes. The nanotubes were functionalized with ethylenediamine, which has a strong affinity to some metal ions, specifically lead. By joining the magnetite with the functionalized nanotubes, it is then possible to separate metal analytes from a matrix magnetically, and then pre-concentrate them by strategic elution for their subsequent quantification.</p> <p>Interdisciplinary: No</p>
40	<p>Enhanced whiteboard-style lecture beats PowerPoint <i>Madisyn Mazik</i> Advisor: <i>Bernard Gee, Psychology</i></p> <p>Many college instructors have chosen PowerPoint (PPT) presentations over traditional lecturing methods (Apperson et al. 2006). Student preferences have been towards PPT, even though most empirical evidence has shown no learning gains when compared to overhead and chalkboard lectures (Susskind 2005). Here, an enhanced whiteboard lecture approach was developed using a chalkboard-style format with visual aids. This lecture technique and PPT presentations were both evaluated on learning outcomes in 200-level undergraduate psychology courses. Students that attended the enhanced whiteboard lectures scored higher on tests than students presented with PPT slides on the same content. Active involvement by the professor correlated with students higher retention of material. This was due to the interactive nature of the enhanced whiteboard lecture, as compared to the PPT presentation with little to no interactive features. Mirror neurons, a mimicry system activated by watching others movements, may play a role in these results (Rizzolatti 2005).</p> <p>Interdisciplinary: No</p>

41	<p>The impact of a Health Promotion Program on physical activity and healthy eating among Danbury Middle school students <i>Kerri-Ann McNally</i> with Shantell Dirskell, Karla Huwae, Heather Morey Advisor: <i>Krista Heybruck, Health Promotion & Exercise Sciences</i></p> <p>The purpose of this study was to evaluate a theory-based health promotion program focused on reducing the risk of pre-diabetes and obesity among middle school students. According to CDC, rates of obesity and pre-diabetes have increased among the adolescent population. A program was designed to address this issue among middle school students in Danbury. The program included an indoor field day at the Danbury Dome where students participated in four stations geared towards the components of physical fitness. A fifth field day station included information on the Let's Go! 5-2-1-0 program, which promotes a balance of physical activity and healthy eating. The program was evaluated using a pretest and post- test design; surveys were used to assess changes in dietary and physical activity behaviors, as well as Social Cognitive determinants of behavior.</p> <p>Interdisciplinary: No</p>
42	<p>Application of Hückel Molecular Orbital Theory to zigzag carbon nanotubes <i>Timothy Meksvanh</i> Advisor: <i>Yu-Fong Yen, Chemistry and Biochemistry</i></p> <p>Some carbon structures have unusual properties. For example, carbon nanotubes (CNTs), tubes made from rolling a sheet of graphene, have high conductivity, strength and thermal conductance. The goal of this work was to investigate how altering the structure of CNTs (single-walled, zigzag CNTs, in particular) affects their conductivity by utilizing a modified version of the Simple Hückel Molecular Orbital (SHMO) model, a method of determining the relative energies of a system's molecular orbitals. 3D models of CNTs were made from pen and paper. Interactions of their p orbitals, which depend on the system's geometry, were mapped out in a matrix, introducing two variables, a and b, as matrix elements. After selecting values for a and b, the determinant was set to zero and solved using MATLAB. Solutions were collected from different combinations of a and b. Finally, a linear regression was performed in Microsoft Excel to extrapolate the data.</p> <p>Interdisciplinary: No</p>
43	<p>An analysis of the relationship between diet, appetite and gut microbiota in lab mice <i>Kaitlyn Meyer</i> with Xiomara Martinez Advisor: <i>Edwin Wong, Biological & Environmental Sciences</i></p> <p>Obesity is a growing problem today especially in the United States. A higher appetite can lead to overconsumption, which contributes to mass gain and possible obesity. The microbiome produces metabolites that act as hormones, which may affect appetite. The purpose of this study is to analyze microbiota differences in mice with different appetites when changing from a standard carbohydrate diet to a high fat diet. We investigated the response of lab mice fecal microbiota and appetite to a change in diet. We measured appetite by the amount of food consumed. We identified microbiome differences of high and low appetite mice by comparing the microbial compositions before and after the diet transition from standard carbohydrate to high fat. We hypothesized that mice with a higher appetite had a different gut microbiome than mice with a low appetite.</p> <p>Interdisciplinary: No</p>

