

OFFICE OF THE PRESIDENT

December 4, 2020

Dear Campus Community:

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

It is certainly a credit to CURCA Director Lamis Jarvinen, Ph.D., and the diligent work of the CURCA Committee to continue this fine tradition of recognizing the significant work of students and faculty.

The creation of a virtual format to replace a large-scale in-person event displays the type of adaptability and creative thinking on display each semester through an admirable collection of research projects developed and executed.

Once again, the intellect and scholarship of Westfield State University students will be showcased. Their knowledge gained through coursework is tested through research and creative avenues, both on campus and through their participation in experiential learning and internships. Such involvement is important for students to pursue advanced degrees and challenging careers.

By generously lending their talent and expertise our dedicated faculty members support undergraduate research projects while serving as mentors.

We are indebted to the CURCA Committee for its collective determination to bring this signature academic event to fruition at Westfield State once again, as we shine a light on our students' accomplishments during a challenging time.

I encourage students to remain steadfast in their exploration of original research and their collaboration with faculty members to pursue and satisfy their intellectual curiosity.

Sincerely,



Roy H.
Saigo,
Ph.D.
Interim
President

CENTER FOR UNDERGRADUATE
RESEARCH AND CREATIVE ACTIVITY

Welcome to our 2020 Fall CURCA Celebration!

The CURCA celebration is an exciting time for our campus as we come together to showcase and celebrate research and creative work of Westfield State University students across all disciplines. It is a day filled with excitement and pride and one we look forward to every semester. CURCA provides students with a unique opportunity to showcase and communicate their work with others. This semester's pandemic has prevented us from celebrating together on campus, but it has not stopped our students from pursuing research and creative projects. With the help of dedicated faculty mentors, students have presented a variety of impressive work.

On behalf of the CURCA committee, congratulations! It is an honor to host this student event and to highlight Westfield State University's commitment to student-applied experiences. 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! Whether through classroom-embedded work, independent research, or internships, these experiences provide students with an opportunity to develop and demonstrate their skills, making them competitive prospects in the workplace, graduate, or professional schools.

This Celebration highlights over 100 undergraduate student projects from all three Colleges along with 25 original student-composed poems (Wall of Words), original musical performances, creative videos, and audio recordings describing their study. Our Celebration is further enriched by the talents of English majors Meaghan Davis '21 and Grace Templeton '22 who were chosen to orate their original poems. Their videos are highlighted on the Celebration homepage.

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 for your contributions and faculty mentors who've worked tirelessly to ensure project success! Thank you Interim President Saigo and Academic Affairs for your continued efforts to prioritize undergraduate research and creative activity through funding and advocacy. The amazingly dedicated CURCA Advisory Board, Professor Roderico Acevedo, Louann D'Angelo, Dean Enrique Morales-Diaz, Corinne Ebbs, Professor Anthony Furnelli, Professor Sonya Lawson, Professor George Ramirez, Professor Amanda Salacinski, and Professor Robin White. This committee is unparalleled in its dedication, insights, and support for fostering institutional growth of research and creative activity. Thank you to Thomas Howard, CURCA Graduate Assistant, for his fearless ability to take on big projects like developing a beautiful CURCA Celebration website, Professor George Ramirez for his artistic input with website and logo design, and Gretchen Konrad, Administrative Assistant, for all of her dedication, communication, and careful editorial efforts in creating this booklet.

Thank you all!



Lamis Jarvinen, Ph.D.

Director, Center for Undergraduate Research and Creative Activity

CURCA Virtual Opening Ceremony

<https://www.westfield.ma.edu/center-for-undergraduate-research-creative-activity>

Welcome Videos:

Dr. Roy H. Saigo, Interim President, Westfield State University

Dr. Lamis Z. Jarvinen, CURCA Director

Keynote Speakers:

Meaghan Davis '21, English, Poetry Reading

“Why We Weren’t Allowed to Bike with Flip Flops on During the Summer”

This poem reflects upon a moment in my childhood in which my younger sister, Ireland, fell off her bike after tangling her flip flop in the tire. It is a piece from a chapbook that I drafted for my Advanced Poetry course about violence against the human body and working-class attitudes.

Grace Templeton '22, English, Memoir Excerpt Reading

On Motherhood and Mothering, excerpt from Stage One - "Denial"

Motherhood is often portrayed as a journey full of undeniable bliss, speckled with moments of hardship as individuals learn to love and be loved in a way they never have before.

