Westfield
STATE UNIVERSITY

CENTER FOR UNDERGRADUATE
RESEARCH AND CREATIVE ACTIVITY

Welcome to our 2020 Spring CURCA Celebration!

Our Spring CURCA celebration is an exciting time for our campus as we come together to showcase and celebrate the creative work and dedication of so many Westfield State students. It is a day filled with excitement and pride and one we look forward to every year. This year's pandemic has prevented us from celebrating on campus together, but it has not stopped our students and their faculty mentors from accomplishing impressive research and creative work. We realize that providing an online version of our Spring Celebration is not the same, but it will make coming together all that much more meaningful when we are back.

It is an honor to host this event and to highlight the great work and dedication of so many students and their mentors. All participating students have explored the process, research, outcomes, and application of their knowledge and creativity to real-world issues. Their accomplishments are remarkable and worthy of celebrating!

On behalf of the CURCA committee, we are amazed and humbled by the talents and dedication of our students, faculty, and staff. It is an honor to showcase their research and creative works and despite the disruption of this semester, we have over 60 undergraduate student projects from all three Colleges along with 27 Wall of Words posters representing original student-composed poetry. Our ceremony is further enriched by the talents of our Theater Arts Department performing the song "Skid Row" from *Little Shop of Horrors*. Lastly, a big thank you to Professor George Ramirez for creating our digital booklet cover.

Acknowledgments

There are so many people to thank in helping to make this event possible! First and foremost, thank you to all of the students and their mentors who've worked tirelessly on their projects and presentations. Thank you President Torrecilha and Academic Affairs for your continued efforts to prioritize undergraduate research and creative activity through funding and advocacy. Professor Robin White, our CURCA Faculty Coordinator, has been invaluable for her contributions as have the other members of our CURCA advisory board (Prof Roderico Acevedo, Louann D'Angelo, Dean Enrique Morales-Diaz, Corinne Ebbs, Prof Anthony Furnelli, Prof Timothy Honig, Prof Sonya Lawson, Prof Amanda Salacinski, and Prof George Ramirez). This committee is unparalleled in its dedicated efforts, insight, and support for fostering institutional growth of research and creative projects. Thank you to Diane Savino, our CURCA Assistant, for her artistic ideas and designs, Gretchen Conrad, our administrative assistant for keeping us all on task, and our undergraduate intern Kendall MacLeod (English) for the editorial content of this booklet and CURCA event planning.

Thank you all!

Lamis Jarvinen, Ph.D.
Director, Center for Undergraduate Research and Creative Activity

Westfield
STATE UNIVERSITY

OFFICE OF THE PRESIDENT

Dear Campus Community:

Welcome to the fifth annual spring celebration of the Center for Undergraduate Research and Creative Activity (CURCA).

Despite the unprecedented disruption to the spring 2020 semester due to the COVID-19 outbreak, I was pleased to learn that the spring celebration would still take place. Even when delivered in a virtual format, the popular event stays true to its roots. We are eager to showcase, once again, an impressive collection of research projects thanks to the aspiring intellect and scholarship of Westfield State University students.

Each year, Westfield State celebrates the research of these scholars not because they answered the questions, but because they inquisitively questioned the answers. Through research and creative avenues students test the knowledge gained through coursework, both on campus and through their participation in experiential learning and internships.

Our undergraduates are enabled to pursue their research through the time, talent, and expertise provided by our faculty members, who commit themselves to support student success through selfless mentorship and high-quality instruction.

Thank you to the considerable efforts and talents of the CURCA Committee who worked so diligently to ensure that this signature academic event at Westfield State continued to shine a light on our students' accomplishments during a challenging time.

I hope our students will continue to explore original research and collaborate with faculty members to pursue and satisfy their intellectual curiosity.

Yours truly,

Ramon S. Torrecilha, Ph.D.
President

Thank You Westfield State University
Theatre Arts Program
for presenting

Skid Row

from
Little Shop of Horrors

Book and Lyrics	Music
by Howard Ashman	by Alan Menken

Cast:

Seymour	Owen Snyder
Audrey	Makayla Vaillancourt
Mushnik	Alora Machuca
Crystal	Simone LaPlant
Ronette	Sumner Lewis
Ensemble	Jonathan D'Amours, Haley Thompson, Elizabeth Dion, Jay Ducharme

Production Staff:

Director	Eric Parness
Music Director & Video Editor	Daniel Monte
Vocal Director	Elizabeth Dion
Choreographer	Kate Martel
Designers	Madeleine Hebert
	Heather Crocker Aulenback
	James McNamara
Sound Engineer	Stuart Holland
Stage Manager	Anna Twite
Assistant Director	Maria Beirne

Band:

Percussion	Kevin Mason
Guitar	James Briand
Bass	Joey Sicard
Synthesizer	Sam Masoud

Westfield STATE UNIVERSITY

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College of Arts, Humanities and Social Sciences

Art

Knight, Megan ’20
Faculty Sponsor, Prof. George Ramirez
Serene
Many Americans who suffer from anxiety prefer a method of self-medicating. The stigma of CBD use needs to be eliminated, so it is viewed as a more mainstream way of combating anxiety. Graphic design can help by creating a positive marketing campaign about CBD usage for anxiety.

Rosenthal, Emma ’20
Faculty Sponsor, Prof. George Ramirez
Knitting Thesis Project
Knitting patterns, whether published in books, available online via Ravelry or other various websites, are often the gateway into knitting. However, the clarity of patterns has not kept pace with the demand for them.

English

Biseinere, Samantha ’23
Faculty Sponsor, Prof. Catherine Savini
Decreasing the Mental Health Stigma that is in High Schools through Education and Awareness
Mental health stigma is the negative connotation resulting from unfavorable thoughts people have towards a group of individuals with mental illnesses. This stigma creates a barrier and extra challenges for people with mental illnesses, such as getting bullied, isolating themselves, and experiencing a lack of understanding from others. This is extremely damaging when it is spread through the education system, especially because “50% of all lifetime mental illnesses will develop by 14 years old” (NAMI). With past experience as a student at West Springfield High School, I have aimed at creating a dialogue with my past teachers and administration on the impact of mental health stigma and how to begin to break down that stigma in the classroom. Through my research, I am proposing new ways that mental health education can be approached more openly and stop the projection of stereotypes in school systems. There are many different approaches to take including the creation of a mental health fair similar to Fresh Check Day in colleges. By enacting better teaching methods, we can decrease the stigma around mental health and allow people to strengthen it instead.

Bonvie,Hannah ’23
Faculty Sponsor, Prof. Paige Hermansen
TikTok: Big Data and Censorship
TikTok is one of the most popular social networking apps among children and teenagers. The company has a valuation of $87 million, and its stated mission is to inform, educate, entertain, and inspire people across the globe through its range of content platforms. TikTok has over 800 million monthly active users, who spend an average of 46 minutes on the app per day. Users of the app are allowed to create short lip-sync, comedy, and talent videos that they can share with friends, as well as other users.
In the process of collecting and sharing this content, they collect information when users create an account and use the platform, including contact details, content you create, location, credit card details, information you choose to share from your social networks, messages on the platform, and metadata.
The company has been criticized for the amount of data it collects, as well as a pattern of censorship. TikTok moderators are told to censor content containing “ugly, poor, fat, or disabled” people in order to attract more users. Furthermore, it is believed that TikTok censors’ content that would damage its

"national honor." In this research project, I investigate how TikTok protects the privacy of its users and how it censors content submitted by users of the app. As a powerful technology company that collects vast amounts of user data, the app and its parent company have been criticized for how it protects its users' information. I also scrutinize the ethics of the company's censorship policies.

Parsons, Robin '21
Faculty Sponsor, Prof. Stephen Adams
The Quality of Nothing: Nature and Justice in the Cosmology of Shakespeare's King Lear
Shakespeare wrote *King Lear* in the winter of 1605 to 1606. A source he used, "The True Chronicle of History of King Lear," was published in May of 1605 and the first court performance of *King Lear* was in December 1606. This means *King Lear* was performed at court within thirteen months of the thwarted Gunpowder Plot of November 1605. In *King Lear,* Shakespeare explored the theme of a kingdom divided and its monarch succumbing to fate, fortune, and nature in all extremity as he descends from his position as the gods' anointed one into Act III's spiritual crisis. *King Lear* is set in ancient Britain within a pre-Christian cosmology of natural and pagan gods. The literary critic Northrup Frye places King Lear's Nature cosmology within an Early Modern Christian frame of reference where everything good is "up" and everything bad is "down." I propose to trace Lear's descent, the dissolution of his faith, or his dark night of the soul, if you will, employing the lens of the medieval political theory of the "king's two bodies." Russ McDonald says, in tragedy "The emphasis is on failure, waste, disappointment, and self-destruction." *King Lear's* proximity to the Gunpowder Plot would not have been lost on Shakespeare's audience. Imagining the anarchy that might have arisen from a successful conclusion to the Gunpowder Plot, King Lear's audience would have understood that an outcome of "failure, waste, disappointment, and self-destruction" had been narrowly missed.