44	<p>Effects of appetite on weight regulation <i>Cindy Mezidor</i> with Shannon Carney Advisor: <i>Patrice Boily, Biological & Environmental Sciences</i></p> <p>We investigated how a change in diet can affect the appetite and body weight regulation of mice. Weight and food intake of 15 mice were tracked for 23 weeks. For 6 weeks, the mice were fed on a standard diet and then switched to a high fat diet for 10 weeks. Afterwards, we returned the mice to their standard diet and weighed them until their weight stabilized (~7 weeks). We expected to see an increase in food consumption and weight while on the high fat diet, and a decrease in food consumption and body weight after the mice had returned to a standard diet. However, our results showed the opposite with regards to food intake. There was a decrease in food consumption while the mice were on a high fat diet and a gradual increase in food consumption when returned back to standard diet.</p> <p>Interdisciplinary: No</p>
45	<p>ArcPlanner: An interactive planner app <i>Jonathan Middleton</i> with Matthew Chastain, Justin Grabowski, Kevin Kelly Advisor: <i>Sean Murthy, Computer Science</i></p> <p>ArcPlanner is a mobile app to help organize a busy life. It organizes tasks into “arcs”, which represent long-term or multi-faceted goals. Each arc may have tasks, or even “sub-arcs” within them. This concept is based on the idea that complex or challenging goals can be achieved by breaking them into smaller, more manageable pieces. The arc-task relationship and the app’s user-interface are designed to be simple and intuitive so users can quickly learn the app and use it to track their personal and professional goals. For example, the app provides both list and calendar views of arcs and tasks, and can display tasks by due dates. ArcPlanner is developed in Dart language using modern data and software-engineering principles learned in WCSU courses CS 298 (DevOps) and CS 305 (Database Application Engineering). The complete source and documentation are available for anyone to freely use and modify (https://github.com/smacademic/project-cgkm).</p> <p>Interdisciplinary: No</p>
46	<p>Exploring the town-gown relationship between WCSU and downtown Danbury <i>Victor Namer</i> Advisor: <i>Rotua Lumbantobing, Social Sciences</i></p> <p>Existing literature demonstrates that the more engagement one has, either through their university co-curricular activities or through service learning in the community, the more satisfaction one has with their respective university.</p> <p>Currently, no study examines the role of recreational engagement with one’s community and its effects on student satisfaction. Utilizing an online questionnaire examining students’ awareness of the downtown Danbury area, whether students have been downtown, and the barriers/motivators involved in visiting the downtown area, this study finds that there are significant barriers preventing students from visiting downtown such as transportation issues and lack of general interest. Additionally, local businesses/organizations downtown are interested in hiring WCSU student workers, interns, and implementing discounts. Further research needs to be conducted to evaluate the effects of community engagement on academic performance, whether job opportunities/internships or discounts on the Main Street area are being utilized by the university, and whether students know about them.</p> <p>Interdisciplinary: No</p>

47	<p>Reduction in sugar transporters of bat fur yeast genome compared to related skin infection and beer yeasts Rebecca Norton Advisor: Hannah Reynolds, Biological & Environmental Sciences</p> <p>White-Nose Syndrome (WNS) is a life-threatening fungal disease in bats. Some bat species with resistance were found to have <i>Debaryomyces udonii</i> colonies in their fur, suggesting <i>D. udonii</i> imparts protection against WNS. Here, we explore the genetic differences between <i>D. udonii</i> and <i>Debaryomyces</i> species. This genus is known for high osmotolerance, relying on the high osmolarity glycerol (HOG) pathway and various polyol transporter genes. We hypothesized these would be preserved. We analyzed 7 published assemblies and 2 published annotations and a newly sequenced and annotated genome to predict gene function in unmatched genomic regions of, and to find unique genes within, the <i>D. udonii</i> genome. We found 320 unique genes compared to <i>D. hansenii</i> and <i>D. fabryi</i>. We also found that the HOG pathway is preserved, along with polyol transport genes. However, <i>D. udonii</i> has a smaller genome than related species, with a dramatically reduced number of sugar transport genes.</p> <p>Interdisciplinary: No</p>
48	<p>Effect of freeze-thaw events on denitrification of soil nitrogen Benedi Nyange Advisor: Hannah Reynolds, Biological & Environmental Sciences</p> <p>Freezing and thawing are known to cause physical and biological changes in soil. The increase in denitrification following thawing may be attributed to the diffusion of organic substrates available to denitrifies from disturbed soil aggregates. Here, I evaluated the effect of freezing and thawing on N₂O production in soil presented in a greenhouse by using different soil samples before and after nitrogen levels to detect the levels of nitrogen in each soil type. I investigated how the freeze thaw cycles affected soil physical properties and microorganisms. I hypothesize that freeze-thaw events will lead to substantial nitrogen loss from soils. I predicted that there will be lower nitrogen in soils after multiple freeze-thaws. The level of mineral nitrogen released will be directly related to the soil microbial biomass.</p> <p>Interdisciplinary: No</p>
49	<p>Who are you to judge? A study examining the stigma surrounding tattoos and piercings Erica Ohrablo Advisor: Rondall Khoo, Psychology</p> <p>This study examines the stigma surrounding people with body modifications. Because people with tattoos and piercings are often seen as unprofessional and less capable compared to people without, I hypothesize that photos of people with tattoos and piercings will be scored significantly lower than the photos of people without. Students viewed four images of either men and women with tattoos and piercings or men and women without. They then rated the images on several ten- point scales related to common stereotypes. The ratings will be used to determine the validity of the aforementioned hypothesis.</p> <p>Interdisciplinary: No</p>