But when viewing motherhood through the lens of Elisabeth Kübler Ross's "Five Stages of Grief", perhaps we can learn to sympathize with the struggling woman in her transformation of becoming a mother.

2020 Student Summer Undergraduate Research Fellows (SSuRF):

This highly competitive award is given to students for their research or creative activity proposal. Students, along with their WSU faculty mentors, undertake an intense 10-week summer research program at Westfield State University to explore their proposed projects.

Madison Czerniawski '21, Economics

Faculty Sponsor - Professor Hillary Sackett-Taylor

*Personality Traits and Health Insurance Plan Attributes: An Economic Choice Experiment**

Olivia Houde '22, Regional Planning

Faculty Sponsor - Professor Alina Gross

Greening the University Campus: Recommendations for New Student Orientation

Holden Nelson '23, Chemistry and Math

Faculty Sponsor - Professor Roderico Acevedo

*Polychlorinated Biphenyls (PCBs) and their Degradation Products: Detection and Remediation Strategies for Afflicted Communities**

Mario Richards '21, English

Faculty Sponsor - Professor Elizabeth Starr

*Embodiment Theory Explained**

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** After Project Title Indicates Audio or Video Component Included Online*

College of Arts, Humanities and Social Sciences

Communication

Jenna DeLisi '21, Communication

Faculty Sponsor: Professor Elizabeth Preston

The Rapidly Changing World – Documentary*

At the start of the pandemic I started a video icon to document the ever changing world. This is part one of my documentary, which brings you back to the early lockdown days.

Liam Foskett '24, English; **Lyric Lamagdelaine** '22, Criminal Justice and Political Science

Faculty Sponsor: Professor Sinuk Kang

Faces in Film: How Movies Today Mirror And Shape Their Societal Audience*

“Our research examines patterns within popular film characters of the past ten years through recording, among other variables, the physical appearance and depicted experience of about 80 leading and supporting roles across 20 movies. Through this sample we draw conclusions about the demographics of contemporary filmed storytelling, and how these qualities of a mass communication medium reflect and impact societal attitudes in the West.”

Samantha Grunden '24, English; **Amanda Jefferson** '24, Political Science

Faculty Sponsor: Professor Sinuk Kang

A Content Analysis of the Movie Portrayal of Main and Supporting Characters: Rated PG13 Action/Adventure Movies*

We conduct a content analysis of 20 main and 20 supporting characters in rated PG-13 Action/Adventure movies to explore how they are portrayed in various aspects such as gender, physical appearance, depictions of violence and sex, consequences at the end, and relationship/family status . Based on the findings, we also discuss how the movie characters are presented compared to real-life people.

English

Saltanat Aldabayeva '21, Chemistry; **Maninder Singh** '22, Environmental Science and Regional Planning

Faculty Sponsor: Professor Brian Chen

Disappearing Chinese Community of Kolkata

The purpose of this project is to inform the audience about the extinction of the only Chinese community in India. The project will cover assimilation of the Chinese people into the Indian culture.

Haley Freund '23, Early Childhood Education

Faculty Sponsor: Professor Brian Chen

Economic Shift in Italy's Chinatown

After a sudden increase of the Chinese population in the late 20th century, there was a major change in the fashion industry of the Chinatown in Prato. Chinatown began to take over all of the major shops and became one of the largest, most effective communities in the production of fashion products.

Bradley Harvey '22, Elementary Education; **Tess McDonald** '22, Psychology
Faculty Sponsor: Professor Brian Chen

Europe's Chinatowns: Liverpool Edition

This presentation will go over the history of Liverpool's Chinatown. Especially in regards to WW2 and its lasting affects.

Joanne Hatch '21, English and Secondary Education

Faculty Sponsor: Professor Brian Chen

Liverpool's Chinatown: The Lost History

Liverpool's Chinatown has a deep history surrounding the events in World War I. In this presentation, I will be exploring this forgotten history and highlighting the importance of Liverpool's Chinatown.

Cassidy Irzyk '21, English

Faculty Sponsor: Professor Brian Chen

The History Behind the Hybridization of Peruvian Chinatown's Culinary Culture

This presentation will demonstrate how the Chinese immigrated to Peru, formed Barrio Chino, and its culinary result. The food of Barrio Chino is a representation of the integration into Peruvian culture, and how Barrio Chino is a hybridization of Chinese and Peruvian cultures.