Reder, Alexis '20
Faculty Sponsor, Prof. Michael Filas
Promoting a Press: Attending the AWP Conference
The Association of Writers and Writing Programs (AWP) Conference is one of the largest literary conferences in North America. People of various roles in the writing community (like publishers, poets, or teachers) register for this conference to attend various panel events and the enormous book fair. I attended the 2020 conference held in San Antonio, TX, to assist Professor Rebecca Olander in managing her table for Perugia Press, an opportunity granted by G-SMARTS. As someone who aims to earn a graduate degree in public relations, the conference enabled me to witness how a press and similar organizations promote themselves and the value of networking to build a rewarding relationship for the represented organizations. I helped to set up the book table for my professor and stood by the table to talk with people — to encourage them to sign up for the press's submissions contest or to inform them of the poetry books we have available to purchase. Furthermore, as a student of writing and a poet, this granted me the opportunity to engage with the writing community more and meet writers of various literary perspectives. Visiting panels and writer events held throughout the city provided an experience to be part of the professional world as someone who represented the press and a student of Westfield State University. For public relations, I now have a greater understanding of how to properly promote oneself, as well as an establishment, through becoming a member of a conference and constructing professional relationships.

Van Tassel, Spencer ’23
Faculty Sponsor, Prof. Catherine Savini
The Sex Talk: Why Queer Kids Don’t Get It, and Why They Need It
Sex education is a pivotal aspect of teenagers’ development. It provides information about functionality, physical benefits, physical risks, safety tips, red flags, and overall confidence to pursue the dating scene safely and comfortably. But, some of society’s most vulnerable, LGBTQ+ youth, often do not receive inclusive sex education in school. The GLSEN 2013 National School Climate Survey found that fewer than 5% of LGBT students had health classes that included positive representations of LGBT-related topics. Among Millennials surveyed in 2015, only 12% said their sex education classes covered same-sex relationships. And while their straight peers are going home to familiar conversations with their parents, parents of queer kids often don’t know where to start. With the school leaving them out, and their parents unsure how to connect, or uncomfortable doing so, LGBTQ+ kids are left out of the loop. This leads to a disproportionately negative impact of sexual violence on LGBTQ+ people. However, surveys and data show that parents overwhelmingly support inclusive sex education: as much as 85%. I believe parents can play a pivotal role in these kids’ futures. My approach to tackling this issue was to write an open letter to parents of LGBTQ+ youth or young/questioning teens. This presentation will demonstrate how I used ethos, logos, and pathos to demonstrate why this issue must be addressed, and how I selected my audience. This project is important because it aims to change the heteronormative standard in our society and help LGBTQ+ youth pursue safe, meaningful relationships.

Yeakley, Jonah ’20, Elizabeth Sears ’22
Faculty Sponsor, Prof. Vanessa Diana
The Misrepresentation of Native Americans in Media
We seek to address the gap in the scholarship through the empowerment of Native American authors and how they accurately portray Native American culture in literature. We will speak truth to power, sharing the disparity between how Native Americans portray their own culture and how outside cultures perceive their important traditions. We read four different works of literature written by Native American authors and analyzed how each depicts Native Americans in society. Additionally, we conducted research online by utilizing databases and credible websites. This presentation offers an explanation and a solution to the problem of modern-day Native American stereotyping. This paper will utilize four perspectives from credible scholars as well as describe how harmful stereotyping has impacted Native American people and continues to impact them today. The conceptual framework of cultural discourse analysis and stereotypes will be used to form an academic criticism of the stereotyping of Native American people. A critical analysis will explain how the lack of accurate Native American representation in the media contributes to negative stereotyping and a lack of awareness of Native American issues. Finally, we will discuss why this cycle has continued for as long as it has, and what we as individuals can do to stop it.

Wall of Words Authors

Teresa Adams, Janey Beardsley, Catriona Buckley, Carli Buzzell, Meaghan Davis, Angela Downey, Elise Dube, Campbell Fackre, Rachel Finney, Donald Ganley, Ben Grainger, Eric Hottin, Mackenzie Jackson, Brenna Jubrey, Caitlynn Kelly, Jared LaValley, Nicole Lavoie, Courtney McCurry, Elise O’Reilly, Bailey Omeche, Samantha Poutre, Alexis Reder, Darby Ryan, Lindsay Stenico, Tony Tedone, Jillian Tully, Koralise Williams

Geography, Planning, and Sustainability

Barmashi, Joseph '20
Faculty Sponsor, Prof. Alina Gross
Study on the Awareness of Housing Issues in the US and Housing Non-Profits
Habitat for Humanity deals with an array of different housing statistics and uses them to help raise housing opportunities for those less fortunate. Part of its mission is to make these statistics known to the general public so there can be support for the program and housing needs. To test this housing knowledge within the Westfield State student body, a survey was conducted asking the students if they knew about Habitat for Humanity and then quizzed them on the statistics that it uses. The student body's awareness of Habitat for Humanity and the statistics that it works with is shown to be lower than originally anticipated. Many test subjects didn't know that Habitat for Humanity existed, and many of those who had heard of it misunderstood what it did. In the questions involving statistics, the right answer would rarely get chosen the most.

Dunleavy, Tess '20
Faculty Sponsor, Prof. Alina Gross
How City Planner's Views for Their City Relate to the Views that are Formulated for the Entire Region
The results from this study will help planners understand how their visions for a city compare or contrast to the visions of the region in terms of moving the city forward and what exactly needs to go into such a task. This study examines the goals and thought processes that are formulated by both regional and city planners to plan efficient economic development. To carry out this study, two interviews were held and a case study was carried out. What these methods will allow one to gather is the relation between the ideals of a city planner in contrast to the ideals of the planner that works for the region in which that city is within. Easthampton and the Pioneer Valley were examined for this study. The results that were gathered from this study aim to portray the different goals and concepts that are prioritized by both the region and the city. This will be useful for planners to understand how their priorities relate to that of the region's. The conclusions of this study will assist in the understanding of how a city planner's visions for their city coincides with the vision that has been set in place by the entire region. It will give an idea of how an individualized plan will coexist within a region.

Gregoire, Connor '20
Faculty Sponsor, Prof. Alina Gross
Westfield State University's Perception of Sustainability (Hydrology)
Westfield State University needs an upgrade to its curriculum, specifically its studies about hydrology and its relation to sustainability. There is currently a geography planning and sustainability major, but this course of study is not as in-depth as some students are wanting. A survey, content analysis, and an interview were done in order to determine what students and members of the WSU community know about the hydrology field. Questions were asked to see if students had any understanding of what hydrology is and if they would take a course that would relate to sustainability and hydrology. Once finished with the online surveys, charts and graphs were created to analyze the results. After an in-depth analysis, it was determined that many people lack knowledge about hydrology and its connection with sustainability. However, many participants indicated they want to find out more about the topics and were interested in ways they can help out. In addition, a content analysis was conducted and the observation of other colleges and universities was noted. Things observed included, but not limited to, were ways they are implementing more sustainable hydrology practices through courses offered and the different measures they are taking to preserve the water they have to maintain a healthy relationship with the valuable resource. The courses that were offered at other colleges and universities were recorded to determine what was best for WSU to implement into their curriculum.

Griffiths, Julianne '20
Faculty Sponsor, Alina Gross
GPS Kids: Developing A Community Planning Education Program
The field of community planning has a broad range of career possibilities and intricacies that are oftentimes unknown to the general public, including children. This creates a gap in knowledge about impacts and influences planning can have to improve the lives of community members. This project aimed to lessen this gap by creating a community planning education program collaboration between Westfield State University's Department of Geography, Planning, and Sustainability (GPS) and the Boys and Girls Club of Greater Westfield (BGC). This program, "GPS Kids," had biweekly lessons during which Westfield State students facilitated lessons on community planning topics with students at the BGC who ranged from ages eight to thirteen. These lessons covered subjects including mentally mapping their neighborhoods from memory, creating their ideal park, and planning a functional community. This program has the potential to have a significant impact on both GPS students, who are gaining skills in planning and facilitating community engagement, and BGC students who are being introduced to subjects that directly impact their futures. Whether they will be planners or engaged citizens, the decisions made in planning today will affect their lives. Based on the success and interest of the GPS Kids program, it can be continued by WSU's GPS department, and there is a range of future topics that can be explored with BGC students in the future including GIS technology, zoning, land use, and more.

Houde, Olivia '22, Caroline McMaster '21
Faculty Sponsor, Prof. Brian Conz
Greening Westfield State University's Campus
Today, we are in the geological age known as the Anthropocene, a time in which human activities are impacting the atmosphere and biosphere in detrimental and potentially irreversible ways. For this reason, there is a growing consensus that the world must turn towards sustainable development, which considers future generations' needs. There are few better places to be exposed to the importance of living sustainably than a college campus because the point of college is to become prepared for one's future. Research into campus sustainability efforts has shown that an institution's culture plays a major role in making progress towards sustainability. In order to assess institutional culture at Westfield State University and to make recommendations for the university, we conducted interviews with faculty and staff, and we sent a questionnaire to students. Preliminary results suggest that faculty, staff, and students alike wish to see more from the campus and seem to have little awareness of the sustainable features the campus already has. Working with these three campus stakeholders, it became clear how essential it is to institutionalize sustainability to change campus culture. The study concludes with a set of suggestions designed for the university that outline ways in which the campus can move in a more sustainable direction.

LaPointe, Kailyn '21
Faculty Sponsor, Prof. Alina Gross
Exploring Mixed-Use Development: A Case Study of Blue Back Square
Blue Back Square in West Hartford, Connecticut, is the focus of this case study on mixed-use development. This study aims to provide support for the argument that mixed-use developments benefit their host cities. Tax data from Connecticut Data Collaborative; an interview with West Hartford's Economic Development Specialist; and questionnaires for the city planner, project designer, and marketing director of Blue Back Square were used to determine the influence that Blue Back Square has had on West Hartford in the areas of tax revenue and development. Overall increases in property tax revenue and total revenue were seen in the years surrounding the opening of Blue Back Square through the present day. An interview with West Hartford's Economic Development Specialist yielded insight into the positive effects Blue Back has had on the town, as well as its own successes and challenges. A description of various annual events held at Blue Back Square was provided by Blue Back Square's Marketing Director and indicates the important role Blue Back plays in community endeavors. The results

of the study imply that more cities should consider adding a mixed-use development to generate business and increase community outreach.