50	<p>Green product purchase behavior <i>Albert Oliveira</i> Advisor: <i>Ronald Drozdenko, Marketing</i></p> <p>The purpose of this reserach is to evaluate how consumers behave regarding green products and to evaluate the shift of sustainable trends. This research will evaluate and explore the possible consumer attitudes and beliefs towards factors such as price, brand reputation, company social responsibility, etc. Within marketing, students will be using various online survey tools to conduct market research; these surveys will examine the relative influence that these variables have on consumer behavior. Audiencies for this survey will also be segmented through means of gender, age, or ethnicity. Feelings and attitudes towards brands will be rated using a matrix or Likert scale. The sample population will be obtained from students conducting research throughout Marketing 310, consumer behavior. Attitudes and perception regarding these results display what are important attributes to market when promoting a “green” product, as well as what classifies to consumers as green products.</p> <p>Interdisciplinary: No</p>
51	<p>Mental rotation performance without eye movements <i>Jessica Plouffe</i> with Maura R. Gissen, Brittney Romagna Advisor: <i>Bernard Gee, Psychology</i></p> <p>Mental rotation of three-dimensional objects is a spatial reasoning task that relates to a variety of visual processes, such as arranging objects into a box, and is also implicated in STEM ability (Hegarty, 2018). While eye movements are important for spatial reasoning, little is currently known about how restricting eye movements affects performance. This is the first study to attempt to investigate this. Participants performed a computerized mental rotation task, with alternating blocks of free and restricted eye movements. We hypothesized that restricted eye movements would decrease performance. While lack of eye movements did decrease accuracy rates, reaction times were actually faster than during the free- gaze condition. This was probably due to task difficulty rather than efficiency. Thus, eye movements are very important, but not absolutely necessary, for spatial reasoning, and their use requires additional time.</p> <p>Interdisciplinary: No</p>
52	<p>Evaluation of the Risk Reduction Earned Credit Program in Connecticut <i>Tashai Price</i> Advisor: <i>Divya Sharma, Justice and Law Administration</i></p> <p>This research evaluates the Risk Reduction Earned Credit program in Connecticut that is aimed at promoting good behavior and program participation among offenders, and increasing prison safety for staff. In doing so, it focuses on reducing recidivism rates and the related cost of incarceration. As earned credit early release programs have been implemented across the country, this research draws on consistencies among these programs and identifies the key factors that result in its success. In some cases, the earned credit program helps offenders earn towards lowering their risk and allowing them more freedom, while in other cases, the earned credit can build toward an early release of an offender. This research found that overall the program has been effective in increasing rehabilitation of offenders and lowering recidivism.</p> <p>Interdisciplinary: No</p>