Rachel Lagasse '23, Music Education

Faculty Sponsor: Professor Brian Chen

Education in Singapore's Chinatown

This presentation takes a closer lens into the diverse, multi-ethnic enclaves of Singapore's Chinatown-- from the Hokkiens (Fukiens) to the Cantonese, etc. By delving into this rich cultural diversity, we can see why this vibrant Chinatown is called the "Gateway to Asia" where "East meets West."

Lisha López-Sánchez '23, Early Childhood Education and Spanish

Faculty Sponsor: Professor Brian Chen

Cultural Fusion: El Barrio Chino

This presentation will focus on people living in "El Barrio Chino" in Havana, Cuba. It will explain the fusion between Chinese and Cuban culture and how it manifests itself in the aspects of Chinese-Cuban people's everyday lives.

Natalie Maslak '22, Political Science

Faculty Sponsor: Professor Brian Chen

London Chinatown: Maintaining Cultural Identity in a Tourism Hub

Through the discussion of London Chinatown's history, as well as it's rising tourism, research focuses on the struggle to maintain cultural identity in a growing tourism destination. History is discussed to provide a basic understanding of cultural norms and traditions that tourism can pose a risk of undermining or changing.

Mario Richards '21, English

Faculty Sponsor: Professor Elizabeth Starr

Embodiment Theory Explained*

This project will explore what embodiment theory is. This will be done by looking at its origins and how it is discussed today.

Elizabeth Sears '22, Communication and Economics

Faculty Sponsor: Professor Brian Chen

Chifa: A Fusion of Chinese and Peruvian Culture

Chinese who immigrated to Peru strived to assimilate into Peruvian society. Chifa, a fusion of Chinese and Peruvian cuisine, is an example of the blending of the two cultures.

Masala Solinis '23, Ethnic & Gender Studies and Social Work; **Audrey Therriault** '21, English

Faculty Sponsor: Professor Brian Chen

Women in Sydney's Chinatown

This project will examine the intricacies and intersectionality of women in Chinatown communities in Sydney, Australia. Discrimination and cultural biases will be analyzed, including misogyny, racism, economic disadvantages, oppression rooted in tradition, and lack of social mobility.

Kamber Sorel '21, Psychology

Faculty Sponsor: Professor Brian Chen

Quartier Asiatique: The Asian Community of Paris, France

Insight into the Asian community of Paris, and the "Chinatown" located there. A look into the lives of the French-Asian people.

Wall of Words Authors

Nicholas Barry, Sierra Benware, Jankaleishka Burgos Cruz, Liam Cotter, Lindsey Daniele, Enaira DaSilva, Jack Dudley, Anthony Duval, Kailey Houle, Cameron Kelleher, Jake Mahoney, Alyssa Malone, Michael Neilsen, Brendan Rooney, Darby Ryan, Isabella Sacco, Kayla Shields, Brianna Smith, Kamber Sorel, Lindsay Stenico, Grace Templeton, Jillian Tully, Melanie Voss, Hailee Wallace, and Koralise Williams

Music

Skyler Acconcio '21, Music Education

Faculty Sponsor: Professor Sonya Lawson

Identity and Conformity in Samuel Barber's "Knoxville: Summer of 1915"

Samuel Barber's "Knoxville: Summer of 1915" was the first American work which featured a soprano and orchestra. This major work is defined by its juxtaposition of identity, as heard in the musical conventions, versus conformity, as described by the prose, musical conventions, and performance history.

Regional Planning

Olivia Houde '22, Regional Planning

Faculty Sponsor: Professor Alina Gross

Greening the University Campus: Recommendations for New Student Orientation

This project aimed at creating recommendations for the New Student Orientation (NSO) staff as to how they could present the topic of sustainability at NSO. The recommendations are based off of responses from interviews that were held with orientation staff from other colleges and universities that introduce students to sustainability at their orientation.

College of Education, Health, and Human Services

Criminal Justice

Dana Canales '24, Criminal Justice and Psychology

Faculty Sponsor: Professor Kimberly Tobin

Cash Bail: Why It's an Issue and How We Can Solve It*

My project will be on the issues regarding the discrimination in the process of setting cash bail. I will be explaining the issue, it's importance, and how we can solve it.

Economics and Management

Andrew Allen '21, Business Management

Faculty Sponsor: Professor Anthony Furnelli

Business Negotiation Influencers: Emotion and Non-Verbal Cues

A more in depth look at how emotions and non-verbal cues can impact negotiations in business. A breakdown of tips and tricks in negotiations.