Ottolini, Dominic '20
Faculty Sponsor, Prof. Alina Gross
GIS Network Analysis of Resident Access to Urban Parks and Open Spaces in Westfield, Springfield, and Northampton
Urban parks and open spaces provide economic, social, and environmental benefits to their communities, thus improving the overall quality of living. However, some urban areas lack the abundance of parks or the ability to access those open spaces. The purpose of this analysis is to evaluate the walking distances that residents must travel to parks in three western Massachusetts cities. The three cities being compared will be Westfield, Springfield, and Northampton. Using ArcGIS Pro software three maps of each city and their parks will be produced. From here, each map will show walking distances of 0-5 minutes, 5-10 minutes, and 10-15 minutes from residents' homes to the parks and open spaces. The analysis unveiled that 37% of Westfield residents, 79% of Springfield residents, and 49% of Northampton residents live within a 15-minute or less walk to a park. It is important to have an abundance of urban parks in cities to maintain a sense of the natural environment in such a high population density community. Having such attractions promotes physical activity and socialization among citizens, contributing to the overall quality of life.

Sangeleer, Alexis '20
Faculty Sponsor, Prof. Alina Gross & Prof. Robert Bristow
Bear Hole Watershed and Recreational Uses
This research targets the history and current recreational use of the Bear Hole Reservoir, located in the Town of West Springfield. The property in which Bear Hole rests is a watershed. Watersheds are important and protected landscapes that need appropriate planning. This research will target and illustrate how the watershed and the former drinking water resource contribute to the region. In addition, the research targets the recreational use of the property. What are people doing when they decide to visit Bear Hole? Other key questions pertain to understanding people's general knowledge of Bear Hole, as well as the history of its property. A survey was created and approved by the Campus IRB to assess how people rate different recreational trail management tools. The original idea of the research was to gather a sample of visitors. However, things changed and most of the research targets the change over time and generally what people are doing at Bear Hole with their friends or family. As Bear Hole has gone through a lot of different changes over the years in the way it is used, this research discusses each change and what could be next for Bear Hole.

Stevenson, Aliya '20
Faculty Sponsor, Prof. Alina Gross
Perceived Level of Support for Minority-Owned Businesses: Perspectives from Black Business Owners and Local Municipal Staff
As a planner, it is important to gain a wide perspective on the needs of others in the community. Gaining a different perspective can help planners recognize and combat the cultural barriers faced by minority business owners. Many minority-owned businesses face cultural barriers which cause these businesses to suffer losses each year and--in worst cases--close. Interviewing three local minority business owners revealed their perspective on the degree to which their cities supported them. Additionally, interviews with three city employees from the Office of Planning and Economic Development in Springfield, Massachusetts, revealed their perspectives on the degree to which the city supported minority-owned businesses. These interviews revealed that local planners played a major role in the lives of minority business owners. These business owners found that city staff and programming provided them resources and networking opportunities. Methods used to assist these business owners included appointing minority citizens on planning committees, encouraging minority representation in business groups, establishing

diverse committees, and designating a Council seat for minority representation only. For planners to ensure the success of minority-owned businesses, they must accommodate demographic shifts, understand the various cultural, demographic, and historical backgrounds of minorities, and study multicultural planning practices for future planning.

Therien, Anna '20
Faculty Sponsor, Prof. Alina Gross
LiDAR and the Role it Plays in Local Planning
Light Detection and Ranging (LiDAR) is a remote sensing technology that can be used in a variety of fields. In the planning field, there is not a commonly accepted role for this technology, but it has been used successfully in environmental planning, urban planning, tourism, and sustainable development. Most of Massachusetts has LiDAR data available that was collected from NOAA (National Oceanic and Atmospheric Administration). This research project examines how local communities within Western Massachusetts may be utilizing LiDAR. The data for this research was collected through interviews with local and regional planners by asking about their knowledge of LiDAR and their use of this technology within their municipality. The questions that the planners were asked focused on two main topics including their familiarity with LiDAR and potential for use in their department. The data demonstrated that most of the planners had knowledge of what the technology was, but there was a variance in how it was used in different municipalities. Sole planners working for their municipalities felt that there was not enough time to learn how to use LiDAR or create projects using this technology. Other planners have plans to use the technology for upcoming projects. This research showed that this technology is still relatively new to the local planning field. As younger planners are increasingly educated in the LiDAR, we may see a shift in how smaller communities use this technology.

Language & Culture Studies

DeMeo, Joseph'23
Faculty Sponsor, Prof. Jeanette Zaragoza De Leon
Differentiating the Old World vs the New World (Spain and Tenochtitlan)
In this project, I aim to differentiate and seek truths and disprove false claims on the siege and culture of Tenochtitlan. As history has passed, it is clear we have many claims and writings about both civilizations at the time (Mexica, Tenochtitlan/ Spain, Spanish Empire). As history has always been written by the victors, this project seeks to provide both cultural, moral, and social beliefs both civilizations had at the time to truly give context and reclaim dignity with the indigenous peoples of Central Mexico and Latin America as a whole. Sources that will be used will come directly from ancient texts of both sides during the siege and colonization of Tenochtitlan. This is most important because, in our education system, we learn mostly of European colonization from a European point of view. Especially today, it's imperative to explore both sides of every story, including those in the past so that we might not repeat or forget in the future.

College of Education, Health and Human Services

Economics and Business Management

Almafrachi, Massara ’20
Faculty Sponsor, Prof Kimberly Sherman
How does Campus Involvement Affect Students’ Presence on Social Media?
College students aim to find jobs after graduating, and with the rise of social media use, employers’ social-media background-checks on applicants are increasing. The social media history of the applicants creates an image for the employers even before the interview. This image can be positive or negative and can impact the process of hiring. In this study, I want to investigate how university students’ involvement on campus (including college clubs and organizations, sports, campus work, and academic programs) may impact their impression and management skills on social media. Results from this study show that students who are involved on campus thought about future employers before posting online more than students who aren't involved.

Barriga, Robert ’21
Faculty Sponsor, Prof. Hillary Sackett-Taylor
Fruit of the Brew Continuity Plan
Hello, we are Fruit of the Brew, a craft brewery located in Roxbury Massachusetts, dedicated to making one of Massachusetts’ favorite traditional beers. Our goal is to raise the standard of beer drinking through new and innovative flavors everyone can enjoy, such as Cherr-ished Times Stout, Wicked Killah Strawberry Ale, and Leaf Peeper Amber Brew. We have global partnerships in Stone Brewing Co. that allow us to sell in Europe, focusing on the German market. This partnership was achieved through a merger with Stone Brewing that helped us expand through the US and EU in exchange for 65% of all international profits. The international side of Fruit of the Brew works through a slow integration of the German community by letting the small retail businesses try the product, selling it with their approval, and building a community in Germany that likes Fruit of the Brew products. As a company, we developed an Emergency Preparedness Plan, which emphasized the safety and sustainability of our employees’ health and jobs, starting with new and improved measures of employee safety training and sanitation procedures, along with a complete brewery-wide inspection and cleaning. Once this measure is applied, production will be restarted and the sale of beer will continue. Our industry is in a global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting to give our company the best chance of survival, with an emphasis on adaptability and moral leadership.

Currie, Kendra ’20, John Marchetti ’20, Mia McDonald ’22, Matt Robles ’20
Faculty Sponsor, Prof. Hillary Sackett-Taylor
Beer Happy Brewing Company Business Continuity Plan
We are Beer Happy Brewing Company, an environmentally-conscious and progressive brewer. At our flagship location in Cambridge, Massachusetts, we have built a community and an experience that ensures people will leave more informed of our brewing process, more informed of our values, and “beer happy.” We have global partnerships in Germany, Spain, and the Netherlands, where we distribute a selected variety of our product, including a unique flavor for each location to highlight the tastes and rich history of each individual market. This was established through our work with Anheuser-Busch (AB InBev), in which they acquired thirty-five percent of our company and have since assisted us in ramping up production, educating consumers of sustainable practices, and global distribution. As a company, we developed an Emergency Preparedness Plan, which emphasizes thorough communication across all levels of the business. Our employees are family, so we want to first ensure everyone is safe, provided for, and

informed. From there, we have an emergency board in place to immediately meet with our executive board, AB InBev representatives, and key suppliers to determine the next course of action. With the help of our global partners and with our team we will continue to sell our product to the best of our ability. Our industry is in a global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting to give our company the best chance of survival, with an emphasis on adaptability and moral leadership.

Czerniawski, Madison ’21, Connor Flynn ’21, Trevor McCarthy ’20
Faculty Sponsor, Prof. Hillary Sackett-Taylor
Fruit of the Brew Business Continuity Plan
Hello, we are Fruit of the Brew, a brewery and tap house located in Roxbury, Massachusetts, that specializes in providing our customers with refreshing fruity beers, ensuring everyone can find their pick of the basket! We have global distribution networks in Berlin, Guadalajara, Quebec City, as well as domestic distribution in Richmond, Virginia, and San Marcos, California, all with the help of our partners at Stone Brewing. Our partnership allows us to focus on our New England brewery and tap house, while Stone Brewing handles international and other domestic affairs. As a company, we developed an Emergency Preparedness Plan, which emphasizes how our brewery will operate during times of emergency. Our plan identifies that we need our brewery, employees, customers, and suppliers to stay in business. Proper actions from the perspectives of both Fruit of the Brew and government guidelines will be implemented in order to ensure everyone’s safety and support. By following all guidelines, Fruit of the Brew can continue to operate while still promoting a safe environment. Our industry is in a global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting to give our company the best chance of survival, with an emphasis on adaptability and moral leadership.