53	<p>Earthworms improve <i>Crassula ovata</i> growth rate in sterilized soil: A controlled experiment. <i>Michelle Reinoso Vasquez</i> Advisor: Hannah Reynolds, Biological & Environmental Sciences</p> <p>It has been understood that healthy soil is needed for a viable <i>Crassula ovata</i> jade plant, to grow. However, the exact impact earthworms have on potted <i>Crassula ovata</i> soil is unknown. Previous work describes the impacts earthworms have on decomposition rates and how it affects soil chemistry, but no papers go in depth of how earthworms can impact the growth rate of the common household jade plant. This study sees the short-term impact earthworms have on newly clipped leaves in sterilized soil from Western Connecticut State University’s Westside nature preserve. A series of jade plants were potted in sterilized soil, one group with earthworms and one without, and grown in the greenhouse to see how earthworms impacted soil acidity, nitrate levels, phosphate levels and growth rates of the jade plants. This study gives jade plant owners a new approach to better care for their indoor houseplants.</p> <p>Interdisciplinary: No</p>
54	<p>The blue wall of shame <i>Natalie Rodriguez</i> with Allison Salzo Advisor: Terrence Dwyer, Justice and Law Administration</p> <p>Sexual harassment, gender discrimination, and workplace sexual assault in the United States is a serious issue confronted by female employees. The recent MeToo movement, as well as the Supreme Court confirmation hearings for Brett Kavanaugh, have placed a national spotlight on this issue. What is rarely discussed are the specific instances of harassment, discrimination and sexual assault confronted by female police officers within their own agencies. It is the hidden shame of policing in the United States which accounts for many female officers either leaving law enforcement or suffering in silence. Relevant research, a survey instrument, and an analysis of reported female police officer civil claims from 2000- 2018 is used to examine sexual harassment, gender discrimination, and sexual assault experienced by female police officers from their male colleagues. Police employer interventions are explored to combat this ongoing problem within the ranks of American law enforcement.</p> <p>Interdisciplinary: No</p>
55	<p>The effect of attractiveness on positive and negative descriptions <i>Sarah Roessler</i> Advisor: Rondall Khoo, Psychology</p> <p>Is your opinion of someone influenced based on their appearance? That is the halo effect. It is the tendency for an impression created in one area to influence opinion in another area. Many studies throughout the years have shown that attractiveness has a strong influence on the way people perceive others and the attributes they would use to describe them. Will attractiveness influence opinion even if the person is described negatively? To test this, participants were given two of six descriptions, one positive one negative. Paired with each description was either no picture, an attractive picture, or an unattractive picture. The participants then filled out a survey to assess their opinion of the picture/description they had. My hypothesis is that the scenario with the attractive picture and negative description will show the most influence from the halo effect, while the scenarios with no picture will show the least.</p> <p>Interdisciplinary: No</p>

56	<p>How to reach to the peak <i>Maria Rojas</i> Advisor: Anna Malavisi, Philosophy and Humanistic Studies</p> <p>The purpose of this study is to identify and quantify the different business administration styles of three different companies. This study will identify which management styles are more productive and why. It will also analyze economic indicators to assess the long-term viability of the company's current plan along with a SWOT analysis to interpret the effectiveness of the management styles. The importance of this paper is to find the formula of success for these companies and how they can be applied to other businesses. This study provides further insight into how the application of business administration can lead to sustained economic growth. An interdisciplinary approach is used bringing the disciplines of economics and business together. The dichotomy between the economic goals and administrative goals is imperative to the long term direction and success of the company. This analysis will further expose this intricate relationship.</p> <p>Interdisciplinary: Yes (Business Administration & Economics)</p>
57	<p>Can multiple pathways to citizenship for undocumented immigrants be an efficient way to keep the American economy first? <i>Kittikorn Sathong</i> Advisor: Rotua Lumbantobing, Economics</p> <p>Immigration in the United States has largely contributed to the growth and performance of the American economy, but growing concern for national security has placed much emphasis on the need for immigration reform. Immigration allows for the accumulation of new ideas that, with enough human capital investments, turn into innovations that put an economy ahead in the world market. Will federal legislation increase participation and completion rates among the immigrant population at higher education institutions? Will completion rates help to effectively reduce poverty within communities across the United States and create a more egalitarian society? Will this simultaneously help the U.S. economy stay on top? This research explores the different dimensions of immigration reform and provides an economic analysis of the costs and benefits of multiple pathways to citizenship.</p> <p>Interdisciplinary: No</p>