Madison Czerniawski '21, Economics

Faculty Sponsor: Professor Hillary Sackett-Taylor

Personality Traits and Health Insurance Plan Attributes: An Economic Choice Experiment*

This project tests the correlations between personality traits and health insurance plan attributes, while simultaneously estimating an individual's willingness to pay for health insurance plan attributes. We use a combination of survey and choice experiments to test these correlations and willingness to pay analyses.

Zachary Graveline '22, Business Management

Faculty Sponsor: Professor Anthony Furnelli

COVID-19's Impact on the Airline and Cruise Line Industry

How airlines and cruise lines' sales revenue has been affected and how they can recover for the future. This presentation will take an in-depth look at the business challenges for the airline and cruise line industry.

Samantha Grunden '24, English

Faculty Sponsor: Professor Hillary Sackett-Saylor

Reincarnation in Native American Beliefs*

My presentation is based on the belief of reincarnation in Native American religions. This will also talk about different tribes and how the religions vary.

Hazam Ihjul '21, Marketing

Faculty Sponsor: Professor Anthony Furnelli

Negotiation During a Pandemic - Tips and Techniques

How has the recent Covid-19 pandemic impacted sales individuals when it comes to the ability to negotiate? What are the best negotiation techniques and tips to use?

Andrew Warren '21, Economics

Faculty Sponsor: Professor James Schlaffer

A Statistical Analysis of the Effect of Legalization of Recreational Marijuana on Crime*

Using statistical analysis methods, I will be examining the relationship between legalizing recreational marijuana in Massachusetts and crime using data from thirteen states. Crime will be differentiated by violent and property crimes, with a highlight of larceny and burglary.

Movement Science

Daniel Arens '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Mental Health and Development in Relation to Participation in Youth Sport*

Youth sport has long been looked at as a way to keep children active and healthy, as well as helping to develop fine and gross motor skills. Current research is beginning to show new data that participation in youth sport has a tremendous positive impact on children's mental health and happiness as well as later in life moving into adolescence and adulthood.

Nicholas Askins '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Femoroacetabular Impingement (FAI): The Prevalence of FAI in Ice Hockey Athletes*

The aim of this presentation is to show the prevalence of FAI in ice hockey athletes of all ages. A deeper look will be taken into why FAI is an issue, how it occurs, and what can be done moving forward to prevent them from occurring.

Makayla Campelo '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Impact of Exercise on Depression*

This poster looks into many different aspects of mental health and exercise, including types of exercise, population, and types of depression. With the use of many different studies, this presentation demonstrates the idea of exercise is medicine and hopefully can bring to light this less common treatment option.

Kimberly Carter '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Emotional and Behavioral Effects Music Therapy Has When Used as a Treatment for Dementia Patients*

Dementia is a progressive and degenerating disease, but a key brain area where music memory is stored is preserved and left undamaged. Using music therapy as a treatment helps to produce the brains uplifting chemicals in dementia patients which ultimately improves cognition, mood, movement and quality of life.

Kayla Castellano '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Ulnar Collateral Ligament Tears: Which Treatment Method is Most Effective?*

This project looks further into the options of repair, whether its surgical or nonsurgical. It also looks into the rehabilitation process.

Nickolas Chambers '21, Movement Science - Concentration in Sports Medicine

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effects of Virtual Reality on Children and Adults with Cerebral Palsy*

I researched whether or not virtual reality can be used in a clinical setting to improve motor development and motor function in patients with Cerebral palsy. Based on my findings virtual reality is a viable tool to add to rehabilitation techniques.

Collin DeBarber '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Prognosis of Glenoid Labral Tears in Collegiate and Professional Football Players*

In my research my goal was to provide an overview and prognosis of glenoid labral tears in collegiate and professional football players. I concluded from my research that football players are at a higher risk than the average person for developing a labral tear, that blocking and tackling positions are at a higher risk for labral tear, that posterior tears are the most common type of labral tear, that re-injury is a high risk especially in those who have had prior labral repair, that return-to-play rates are relatively high post-injury and post-operative, and that surgical intervention provides the best patient outcomes in terms of injury management.

Alexandria Dotiwalla '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Benefits of Pediatric Prosthetics*

This project is based on pediatric amputee patients, and the benefits that prosthetics can provide to them. Medical care procedures and statistics are included within this research.

Sean Goslin '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Second Impact Syndrome in Contact Sports and Non-Athletic Populations*

My research Highlights second impact syndrome and it's occurrence in both contact sports and non-athletic populations. This research presents a view specifically looking at how second impact syndrome occurs after an initial concussive force and how it affects the patient.