Delaney, Joshua ’20, Nathan Martel ’20, Nicholas Juliano ’20
Faculty Sponsor, Prof. Hillary Sackett-Taylor
Crossroads Brewery
We are Crossroads Brewery, a small Boston brewery, where we welcome anyone and everyone to provide a laid-back friendly environment to drink our well-known Lowell Lager and Back Bay IPA. We have global partnerships in Europe with Heineken. Being partners with Heineken allows our beers to be brewed with top-of-the-line equipment and advanced testing to ensure a great taste every time. We are most well known in the greater Boston area and New England but are looking into expanding to bring our beer and atmosphere to other parts of the United States and potentially the German market. As a company, we developed an Emergency Preparedness Plan, which emphasizes the health and safety of our employees and our customers. To this end, we are providing assistance, financial and otherwise, to our employees. We are also figuring out the logistics of keeping our customers satisfied in ways that we can safely manage, including looking into working with various liquor and grocery stores to make our product more widely available and looking into pickups and drop-offs. Furthermore, we will be looking into speaking with the musicians that come in to play at our location to see if they would be willing to do online concerts, helping to spread some positivity and some of the Crossroad’s experience in these trying times. This project will outline the Business Continuity Plans we are enacting, to give our company the best opportunities moving forward, with an emphasis on adaptability and moral leadership.

Gralinski, Zachary ’20
Faculty Sponsor, Prof. Hillary Sackett-Taylor
Crossroads Brewery
Hello, we are Crossroads Brewery, a small Northeastern brewery located in Boston that has a focus on providing a fun, relaxed environment with live music and homemade lagers and IPAs to provide the best experience we can for our customers. We have global partnerships throughout Germany, having recently been acquired by Heineken International. This alliance allows us to not only sell their products here at

home but also gives us the ability to make more commercial sales with help from their production and distribution resources. In the future, we hope to begin opening more locations both in the United States, as well as internationally, once our brand becomes better known. As a company, we developed an Emergency Preparedness Plan, which emphasizes specific plans for how to respond to various emergencies that could arise, such as medical or weather-based incidents. Our overall goals for this plan are to not only ensure the safety of our employees and customers in the short term but also to have contingency plans in place if a long-term problem should arise. Our industry is in a global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting, to give our company the best chance of survival, with an emphasis on adaptability, community support, and moral leadership.

Grande, Aleah ’21
Faculty Sponsor, Prof. Anthony Furnelli
Food Allergen Gluten-Free Market Expanding by Health and Weight Conscious Consumers
The expanding gluten-free market is due to health-conscious consumers looking for a healthier alternative. Gluten-free labeling, apps, and word of mouth tie into the widespread of the allergen market.

Joyal, Joseph ’21, Tabitha Saalfrank ’21, Krystina Torrey ’21, Massara Almafrachi ’20
Faculty Sponsor, Hillary Sackett-Taylor
Roots Brewery Project
We are Roots, a charmingly simple brewery that started in Boston, Massachusetts. We offer a variety of beers while focusing on maintaining a comforting, southern atmosphere. Not only do we experiment with our beers, but we love to focus on farm to table ingredients as well as fermented beverages, like kombucha. Our goal is to provide a setting for others to relax, unwind, and have a beer. We have a global partnership in Belgium with Anheuser Busch. Through this partnership, we distribute our product nationally and internationally into Europe, while bringing our charmingly simple culture. Roots is meant to be an escape from our everyday busy reality and it should be shared worldwide. As a company, we developed an Emergency Preparedness Plan, which emphasizes the safety of our community employees. Our first priority is establishing an external storage facility that could be used as a shelter if needed. This would be open to employees and those in the local community. In our financial structure, we plan to set aside an emergency fund that would be available to make repairs and compensate employees. If given the opportunity to continue production, we will continue to distribute nationally and provide local delivery if desired. Our industry is in the global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting to give our company the best chance of survival, with an emphasis on adaptability and moral leadership.

Langley, Julia ’21, Erica Layne ’21, Lindsey Dalrymple ’21
Faculty Sponsor, Prof. Hillary Sackett-Taylor
High Spirit's Brewery Continuity Plan
Hello, we are High Spirits Brewery, an independently owned microbrewery located in Los Angeles, California. Our company’s mission is to reinvent the way people look at beer by incorporating a modern twist. Our products incorporate the infusion of cannabis, fruit, and protein into our beer. We have a global partnership with Province Brands of Nunavut, Canada, after our recently launched acquisition of their company. We own about 55% of Province Brand’s stock and both companies remain independent while selling each other's brands. They’re a great partnership for us because it allows us to enter an international market in which we share the same values and interest of cannabis infusion. As a company, we developed an Emergency Preparedness Plan, which emphasizes the closure of both locations. We’re continuing the production of our products and offering a delivery or pickup option for our customers. This ensures the safety of our customers and employees by maintaining a sanitized work environment and utilizing protective supplies. By continuing to offer the delivery and pickup option, this ensures the survival of our business, while keeping our workers employed. As the demand for alcohol increases during COVID-19,

we are adapting our work environment to coordinate with these uncertain times, to best provide our customers and employees. Our industry is in a global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting to give our company the best chance of survival, with an emphasis on adaptability and moral leadership.

Mensah, Gillianne, Tyler Morais '20
Faculty Sponsor, Prof. Hillary Sackett-Taylor
High Spirits Brewing Company
Hello, we are High Spirits Brewing Company, a brewery located in Los Angeles, California. We are most known for our cannabis-infused beers but that's not all. We offer a wide range of beer from fruity sweet beers to protein-infused beers. You'll find that there is a beer for everyone here! We have a global partnership in Canada with a brewing company named Province Brands of Nunavut. We recently just acquired a 55% share of this company; even though we own more than 50% of the company, we have decided to just utilize both markets and grow both companies together. We will both be benefiting from this global partnership in which we will see two cultures come together to make a product. As a company, we developed an Emergency Preparedness Plan, which emphasizes the safety of our employees and the security of their jobs. We want to ensure that all of our employees will keep their jobs in case of emergency and they are not harmed by the impact of said emergency. Depending on the severity of the emergency, we have placed a plan to operate our company virtually to keep sales going by selling our products online. We also have a team that we have created in case of an emergency that is equipped to handle different types of emergency situations. Our industry is in a global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting to give our company the best chance of survival, with an emphasis on adaptability and moral leadership.

Mheid, Ali '20
Faculty Sponsor, Prof. Hillary Sackett-Taylor
The Power of Beer
Hello, I am Ali Mheid, a representative of Crossroads Brewery located in Boston, MA. We want to bring people together to share one of our popular Lagers, IPA's, and enjoy one of our live music nights. Our mission is to help people come together and enjoy a good time. We started off our global partnership with one of the biggest companies in this industry, Heineken, based in Holland. We launched this partnership because the production could not keep up with the rising demand, and we needed an increase in capital provided by Heineken to be able to grow. Our European branches will be different in the sense that the atmosphere created will be specific to the values of the country it is in. As a company, we developed an Emergency Preparedness Plan, which emphasizes maintaining our current sales and our current workforce. In order to maintain our sales, we decided to start delivering our product to our customers' houses; this also helps us keep our employees that are not deemed "essential to the production" employed. Additionally, we have developed promotional collaborations with local package stores to incentivize purchases during an economic downturn. Our industry is in a global state of emergency, induced by the COVID-19 pandemic. This project will outline the Business Continuity Plans we are enacting to give our company the best chance of survival as we face the inevitability of change.

Moriarty, Jack '22
Faculty Sponsor, Prof. Anthony Furnelli
The Inclusiveness of Dungeons and Dragons
Dungeons and Dragons is a game where your very imagination comes to life. The Dungeon Master creates a world for the Players where they must deal with both mundane and cosmic problems, ending in collaboration between both. In Dungeons and Dragons, you start by making a character. This character can be any number of available races, can be any gender (or none at all), have any sexual preference (or none at all), and have any sort of cool backstory you can think of. In recent years, Wizards of the Coast (the DnD company) has gone to great lengths to make lots of communities feel more welcomed and

accepted in the world's greatest roleplaying game. With countless examples of LGBTQ and race representation, Dungeons and Dragons truly incorporates what it means to accept and understand everyone, no matter who they are!

Education

Colon-Ortiz, William '21
Faculty Sponsor
Tracking Movement of the Mind
The critical thinking process shows our minds at work. I want to prepare students for life after high school by teaching them that career activities after college, our daily interactions with family, coworkers, and team-members all involve thinking. All graduating high school students should join our local workforce with the understanding that reading, writing, editing, interpreting, and conceptualizing information are skills that will help them respond to the growing technological advances that continue to challenge the ways we think our way through our daily activities. How might an English Language Arts teacher track movement of the mind? To answer the question that later guided my research, I worked with Dr. Declan Fitzpatrick's article, "Constructing Complexity: Using Reading Levels to Differentiate Reading Comprehension Activities" (2008). The author suggested in his article that movement of the mind can be tracked by measuring a student's individual reading level through a method referred to as the Reading Level Inventory (RLI). In my lesson, levels five and six are being used to challenge students to evaluate events pulled from a text for the purpose of making inferences, which will be used by students to make a general statement or section about the information being analyzed. Fitzpatrick's work is an interpretation of George Hillocks Jr. and Larry H. Ludlow's research that was published in the "American Educational Research Journal" (1984). My lesson is titled, " Teaching Ambition in the English Language Arts Classroom." As part of this year's CURCA celebration, I would like to demonstrate how teachers can use the model shown in FitzPatrick's article to measure the extent to which their students will be able to base logical statements on inferred information taken from a sample of William Shakespeare's "Macbeth" (Hibbs English, 2020). Teachers track movement of the mind by employing proven methods to measure the level at which their students are thinking. Participating in this year's CURCA celebration would mean a lot to me as a prospective teacher because having the opportunity to share my research and results could help my audience understand the importance of thinking critically in the English Language Arts classroom.