58	<p>The effect of depression and anxiety on athletic performance in collegiate athletes <i>Harrison Schreiner</i> Advisor: <i>Anna Malavisi, Philosophy and Humanistic Studies</i></p> <p>Psychology is a growing field of study to examine behavior in an increasingly complex world. The jobs of health promotion and exercise science professionals such as collegiate coaches and athletic trainers are built upon increasing performance of their athletes. It is important for health professionals to understand the mental demands of their athletes to help them succeed. If athletes are facing mental health issues such as depression or anxiety, will their performance suffer in training and competition? Additionally, what factors specifically affect the mental health of athletes? This project will examine the effects of depression and anxiety on athletic performance in collegiate athletes. The research will use an interdisciplinary approach within the scope of psychological measures of mental health and the physical performance measures of exercise science. Additionally, risk factors for anxiety and depression will be examined, which will help determine how to manage these factors in collegiate athletes.</p> <p>Interdisciplinary: Yes (Health Promotion & Exercise Sciences, Psychology)</p>
59	<p>Stress and dealing with stress: An evaluation of the resources at the Waterbury Police Department <i>Shawn Segal</i> Advisor: <i>Divya Sharma, Justice and Law Administration</i></p> <p>This research paper evaluates the resources available to the police officers at the Waterbury Police Department such as the Cooper's Color Code and the Emergency Action Plan (EAP). These resources provide assistance to officers in dealing with various types of stress. The paper explores sources and effects of the stress factors on a police officer's physical health, mental health, and relationship problems (personal and professional), and the resources available to deal with the same. The study is based on primary data collected from the Waterbury Police Departments across various police/work shifts.</p> <p>Interdisciplinary: No</p>
60	<p>Colonial frameworks and transgender: Analysis of Twitter discourse around selected keywords <i>William Silvia</i> Advisor: <i>Carina Bandhauer, Social Sciences</i></p> <p>Historical accounts of colonialism and its resistance offer a framework for evaluating a variety of oppressions. This study used these frameworks to analyze transgender-related tweets as part of a larger investigation of social attitudes. Two studies were conducted using random samples drawn from 2,012 tweets with transgender-related keywords from 1,526 users (M = 1.32 tweets, SD = 1.25). Study 1 explored 100 tweets through content analysis with predicted themes of violence, inequality, erasure, and support. In Study 2, responses in 50 tweet "threads" were analyzed. Tweets expressing support (15%), describing inequality (12%), and advocating anti-trans ideology (9%) were most common. Additional themes included transgender representation in media (7%) and transgender athletes (8%). Consistent with recorded experiences of racialized minorities, findings suggest coded language is instrumental in trans oppression. Finally, data suggests an emerging narrative of support and resistance among twitter users using transgender keywords.</p> <p>Interdisciplinary: No</p>

61	<p>Development of maltose binding protein purification for cytochrome c <i>Maximillian Simpson</i> Advisor: <i>Helena Prieto, Chemistry and Biochemistry</i></p> <p>Apoptosis, a type of programmed cell-death (PCD), is typically used by higher multicellular organisms for the regulation of development. It has been observed that the blood stages of <i>P. falciparum</i>, the malarial parasite, consist of apoptosis- like characteristics during stress conditions. PCD has also been observed in the mosquito life cycle stages of the parasite using cellular and biochemical means. In order to test this pathway, the recombinant cytochrome c must be obtained to measure the protease activity using a fluorogenic substrate in <i>P. falciparum</i> lysate. Data on the protein expression and purification, as well as fluorogenic assay data, will be presented.</p> <p>Interdisciplinary: No</p>
62	<p>Step up to the plate: A theory based health promotion program to promote proper nutrition in middle school students <i>Renee Skidmore</i> with Samantha Lawlor, Marissa Zabriskie Advisor: <i>Emily Stevens, Health Promotion & Exercise Sciences</i></p> <p>The purpose of this study was to design, implement, and evaluate a theory-based health promotion program to promote healthy eating among middle school students in Danbury. The prevalence of adolescents meeting the national guidelines for fruit and vegetable consumption is low. The program was designed to promote healthy eating using an experiential, skill-building workshop based on Social Cognitive Theory. The interactive program introduced students to the food groups and healthy eating choices through a healthy cooking class, a bingo game, and take- home cookbook. Pretest and post-test measures were used to assess changes in behavior and theoretical constructs among the middle school students.</p> <p>Interdisciplinary: No</p>
63	<p>Can education and awareness help combat the opioid epidemic? <i>Joseph Tamberelli</i> Advisor: <i>Divya Sharma, Justice and Law Administration</i></p> <p>This research study evaluates the Heroin Education Action Team (HEAT), a drug awareness program in Connecticut. Members of the community who have lost loved ones to the opioid crisis, have joined the District Attorney’s office to form the Connecticut Chapter of the HEAT. The program has engaged people in over 70 cities in CT to share their stories and raise awareness. In CT, the heroin related deaths have increased from 355 in 2012 to 1,017 in 2018. This research study is a continuation of a project that was started over a year ago and now includes primary data collected at the Western Connecticut State University to assess the awareness about the HEAT program. It is then compared to the awareness about the opioid crisis in the larger community. The preliminary analysis indicates lower awareness and some criticism about the state not doing enough to help with deaddiction and rehabilitation programs.</p> <p>Interdisciplinary: No</p>