Alexander Kalesnik '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Diagnosis and Treatment of Low Back Pain

Rianna LaFleche '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effect of Mirror Therapy on Post Stroke Patients*

This presentation will discuss current research on the effects of mirror therapy in patients who have experienced a stroke. Mirror therapy positively impacts the recovery of movement in upper and lower limbs suffering paralysis due to a stroke.

Nicole Lapointe '21, Movement Science - Concentration in Sports Medicine

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effects of Physical Activity on Adults with Clinical Depression*

The focus of this presentation is to show the effects of physical activity on adults who suffer from clinical depression. The research on depression and exercise shows that both the physical and the mental benefits of physical activity will assist in improving an individual's mood, overall decreasing their symptoms of depression.

Lina Lark '22, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effects of Physical Activity on Mental Health and Wellbeing*

Mental health and wellbeing have been prevalent throughout time along with various methods to improve it. In this project I will hone in on the effectiveness of physical activity as a method for improvement.

Lindsey McGrath '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Benefits of Exercise on Mental Health*

My topic is the benefits of physical exercise on mental health. In my research I found there are many benefits of different types of physical exercise on mental health to help improve, as opposed to the alternatives like medication.

Julianna McGovern '21, Movement Science - Concentration in Sports Medicine

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Understanding Chronic Back Pains' Physical and Psychological Effect and Applying Interventions and Treatment*

There are many different causes of chronic back pain, but with populations on the rise with this problem it is important to understand the interventions and treatments that allow patients relief and a better quality of life. For example, there is significant research that supports exercise and cognitive-behavioral therapy as positive interventions and treatments for chronic back pain.

Ryan Morais '21, Movement Science - Concentration in Sports Medicine

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

What Role Does Long-Term Physical Activity Play in Reducing the Occurrence of Chronic Disease such as Cancer, Heart disease, and Diabetes?*

In my poster, I determine how great of a role long-term physical activity plays in chronic disease prevention and also as a form of treatment. In doing this, I discuss multiple studies that draw conclusions from long-term data samples that illustrate what role physical activity plays in cancer, heart disease, and diabetic prognoses.

Morgan Murphy '21, Movement Science - Concentration in Preventive Health and Physical Activity

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

Health Benefits Associated with a Plant-Based Diet*

Having a nutritious diet packed with vitamins and nutrients is one of the most important aspects of contributing to maximal human functioning and overall health. In this study, the benefits associated with the change to a plant-based diet (PBD) are expanded upon and validated through the findings of multiple researchers and positive correlations through a database search.

Kyle Paynter '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effects Concussions Have on Athletes Cognitive/Mental Health*

This presentation will provide information on the short and long term effects that concussions have on the cognitive/mental health of athletes. Also, it will give information on how to better handle these athletes who have sustained a concussion.

Amanda Saucier '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effects of Implementing Structured and Unstructured Physical Activity Sessions in Youth*

At most schools today, recess is an unstructured period of time when kids are encouraged to engage in physical activity and social interaction. There are many who support the idea of a structured recess, because in doing so, it provides various benefits for children in their motor development and overall health.

Asia Taylor '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Impact of Exercise Rehabilitation on Substance Abuse*

This project will focus on the benefits for a person who suffers from past or current substance abuse. Focusing on exactly how the exercise rehabilitation process will help with damage already done to the body or help stop the urge of future use.

Taylor Wilson '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effects of Exercise on Dementia*

This presentation will explore the effects that exercise has on patients suffering with dementia. With early onset dementia, consistent exercise has shown to have positive results on delaying the progression of the disease.

Olivia Wright '21, Movement Science

Faculty Sponsor: Professor Lynn Pantuosco-Hensch

The Effect of Resistance Training on the Muscular Strength of the Elderly*

Resistance training has not always been perceived as a beneficial recommendation in daily exercise programs and rehabilitation of the elderly population. This current research focuses on the positive effects that resistance training has presented on muscular strength in the elderly.

College of Mathematics and Sciences

Biology

Curtis Antoine '21, Biology and Psychology; **Grace Brunner '21**, Biology; **Zionna Henderson-Davis**

'21, Biology; **Agnesa Protsun '20**, Biology

Faculty Sponsor: Professor Mao-Lun Weng

Differential Gene Expression Associated with the Pathogenesis of Schizophrenia*

The study involves the analysis of differential gene expression from subjects with schizophrenia to locate sequencing data that are associated with the disorder. Data will be used from the NCBI database to analyze the RNA sequencing by utilizing the Read Mapping and Transcript Assembly application to determine if there is a contributing factor to the pathogenesis of schizophrenia.