Movement Science

Cipriani, Kristina '20, Lynn Shattuck '21, Amanda Salacinski, Lamis Jarvinen
Faculty Sponsor, Prof. Amanda Salacinski
Reliability of the InBody 770 for Body Composition with and without Proper Protocol
Although proper impedance measurements with the BIA should be taken under standardized conditions, there is little to no research that examines the reliability or accuracy of a BIA, such as InBody 770, when participants do not follow manufacturer-recommended protocol. Therefore, for the purpose of this study, we sought to address the reliability of the InBody 770 to accurately measure body composition of participants when they follow versus when they do not follow the pre-test recommended protocols.

Nursing

Boden, Alexandra ’20
Faculty Sponsor, Prof. Joan Kuhnly
Intravenous Acetaminophen: A Multimodal Approach to Decreasing Opioid Requirements in Pediatric Orthopedic Postoperative Patients
Intravenous Acetaminophen, also known as Ofirmev, is widely used in adult orthopedic medicine as an effective method of pain control. Intravenous Acetaminophen has been used as both a method for optimizing pain control and as a multimodal analgesic approach to decrease the use of more invasive and addictive opioid pain control methods. Initial research on the use of intravenous Acetaminophen with pediatric orthopedic post-surgical patients demonstrated a reduction in opiate consumption, improved analgesia, and considerably reduced time to discontinuation of PCA and EPCA. The use of intravenous Acetaminophen reduced the mean opioid requirement by between 25% to 46% in this population and reduced discontinuation times of PCA and EPCA by up to 17 hours. This scholarly project was conducted to synthesize and analyze current research to identify whether pediatric orthopedic post-surgical patients who were given intravenous Acetaminophen in conjunction with opioid analgesics had better outcomes in pain management. A review of the current literature was conducted on scholarly peer-reviewed articles. The literature search resulted in a systematic review of randomized controlled trials, quantitative research, an observational study, literature reviews, and practice recommendations from the Journal of Pediatric Pharmacology and Therapeutics. The evidence supports that pediatric orthopedic post-surgical patients who received intravenous Acetaminophen had better controlled pain, significantly reduced opioid consumption, and had shorter lengths of stay due to faster discontinuation of PCA and EPCA. This scholarly project also proposes a planned test of change based on the Plan Do Study Act (PDSA) model to be used as a foundation to implement evidence-based research into an approved clinical care model that could potentially decrease opioid consumption rates among pediatric post-surgical patients and increase patient satisfaction.

Castro, Isabella ’21, Grace Benson ’21, Hallee Trip ’21, Lauren Blakeley ’21 Catherine Plante ’21
Faculty Sponsor, Prof. Joan Kuhnly
Non-Pharmacological Pain Management in Pediatric Patients Undergoing Chemotherapy
Pharmacological techniques are commonly used to treat pain; however, there are other ways to minimize pain through non-pharmacological interventions. While receiving care, pediatric patients may experience fear and pain related to medical procedures, side effects of medication, or ongoing illnesses. Utilizing non-pharmacological pain management methods in pediatric patients should be a goal of care to reduce the risk of medication dependency and abuse and decrease the potential for medication adverse effects. In this scholarly project, current research was gathered and analyzed to identify how non-pharmacological interventions influence the relief of pain and side effects in children undergoing chemotherapy. Five peer-reviewed scholarly articles about this topic were reviewed. The literature included qualitative and quantitative research with the intended audience of medical professionals to incorporate different techniques of pain management to improve pain felt during chemotherapy procedures. The articles showed that the use of herbal therapies, laser acupuncture, creative arts, and changing position during chemotherapy procedures decreases pediatric pain and side effects. Based on the information synthesized from these articles, this project describes a potential evidence-based practice change project using the Plan Do Study Act (PDSA) model. This model can be used as a means of implementing evidence-based research into the clinical setting that could increase the use of non-pharmacological interventions to decrease reported pain in children undergoing chemotherapy.

Fontaine, Jessica ’21, Samantha Florio ’21, Shelby Houle ’21, Charlene Meserve ’21, Jayde Gaudet ’21
Faculty Sponsor, Prof. Joan Kuhnly
Comparative Insulin Administration in Patients with Type 1 Diabetes
Introduction/Significance/Background- In order to understand the comparison between the use of insulin pumps or insulin shots to help manage their diabetes and overall Hemoglobin A1C (HbA1c) in patients with type one diabetes. Reviewing the current evidence on this topic can improve the management of diabetes for the patient and the healthcare team.
Objective - The objective of the proposed project was to determine whether using an insulin pump with continuous subcutaneous insulin infusion compared to insulin shots (multiple daily injections) among patients with type 1 diabetes affects their HbA1c within a 6-month period.
Methods - A literature review was conducted on five articles related to type 1 diabetes that compared the effectiveness of insulin pumps and insulin shots. Most of the studies were qualitative, observational studies and compared the results from using the two methods.
Results - The results of the studies showed that the usage of insulin pumps compared to insulin shots, improved outcomes including less incidence of hypoglycemic occurrences, diabetic ketoacidosis, and improved overall metabolic control (HbA1c) in patients with type 1 diabetes.
Discussion - Educating the healthcare team on this data, the professionals can help provide improved treatment plans for patients with diabetes while incorporating insulin pumps into their plans. Educating these health care professionals about the benefits of insulin pumps is the next step in providing awareness and education for patients with type one diabetes to better their HbA1c and quality of life. Further implementation of these treatment plans is proposed as an evidence-based practice project.

MacWilliam, Melissa ’20
Faculty Sponsor, Prof. Joan Kuhnly & Prof. Susan Scott
Electroconvulsive Therapy: Dispelling the Myths and Promoting Patient Education
There are controversial beliefs and stigmatization surrounding the use of Electroconvulsive Therapy (ECT) as a treatment for patients with mental illness. While proven to be an effective and safe treatment, the lack of knowledge about the procedure and the side effects on memory loss raises concern among the general population. The purpose of this scholarly project was to provide education to patients and healthcare professionals regarding the effectiveness of ECT treatment by addressing concerns and stigmas surrounding it. The evidence in the qualitative and quantitative studies concluded that patients seeking treatment to relieve symptoms of mental illness that have not responded to medication trials, benefit from ECT treatment. An educational module on the current evidence of the therapy was developed for staff. Implementing this educational plan would be part of a Plan Do Study Act (PDSA) model to improve care by educating staff and patients on the current evidence regarding therapy and dispelling myths. The research concluded short-term side effects on memory loss occur after treatment but currently, there is no indication of long-term cognitive function loss. Future research would be conducted to determine if patient education regarding ECT decreases the stigma and increases patient compliance with the treatment over a period of six months.

College of Mathematics and Sciences

Biology

Acevedo, Dianelise ’20, Rebecca Pereira ’20, Daniel Pavlyuk ’20
Faculty Sponsor, Prof. Robin White
Presence of Human APOE4 Gene on Astrocyte Morphology in C6 Mouse Glial Cells
The apolipoprotein E gene (APOE) has shown in different studies to have a link to Alzheimer’s disease (AD), the most commonly known form of neurodegenerative disease. The APOE4 isoform is known to affect the shape of the brain cells known as astrocytes, cells with numerous roles in the central nervous system. The gene changes the shape of the cell which decreases its function, potentially leading to complications to those affected. To study the effects of APOE4, the gene was inserted into a fluorescent backbone that could be used to easily visualize the cells. A plasmid containing APOE4, pCMV4-ApoE4, was ordered and the DNA was isolated through the use of a QIAgen midi prep kit. Site-directed mutagenesis was used to remove a BamHI restriction enzyme cutting site to allow the proper insertion of APOE4 into pIRES2-ZsGreen1 backbone due to too many BamHI cutting sites. The gene was inserted into the backbone using restriction enzymes BamHI/EcoRI, and PstI. Polymerase chain reaction (PCR) was then used to amplify the whole plasmid. Once the gene was inserted, the morphology of the astrocytes in with and without APOE4 overexpression would be observed by measuring the size of the cells or the number/length of the processes. We hypothesize that APOE4 overexpression will alter the structure of astrocyte cells, changing their function.