64	<p>Exploring white collar crimes in comparison to street crimes Jayme Thompson Advisor: Hasan Arslan, Justice and Law Administration</p> <p>This research investigates whether white collar crime is looked at in the same light as other criminal offenses. Corporate professionals often take advantage of their control with the power and complexity held within their committed crimes.</p> <p>Furthermore, white collar crimes require longer investigation with technical investigative skills. This research will analyze cases of different outcomes to seek differences within the prosecutions, and will compare white collar crime prosecutions to those of other criminal offenses to discover the varying procedures and consequences. The goal of this research is to determine whether or not white collar crime is looked at differently than other criminal offenses.</p> <p>Interdisciplinary: Yes (I am an accounting major who has been working with Dr. Arslan (justice and law professor). I would like to be registered as an accounting major for WRD.)</p> <p>Interdisciplinary: Yes (Justice and Law Administration and Accounting)</p>
65	<p>Recidivism Christian Thurmond Advisor: Anna Malavisi, Philosophy and Humanistic Studies</p> <p>Recidivism is one of the most fundamental concepts in criminal justice, the lack of job opportunities is the number one reason for recidivism. Interdisciplinary studies gave me get a better understanding on why this is a problem, which is not recognized by the criminal justice system. The goal of the criminal justice system is to help prevent recidivism. Some ways they can help prevent it from happening are preparation, transitioning, and stabilization of individuals. Evaluating the studies of recidivism show a cycle of increasing recidivism in today’s society, so why call a correctional facility a place for rehabilitation? This project will use an interdisciplinary approach to investigate this problem. It’s a social problem that affects not just the re-offender, but society as a whole.</p> <p>Interdisciplinary: Yes (Justice and Law Administration and Sociology)</p>
66	<p>Characterization of Babesia Microti’s cytochrome c Layra Valdes Advisor: Helena Prieto, Chemistry and Biochemistry</p> <p>Babesia is an <i>Apicomplexan</i> parasite that infects red blood cells, and it is transmitted by deer ticks. <i>Theileria microti</i> is the variety that affects people in the American Northeast. This parasite looks exactly like the parasite that causes Malaria, even though these parasites are not closely related taxonomically. When the tick bites a human, they transmit the parasite to the red blood cell where it develops and eventually destroys the red blood cell. Babesiosis can be asymptomatic or it can develop flu-like symptoms; babesiosis can cause hemolytic anemia due to the destruction of the red blood cells. The objective of this study is to characterize <i>Babesia Microti</i>. We want to extract cytochrome c from the parasite to relate and contrast these results to known results of malaria and other apicomplexan such as <i>Toxoplasma</i> and <i>Trypanosoma</i>, this might be a key in understanding the phenotypic similarities between the protozoan parasites.</p> <p>Interdisciplinary: No</p>