Antoine, Curtis ’21, Melita Gavel’20, Yuliya Overchuk ’20, Ghadeer Mazloum ’20, Fatima Massaee ’21
Faculty Sponsor, Prof. Robin White
ApoE4 Fragmentation Exacerbates Alzheimer’s Disease Pathology
The specific factors that cause Alzheimer’s disease are not readily known. Various components can increase the risk of developing the disease, but the Apolipoprotein E4 (ApoE4) gene shows the most significant genetic risk factor for developing late-onset AD. One ApoE4 allele may slightly increase the risk of developing AD, but a second ApoE4 allele is associated with a significant increase in risk, signifying a dose-dependency (Hostage, Choudhury, Doraiswamy, & Petrella, 2013). A pCMV4-ApoE4 bacterial plasmid was used in the extraction of ApoE4. The ApoE4 DNA was isolated, followed by digestion with XmaI restriction enzyme. The digested ApoE4 was analyzed using gel electrophoresis and then isolated for PCR amplification. It was used to insert into the reporter pIRES-ZsGreen1 plasmid to see how many cells were transfected with Apoe4. Amplification allows the overexpression of ApoE4 to assess its biological function(s). Docosahexaenoic acid (DHA), an omega-3 polyunsaturated fatty acid (PUFA), will be used to determine if it elicits a treatment effect on ApoE4 by decreasing hypometabolism that results in oxidative stress. Neuro-2A that are derived from an albino mouse neuroblastoma, express the ApoE4 gene will be utilized, treating one group of cultured cells with DHA, and the other without, to maintain a control group status. Fragmentation of ApoE4 will be measured to determine DHA’s effectiveness because an increase in oxidative stress increases ApoE4 fragmentation. ELISA assays will measure the concentration of ApoE4 fragmentation, utilizing the nApoECF antibody, which detects the 17kDa fragment (p17) of ApoE4 (Gause, Day, Caraway, Poon, & Rohn, 2017).

Beaupre, Natalie ’20, Monica Rivera ’20, Mileny Campos’20, Miranda Piangerelli ’21, Courtney Swain ’20
Faculty Sponsor, Prof. Robin White
How does a High Fat “Keto” Diet Affect the Survivability of Neuro-2A Cells Overexpressing APOE4 Isoform
APOE4 is an isoform of a protein that is used to form lipoproteins in the body when combined with lipids. The APOE4 gene has been found to promote the accumulation of beta-amyloid proteins into plaques as seen in Alzheimer’s disease. A high fat diet, like the ketogenic diet, offers a new perspective into treating and slowing the progression of Alzheimer’s disease in patients. This study attempts to examine how the outcomes of a high fat diet can affect the survivability of Neuro2A cells, which are simply fast-growing mouse neuroblastoma cells that are overexpressing APOE4. Through cloning the APOE4 gene from the plasmid it was received in using overhang primers during PCR, an extra enzyme cutting site for EcoRI was added for the APOE4 gene to be inserted into a fluorescent backbone. The extra EcoRI site was put into place in order to make for easier extraction of the target gene. The fluorescence was meant to aid in the counting of Neuro2A cells that included the plasmid with the target gene, which would have been grown in either a standard or high-fat culture medium. The use of two different fat content cell mediums was meant to give a point of comparison between how APOE4 would affect Neuro2A cell replication in a person with a high fat diet versus a more equally balanced diet.

Contin-Mendoza, Karla’ 21, Shavon McBynum ’20
Faculty Sponsor, Prof. Robin White
Effects of SIRT6 Overexpression on Neuronal Cells
SIRT6 is known for its implication in cellular stress resistance, genomic stability, aging, and energy homeostasis and plays an important role in DNA repair, maintenance of telomeric chromatin, inflammation, lipid, and glucose metabolism. In the prevention of neurodegeneration associated with aging and neurodegenerative diseases (Alzheimer’s disease, Parkinson’s disease), neuronal differentiation is of interest. We, therefore, are going to study the ability to induce neuronal differentiation of Neuro2a cells, a fast-growing mouse neuroblastoma cell line that is widely known for its capacity to differentiate into mature neuronal cells. We used restriction digestion and gel electrophoresis to linearize a small circular fragment of DNA that replicates independently from the host's chromosomal DNA, called plasmid, to confirm we had the piece of DNA that corresponded to SIRT6 gene. To further the study of the function of this gene in cell differentiation, we are going to proceed to transfect the plasmid into mammalian cells to produce the desired protein. We are trying to find if the overexpression of the gene impacts morphology and protein expression of Neuro2a cells. The difference in morphology can be evaluated through the presence of dendrites and axons using the image analysis software Image J. Detection and quantification of the target protein is going to be accomplished by using an ELISA (enzyme-linked immunosorbent assay). Protein expression can be further analyzed through immunoblotting. Research in this line of study could potentially be used to develop a therapeutic alternative in neurodegenerative pathologies associated with neuronal loss.

Hoynoski, Rebecca ’20
Faculty Sponsor, Prof. Kimberly Berman
The Effects of NLRP12-deficiency on IL-1β in a Mouse Model of Diet-Induced Obesity
Type 2 diabetes mellitus (T2DM) is distinguished by high blood glucose levels and a chronic pro-inflammatory state. Obesity, a significant contributor and underlying cause of T2DM, is characterized by inflammation stimulated by the infiltration of macrophages within the adipose tissue. Macrophages produce pro-inflammatory cytokines that interfere with insulin signaling and prohibit the regulation of blood glucose levels. Previous studies in rodent models of obesity and T2DM have shown increases in pro-inflammatory cytokines such as IL-1β and TNF-α in the adipose tissue. Similar findings have been observed in patients of T2DM indicating that pro-inflammatory cytokines play a significant role in insulin resistance and the onset of diabetes in association with obesity. This study investigates the role of

nucleotide-binding leucine-rich repeat-containing protein 12 (NLRP12), a recently discovered innate immune sensor, using tissue samples from mouse models of diet-induced obesity (DIO). Recent studies by Truax et al. indicate NLRP12 as a novel immune suppressor of metabolic disease. NLRP12-deficient mice had increased weight gain, expanded adipose tissue, higher blood glucose levels, and M1 macrophage polarization. In order to show the effect of NLRP12 on IL-1β secretion in mice fed a high-fat diet, adipose and liver tissue samples were harvested from wildtype and NLRP12-deficient mice and were stained using immunohistochemistry (IHC) and analyzed to further understand the role of NLRP12 in T2DM.

Hussein, Baidan ’21, Melissa Otero ’20, Matthew Gaffney ’20, Clarissa Aponte’ 21, Leslie Ortiz ’21
Faculty Sponsor, Prof. Robin White
Survival Rates on C6 Cells that Contain Both Cholesterol and Apolipoprotein E 4
Apolipoprotein E 4 is a gene that produces proteins to make fats into lipoproteins so that they can be carried throughout the body. APOE4 is being studied because there is a lack of understanding of the function of this gene with its relation to Alzheimer's Disease (AD). This disease is caused by dying brain cells and forms plaques that are made of beta-amyloid. Cholesterol plays a vital role in APOE4, and high levels of cholesterol are associated with APOE4. An increase in levels of cholesterol increases the risk of Alzheimer’s Disease. In order to determine how APOE4 overexpression affects astrocytes, neuronal support cells in the brain, a DNA plasmid was developed that includes the APOE4 gene. The APOE4 gene from the plasmid pCMV4-APOE4 was transferred to pIRES2-Green, a fluorescent reporter plasmid by adding an additional BglII site into pCMV4-APOE4. Multiple restriction enzyme digests were used in identifying the BgIII sites. The Taq 2x Master Mix protocol was used to amplify the APOE4 gene allowing the addition of a restriction site on the 3’ end of the APOE4 gene. With the help of these protocols, we were able to successfully produce the needed bands in our digests and PCR gel electrophoresis, allowing the addition of a BgIII site to the 3’ end of pCMV4-APOE4. With the addition of this BgIII site, we are going to test how cholesterol impacts cells with or without APOE4 overexpression. This study will use C6 cells, derived from rat glial tumors, to assess survival rates.

Rivera, Monica ’20, Lawrence Washington
Faculty Sponsor, Prof. Arne K. Christensen
Shedding Light on the Form and Function of Large Cytoskeletal Arrays in the Carapace Epithelia of Daphnia Magna
Daphnia magna are a species of freshwater zooplankton that are enclosed in a carapace containing large partially colocalized arrays of actin microfilaments and microtubules. Little is known of the form or function of the cytoskeletal arrays in the D. magna carapace. We used ImageJ to quantify the morphology and relative localization of these microfilament and microtubule arrays in 3D confocal fluorescence micrograph stacks. Based on our preliminary observations, we hypothesized that the microtubule array area would be two-fold greater than that of actin microfilaments. Surprisingly, we found that the measured differences between the microfilament (87.8 μm2 ± 30.4) and microtubule (130.4 μm2 ± 52.9) arrays were not significant. We used a bioinformatic approach to identify six unique putative actin family members in D. magna and their predicted homologues in D. pulex and Homo sapiens. We used a pharmacological approach to assess the relative and interdependent sensitivity of the microfilament and microtubule arrays to drugs that interfere with their respective polymerization. With the drug concentrations we tested, we found that microfilament arrays were sensitive to cytochalasin D, but microtubules were resistant to nocodazole, and the microtubule arrays were not dependent on intact microfilaments. Our ongoing work aims to shed light on the morphology and biology of these microfilament and microtubule arrays to better understand their function in D. magna, and in similar structures found in other species, like hair cells of the mammalian inner ear.

Chemistry

Angell, Caleb '20, Diane Maher '20
Faculty Sponsor, Prof. Aaron Reyes
Identifying Potential Salt Sources in the Great Brook Tributary
Humans rely on a supply of fresh water, which differs from saltwater and contaminated water by its low total dissolved solids (TDS). Previous studies showed elevated TDS content in Great Brook, a tributary to the Westfield River. We tested water quality parameters in-situ by measuring pH, dissolved oxygen, temperature, TDS, and conductivity at six sites along the Great Brook. We measured cation concentrations in the lab in order to gain a better understanding of what contributes to differences in TDS. Finally, bacterial content, evaluated during a period of moderate flow rate (approximately, 500 cubic feet per second), was below 235 MPN/100mL for all samples, which is considered safe for recreational activities in Massachusetts. Seven cation concentrations were measured by atomic absorption [calcium (Ca), copper (Cu), iron (Fe), lead (Pb), magnesium (Mg), nickel (Ni), and Zinc (Zn)] and two by atomic emission [potassium (K), and sodium (Na)]. Ca, K, Na, and Mg were detected, with K the least concentrated element (.891 to 3.40 ppm) and Ca the most (17.4-24.4 ppm). Cu, Fe, Pb, Ni, and Zn were not detected in our samples. In general, cation concentrations exhibit a positive correlation with TDS, which increases downstream. Lower concentrations of cations were detected in the upstream samples (Congamond Lake and near outflow of the lake) and higher concentrations downstream. We hypothesize that potential drainage from adjacent agricultural activity could be a contributing factor for the observed increases in TDS between the upstream and downstream samples.