67	<p>A replication of the implicit association test: Evaluating sexual orientation bias <i>Taisha Vargas</i> Advisor: Robin Gustafson, Psychology</p> <p>Due to our implicit feelings, we may be unable to say what we are truly feeling. Implicit biases are attitudes and beliefs that we are unwilling or unable to report. Response latency can identify implicit attitudes. An extensive amount of research conducted by Anthony Greenwald and his colleagues, supports this idea. The experiment conducted required participants to place words and images into their respective categories, as fast as possible, without errors. The words and images related to homosexuality and heterosexuality, testing whether a preference for one over the other exists. The results supported my hypothesis and matched Greenwald’s original findings of the identification of implicit biases.</p> <p>Interdisciplinary: No</p>
68	<p>Compensation for NCAA Division I Student-Athletes <i>Joseph Waite</i> with Lauren Bradshaw Advisor: Rotua Lumbantobing, Economics</p> <p>The debate surrounding compensation for NCAA athletes has been a long time in the making, with football, the “profit center” at the forefront of the conversation. As money keeps growing in college sports, so do concerns about how the money is being spent. Performing a quantitative analysis of NCAA Division I football player profit-generating performance statistics helps to develop a deeper understanding and appreciation of the argument for compensating student-athletes. It is important to consider current revenues and expenses for leading college football teams across the NCAA as part of this equation to provide insight into the appropriate level of compensation. Evaluating a multitude of NCAA college football players across various schools within different conferences lends itself to a well- rounded and informed argument. Making money through endorsements while excelling in sports does not appear to hurt interest in the Olympics, so what makes college football any different?</p> <p>Interdisciplinary: No</p>
69	<p>Synthesis of the Hexahydrothieno[3,2-b]thiophene Heterocyclic Core <i>Daniel Wong</i> Advisor: Forest Robertson, Chemistry and Biochemistry</p> <p>The development of new and efficient methods for the formation of C—S bonds is of significant importance. Various methods have been developed that describe the formation of C—S bonds; however, most of these processes require that the substrates be activated before any reactivity is achieved. Robertson et al. described a facile two-step process for the formation of C—S bonds starting from two alcohols, which was then applied to an intramolecular process for the formation of chiral tetrahydrothiophenes. As noted in the literature, octahydrothiopyrano[3,2- b]-fused heterocycles are implicated in a plethora of biologically active molecules such as the cephalosporins, dithiathromboxanes, and many others. In an effort to expand the scope of the intramolecular C—S bond-forming process and to access other highly privileged scaffolds this chemistry shall be thoroughly investigated.</p> <p>Interdisciplinary: No</p>

70

An evaluation of the Danbury Police Explorers Program

Edisson Yunga

Advisor: Divya Sharma, Justice and Law Administration

This research paper evaluates the effectiveness of the Danbury Police Explorer Program. It offers young adults, ages 14-21 that may be thinking about a career in law enforcement an introduction to training, practical experience, and other activities. It has three main goals: to further Explorer's education; to encourage Explorer's participation in a rewarding and productive service activity; and, to enhance Explorer's preparation for future roles as citizens, community members, leaders and future law enforcement careers. It studies different perspectives, attitudes and expectations including similarities and differences among senior and rookie Explorers. The findings are based on the primary data collected from the Explorers and Advisors at the Danbury Police Department.

Interdisciplinary: No

Judges

Rakhee Agarwal
Maya Aloni
Hasan Arslan
Mohsen Alizadeh
Galina Bakhtiarova
Ethan Balk
Diane Bennett
Keith Betts
Adam Brewer
Kim Bridges
Kevin Burnard
Eileen Campbell
Mark Case
Stavros Christofi
Denise Colaianni
Roger Conner
Marie Elena Cordisco
Richard Corzo
Patricia Cumella
Stuart Dalton
Robert Dolan
Libby Fedorko
Jennifer Flynn
Kristin Giamanco
Edward Gleason
Maribeth Griffin
Robin Gustafson
Josie Hamer
Xiaoqi Han
Amanda Harkin
William Joel
Rayda Krell
Rainer Kroll
Stephanie Kuhn
Leslie Lindenauer
Aura Lippincott
Rotua Lumbantobing
Jeanette Lupinacci
Kim Marino
Ron Mason
Thomas Miller
Manoj Misra
Mary Nielson

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Director of Residential Programs
Psychology
Math
Marketing
Art
Computer Science
Biology
JLA
Education/Psychology
History
Library
Social Sciences
Nursing
JLA
Director of Housing
JLA
Sociology
Nursing

Judges (continued)

Jennifer O'Brien
Julie Perrelli
William Petkanas
Joann Petrini
J Helena Prieto
Teresa Puckhaber
Hannah Reynolds
Forest Robertson
Ken Scaglia
Jeffrey Schlicht
Michael Shoushani
Paul Simon
Monica Sousa
Tricia J. Stewart
Patrick Sturges
Karen Thompson
Jack Tom
Todd Trimble
Linda Warren
Ed Wong

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Chemistry
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HPX
Math
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Biology

Student Volunteers

Devin Bhavsar
Tricia Campanelli
Alex Debruyne
Skylar Delp
Grace Fabrizio
Mya Fayad
Kaitlin Hargreaves
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Cristel Leiva
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Brittany Lyon
Madisyn Mazik
Michelle Ryan
Kaitlin Powers
Giovanni Sanon
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Dr. Emily Stevens, Health Promotion and Exercise Sciences