Fletcher, Kelli '20
Faculty Sponsor, Prof. Richard Rees
Dancing with the Stars Season 4.6 Billion
Stellar nucleosynthesis is the process of making new elements from nuclear fusion reactions. Fusion proceeds in multiple layers with different elements burning in a series of shells around the core of high/low mass stars. The goal of this project is to observe the effects of stellar parameters, such as initial mass and rotation on RGB/AGB dredge up, comparing the mass fractions in the stars' outermost layer of elements from initial to final profiles. Using the MESA-Web stellar evolution code we will model nucleosynthesis in stars and simulate nuclear reactions of stars over their lifetime. Multiple models with different controls and independent variables will be run to compare the effects of each using intermediate-mass stars ranging from 3-8 solar masses.

Environmental Science

Baptiste, Daizha '21
Faculty Sponsor, Prof. Michael Vorwerk
The Effect of Demographic Composition on the Presence of Food Swamps and Food Deserts in Neighboring Communities of Western Massachusetts
My research this semester pertains to the presence of food deserts and food swamps in neighboring communities and their correlation to low income and minority groups. Food deserts are characterized by a lack of affordable healthy food options at reasonable distances to a community and, according to the USDA, are typically found in communities inhabited by marginalized groups. Additionally, the North American Classification System identifies over 6,500 food deserts nationally. Moreover, food stamps are a form of food insecurity and are described as areas overrun with fast food, liquor stores, and convenience stores. Food deserts coupled with food swamps can be credited for numerous health issues plaguing minority communities such as increased rates of obesity, heart disease, high cholesterol, and diabetes. My

research seeks to examine the presence of food insecurity in neighboring communities in Western Massachusetts of varying income and poverty rates to emphasize any disparities and disproportionate burdens attributing to systemic oppression. I hypothesized that a higher concentration of liquor stores and convenience stores will be evident in communities with higher poverty rates such as Springfield. Higher concentrations of healthier food options such as full grocery stores like Big Y and Whole Foods will be more evident in communities with lower poverty rates like Longmeadow. My initial findings support both hypotheses, but also revealed some unexpected results.

Celetti, Alexander '20
Faculty Sponsor, Prof. Michael Vorwerk
The Analysis of Temperature Abnormalities Within the Big Pond Stream, Otis, MA
Dams and reservoirs are used for drinking water, creating electricity, and recreational activities, but they also cause serious environmental concerns. Increased water temperatures from thermal and point source pollution are plaguing reservoirs with harmful algae blooms and causing anaerobic conditions. The focus of this research is to monitor the anomaly of elevated water temperatures discovered in Big Pond Stream in Otis, MA. This stream forms at the output of Big Pond and discharges into Otis Reservoir downstream. The goal of this study is to identify where the elevated water temperatures are occurring (point source), their cause, and to discuss remediation techniques to ameliorate the situation. Based on research from a previous student at Westfield State University who first reported the extremely high temperatures, I designed a new study with four distinct temperature recording locations each having two Hobo Instruments temperature loggers along Big Pond Stream. A total of 1,984 data entries were recorded per location and used to analyze the water temperatures through mid-March. The warmest water monitored during the experiment was 7.4 °C and that was located in the input to Otis Reservoir on March 10, 2020, at 2:45 p.m. The data showed that no water temperatures were significantly high enough to raise serious concerns over water quality conditions during the study period. Unfortunately, COVID-19 shut down the research before warm temperatures are likely to transpire.

Covill, Cameron '20
Faculty Sponsor, Prof. Michael Vorwerk
Effects of Boat Launches on Macroinvertebrate Diversity Along the Connecticut River
The Connecticut River is the longest stream in New England and provides recreational boating opportunities from designated launches in each of the 4 states it passes through. It is known that boating can spread invasive plants, but what about its impact on the macroinvertebrate community? These small benthic organisms are susceptible to minute changes in the river ecosystem and the presence or absence of certain macroinvertebrate species are commonly used as indicators of stream health. The purpose of this research was to find differences in macroinvertebrate diversity at boat launches along the Connecticut River, seeking to quantify changes in ecosystem health at these launches in comparison to other control points along the river. Using BMPs and techniques from the EPA, several state governments, and The Streamkeeper's Field Guide, macroinvertebrate samples were to be collected using a kicknet and identified to taxonomic order. These data would be used to make a quantified assessment of the overall river health in the areas they were sampled. Finding a difference in diversity at boat launches compared to the control areas away from their impacts would warrant further research and updated boat launch practices and etiquette. Unfortunately, the closure of the University only allowed me time to carry out one round of sampling and an incomplete analysis of that sample. The little data I was able to collect suggested the river was relatively clean and yielded a moderate to high diversity of macroinvertebrates, with several species such as caddisfly larvae that indicate good water quality.

Fahy, Patrick '20
Faculty Sponsor, Prof. Michael Vorwerk
Bacteria in The Otis Reservoir and Big Benton Pond, Otis MA
The purpose of this study was to measure the water quality in the Otis Reservoir and Big Benton Pond, MA, along with the stream that connects the two. This idea was created based on a previous study that showed the temperatures in the connecting stream could reach unexpectedly high values, coming close to 100 degrees Fahrenheit. The high temperatures were recorded during the peak heat time of the day, generally between 12 pm and 1 pm. I proposed that the high temperatures in the area could lead to harmful bacterial growth. If the bacteria were found at high levels, I planned to do source tracking to locate the source of the high levels of bacteria and determine why they prosper in these areas. The equipment needed for this study was test bottles for the sampling, a cooler to keep the samples, an incubation chamber, and a Colliert Instrument for measuring bacteria. Once the samples were collected, they were to be brought to a lab on campus, and mixed with a reagent, and then placed into a Quanti-Tray and sealed for 24 hours to incubate the sample. After incubation, the samples were placed under ultraviolet light in the Colliert to measure the bacteria present. Then a chart would be used to compare color and bacterial concentration. Unfortunately, the Covid-19 outbreak occurred before I could collect samples, so this work is proposed only.

Fleury, Ryan' 20, Andrew Mitera '20
Faculty Sponsor, Prof. Michael Vorwerk & Prof. John McDonald
Analysis of Amphibian First Occurrence in Man-made vs. Natural Vernal Pool
Wildlife populations have and will continue to experience habitat destruction from human development and climate change factors in the coming decades. Unlike mammals and many birds, amphibians are more vulnerable populations due to their specific breeding habitats and sensitivity to toxins in the environment. As a result, amphibians will have a harder time being able to adapt and combat these changes brought by human development and climate change since they would require specific habitats to migrate to. These habitats include both wetlands and vernal pools. Vernal pools are usually seasonal pools that provide an important (but temporary) habitat and breeding ground for many amphibians such as frogs, salamanders, and toads. Without them, amphibian populations would suffer significantly since they rely on these areas for reproduction and persistence. This study compares a man-made pond and a natural vernal pool regarding amphibian activity to find out when and under what conditions first occurrences appear. Different aspects of each were monitored, including the air/water temperature, sound, and visual observation. Temperature/light loggers, sound meter recorders, and pitfall traps were used for monitoring. Both pools are located in the same farm field in Southwick, MA. The study also allowed us to see the effectiveness of man-made pools as amphibian habitat during their breeding season.

Frisbie, Jourdan '20
Faculty Sponsor, Prof. Michael Vorwerk
An Ash Tree Management Plan for Stanley Park with a Current Assessment of Tree Health
The main goal of my research was to come up with a management plan to deal with the predicted damage to the ash trees of the Stanley Park Reservation area due to the invasive Emerald Ash Borer. Prompt attention is needed so that they do not become dangerous to humans in the future. Trees that have been badly infested may need to be cut down and burned before the beetle spreads further. For my research, I mapped the ash trees that I was able to identify along the trail systems in Stanley Park. Each tree was marked by its coordinates using a GPS. I discovered very few ash trees on the main trails of the conservation area; this was not surprising as they have been steadily on the decline. I carried out a simple wellness check to more accurately determine the status of each individual ash tree. However, evaluating the current conditions of the remaining ash trees was difficult. Bark indicators were one of the only methods of detecting the beetle at this time of year. Some damage was too obscure to link directly to the ash borer. Unfortunately, I was not able to complete my assessment and analysis. This poster will display my findings so far.

Guilbe, Lisamary '20
Faculty Sponsor, Prof. Michael Vorwerk
Native Plant Response to Presence/Absence of Mycorrhizal Fungi for Ecological Restoration
The primary goal of this project is to find ways to help the establishment of self-sustaining native plant populations in restoration areas with degraded soils. It is important to use native plants when restoring degraded sites, especially when the site has threatened or endangered species. These species will benefit from the reintroduction of native plant species. Changes in the environment due to human activity may require modifications in the ways plants are reintroduced. In some restoration projects, plants will have to grow or be planted with other organisms for a higher success rate. One group of organisms that can help plants in their survival rates are called Arbuscular mycorrhizal fungi. Plants form beneficial symbiotic relationships with Arbuscular mycorrhizal fungi. Using Arbuscular mycorrhizal fungi benefits plants by aiding in the uptake of nutrients, which the plant roots are not otherwise able to reach. In return, the plants supply the fungi with sugars. Soil samples were collected from degraded sites near South Lot on the Westfield State University campus, as well as healthy grassland and forested sites in the WSU Research Area. Experimental pots of the soils were mixed with Arbuscular mycorrhizal fungi while other pots were maintained as controls. All were then planted with Northeast Native Grass seeds. The growth was monitored until the campus was shut down. The goal was to measure plant biomass at the end of the experiment to determine the impact of the fungi.

Halpin, Conor '20
Faculty Sponsor, Prof. Michael Vorwerk
An Analysis of Water Quality in the Stream Feeding Otis Reservoir, Otis MA
Otis Reservoir is a 1,036-acre public access lake in the towns of Otis and Tolland, Massachusetts. The shoreline is densely developed with summer homes, while in season the lake is filled with boaters, fishermen, and vacationers making the town's economy flourish. It is important that water entering Otis Reservoir be of high quality to ensure it is healthy for aquatic organisms and public use. A fellow student in last semester's research found that water entering the Otis Reservoir from the Big Pond tributary had temperatures that spiked up to the mid 90°F range. Changes in water temperatures can have a huge effect on water quality, overall species composition, and behavior in aquatic ecosystems. My study involved in-situ monitoring of temperature, dissolved oxygen concentrations, and pH levels in the stream using a Hydrolab Instruments Quanta Multiprobe Water Quality Sonde. These parameters are fundamental indicators commonly used to assess water quality and aquatic ecosystem health. Three sample sites along the stream were measured three times per week, leading up to the inflow into Otis Reservoir. Unfortunately, shutting the University down due to the Covid 19 virus cut my study short, and I was only able to sample for three weeks (nine sample days). My goal was to sample six weeks as well as include a study over space (measuring the tributary every 150 feet) and time (measuring one location every hour for 8 hours). This poster will show my interim results and conclusions.

Hampton, Jacob '20
Faculty Sponsor, Prof. Michael Vorwerk
A Comparison Between Management Strategies and Desired Outcomes in Community Gardens Across Massachusetts
With the recent popularization of community gardens, it is important to distinguish what obstacles organizers face that prevent them from maintaining a successful operation. Garden success rate was measured by a series of interview questions based around a compiled list of "best practices" from Rutgers, Texas A&M, and NC State University. How a given community garden follows these practices was compared to a self-reported determination on whether the garden has been successful in achieving its desired goals. Due to the limitations COVID-19 presents, these interview findings are only preliminary. In addition to this qualitative analysis, soil samples were also going to be collected at each garden and analyzed for nitrate and pH content, as a measure of how each garden's management strategy affects the

amounts of these critical nutrients. In an experiment, these same samples would have been used to grow beans, and final plant biomass would be used as a measure of soil productivity and health. This would have been compared to both the reported success of the garden and its soil chemistry. Experimental treatments, including different added fertilizers, would have also been tested. Due to COVID-19, this portion of the study was not carried out at all.

Mooney, Myles'20
Faculty Sponsor, Prof. Lauren DiCarlo
Bumblebee Visitation Time Between the WSU Pollinator Garden and an Early Successional Habitat
Pollinator plant preference depends on a variety of factors, including flower color, morphology, scent, protein, amino acids, and lipids. Bumblebees (Bombus), common pollinators in Massachusetts, are known to visit flowers with high pollen protein to lipid ratios since higher pollen protein concentrations improve the growth of the colony; however, local preferences are unknown. To measure bumblebees' flowering plant preference, late-season visitation time of flower clusters was observed in both the Westfield State University's pollinator garden and a nearby early successional habitat. It was hypothesized that bumblebees will have longer visitation times in the pollinator garden than the early successional habitat. The garden was planted to attract pollinators, with showy flowers more likely to attract pollinators. Three species of bumblebees were found between the two locations: B. impatiens, B. griseocollis, and B. bimaculatus. Six flowering plants were observed for visitation. Goldenrod, Panicled Aster, and Woodland Sunflower were found in the early successional habitat, and New England Aster, Obedient Plant, and Aromatic Aster were found in the pollinator garden.

Ottolini, Dominic '20
Faculty Sponsor, Prof. Michael Vorwerk
Correlation of Physical Steam Characteristics and Increased Water Temperature in the Otis Reservoir Inflow Stream, Otis MA
Physical streamflow characteristics are important to monitor when assessing the overall water quality of a stream and in explaining anomalies in water quality. Maintaining good water quality ensures the overall health of humans and our ecosystems. A previous student's study on Otis Reservoir found extreme high temperatures in the northeast cove. In this cove, a stream leading from Big Pond flows into the reservoir. I performed extensive physical stream surveys on the inflow stream to see if there is a correlation between stream characteristics and the extreme water temperatures. The parameters were the stream cross-section survey, horizontal survey, stream bottom survey, stream flow, and stream habitat survey. They were assessed at four transects along the stream. Providing a description of how the stream physically changes as it moves downstream and how the water moves throughout its lifespan in the stream pinpoints areas where temperatures could've been increased. Before the study was prematurely shut down by the University's COVID-19 shutdown I was able to execute each survey at two transects. Drastic changes were found in the surveys completed at each transect. The stream begins with stable banks, a silty stream bottom, and a consistent depth from bank to bank. By the time it reaches its entry point to the reservoir, the banks are affected by erosion, the stream bottom has a mix of conglomerates and woody debris, and the stream depth varies across the transect. Results from these transects can be viewed in my poster.

Simpkins, Hanna '20
Faculty Sponsor, Prof. Michael Vorwerk
An Analysis of the Environmental Impact of Almond Milk versus Cow Milk
Milk substitutes have been becoming increasingly prominent in most people's diets all around the world in the recent decade. These products have been marketed and advertised under the pretenses that they are superior in the fact that they are better for the environment than cow's milk. This is due to the fact that the production of almond milk does not require the factory farming of dairy cattle. This produces large amounts of methane and requires lots of resources to provide the cows with ample food and water and keep them in good health. There are also many health-related benefits of substituting a non-dairy option

for regular milk which has helped in increasing the popularity of this product. However, more recently, there has been some buzz about the fact that almond milk may not be so wonderful after all. Some plant-based alternatives require a very large quantity of water and materials to produce. Other materials include pesticides, plastic packaging, fossil fuels for transportation, and a large number of bees to pollinate the almond trees. These plant-based alternatives, almond milk, in particular, have to be transported across the country, as much of the country's almond milk is produced in California. This study will analyze the environmental impact of the life cycle of cow's milk versus the environmental impact of the life cycle of dairy substitutes, specifically almond milk. The term life cycle entails the whole process of milk production, transportation, packaging, and consumption.

Psychology

Chapman, Katie '20
Faculty Sponsor, Prof. T. Alex Daniel
The Most Effective Way to Prime: Words or Pictures?
Priming is when a memory of a past stimulus influences an individual's response to a later stimulus (Graf & Schacter, 1985). Priming uses implicit memory; this process is very quick and occurs without the individual being aware it has occurred. Individuals who have amnesia, and therefore cannot produce explicit memory, still exhibit the priming effect (Graf & Schacter, 1985; Jacobs, Grainger, Ferrand, 1995; Schwartz, 1989). Past research has shown that words can be primed by both words and pictures, however, there are few studies that compare the two modalities of priming. This project is interested in investigating through the collection of preliminary data what stimuli (pictures or words) are the most effective to prime individuals with. It is predicted that participants will perform better when primed with words rather than pictures, but also that participants will perform better on the word completion task when the target words relate to one that was primed rather than not primed.

Chapman, Katie '20
Prof. Faculty Sponsor, T. Alex Daniel
State Anxiety and Visual Attention: A Free Viewing Eye-Tracking Experiment Past research has supported the hypervigilance-avoidance hypothesis within samples who have a diagnosed anxiety disorder; however, little research has been conducted to test this hypothesis within subclinical samples. This model predicts that people who have high anxiety have an initial attentional bias towards threatening stimuli, directing their attention toward a threatening stimulus initially, but then subsequently avoiding the threatening stimulus. Participants were randomly assigned to one of two groups where anxiety was either induced using the Trier Social Stress Test (TSST) or not induced via a placebo procedure. Afterward, participants were shown a total of 40 image pairs, each of which contained one negative threatening image, while their eye gazes and skin conductance response (SCR) were measured. The results of this study did not support the hypervigilance-avoidance hypothesis, suggesting that this model of anxiety might only pertain to those with clinical levels of anxiety. These results contribute to the existing literature surrounding anxiety and attentional biases and offer a potential behavioral test for treatment outcomes.

Letsche, Samantha '21
Faculty Sponsor, Prof. T. Alex Daniel

Measuring Selective Attention: The Effect of Background Music on Cognitive Test Performance

This within-group experiment examines the effects of background music on selective attention. Background music is constantly around individuals as they perform tasks throughout their daily lives. This experiment researches if background music takes away human's selective attention from the task they have at hand. This experiment examines selective attention through the use of the Stroop Effect Test and the impact music has on reaction time and accuracy for this test. The study is based on 30 undergraduate students from Westfield State University. This study was done to determine if background music negatively impacts selective attention, causing inattention to the task the participants are presented with. Researchers found a significant difference in accuracy when participants listened to Classical music as opposed to Hip Hop music; participants had higher scores when Classical music was present. There was no statistical significance in either reaction time or accuracy when comparing music playing in the background to no music present. There was no statistical significance in the reaction time between participants who listened to Classical music compared to Hip Hop music.