Beverly Appiah '21, Biology; John Casey '21, Biology; Jacob Heilmann '21, Biology; Leslie Osei-Bonsu '21, Biology

Faculty Sponsor: Professor Mao Lun-Weng

Analysis of Drought Stress Gene Expression in Maize, Tomato, and Brassica Rapa*

We will be using bioinformatics tools to search the genomes of 3 important cash crops for homologs of genes related to drought stress or tolerance. The goal is to address more frequent drought conditions brought for from climate change/global warming.

Morgan Boisvert '22, Biology; Rachel Franz '21, Biology; Julia Hong '21, Biology

Faculty Sponsor: Professor Randi (Ruth) Darling

The Influence of Temperature on Geese Abundance

We observed the reaction of geese to cold weather. We also looked into their migration patterns and behavior during the colder seasons.

Daniel Candido '21, Biology; Mitch Maslowski '21, Biology; Lizbeth Morales '21, Biology

Faculty Sponsor: Professor Professor Weng

Comparative Duchenne Muscular Dystrophy Genes*

Analyzing differentially expressed genes among healthy and diagnosed DMD genomes. Utilizing BLAST, Cyverse and Rstudio to statistically analyze gene expression.

Jordyn Carpenter '21, Biology and Criminal Justice; Renee St. Jacques '21, Biology

Faculty Sponsor: Professor Professor Weng

Harlequin Ichthyosis*

For our project we have decided to look at data from studies about the ABCA12 gene, which is the gene for an autosomal recessive disease (U.S. Department of Health and Human Services, 2015-'20)) in humans commonly known as Harlequin Ichthyosis. We will be using the data collected in different studies to analyze the effectiveness of the retinoid treatment overall and if these treatments would be beneficial to put into clinical use based on our analysis.

Ryan Cunningham '21, Biology; Meaghan Donahue '21, Biology

Faculty Sponsor: Professor Randi (Ruth) Darling

Ideal Free Distribution of Mallard Ducks

Observing the ducks in Stanley Park to model the theory of ideal free distribution.

Kayla Donaruma '21, Biology; Alexandra Mello '21, Biology; Alyssa Smith '21, Environmental Science; Jailene Stapleton '21, Biology

Faculty Sponsor: Professor Randi (Ruth) Darling

The Effect of Loud Noise on the Reaction of Squirrels by Humans Approaching

This was an experiment based on squirrel flight distance in high foot-traffic parks. We tried to see if squirrels would be urbanized and be used to sudden loud noises, and allow us to approach them.

Jean Ganek '23, Biology and Secondary Education

Faculty Sponsor: Professor Jessica Stephens

Investigating the Origins of Same Sex Behavior*

Despite being seemingly maladaptive, same sex behavior has persisted in animals leading evolutionary biologists to question why and how. Although there is still much debate, genetics, social environments, and the evolution of animals' sex drive are the leading theories today.

Syed Khalid '21, Biology; **Fatima Massae** '21, Biology

Faculty Sponsor: Professor Mao-Lun Weng

ABA's Response to Drought in Arabidopsis*

We want to study the effect of abscisic acid hormone (ABA) on Arabidopsis under drought conditions, and what responses this hormone has under this abiotic factor.

Jennifer Krahala '21, Biology

Faculty Sponsor: Professor Mao-Lun Weng

DEGs Identified in Individuals with Parkinson's Disease after Intensive Rehabilitative Training*

Gene expression has shown that intensive 16-week rehabilitative training, has improved muscle mass and neuromuscular function deficits in individuals with Parkinson's Disease. Genes associated with muscle regeneration and neural development had a higher rate of expression, compared to a reduced expression of genes related to apoptosis and denervation.

Vanessa Sanches '21, Biology; **Patel Shiv** '20, Biology; **Bryan Titus** '21, Biology

Faculty Sponsor: Professor Mao-Lun Weng

RNA-Seq of Lung Cancer*

Comparing the RNA-seq between smokers and non-smokers who have and do not have lung cancer. We will be looking at if there are any similarities between the genetic sequence of these individuals

Chemical and Physical Sciences

Holden Nelson '23, Chemistry and Mathematics

Faculty Sponsor: Professor Roderico Acevedo

Polychlorinated Biphenyls (PCBs) and Their Degradation Products: Detection and Remediation Strategies for Afflicted Communities*

A video overview of the research I performed over the summer with Professor Acevedo regarding the chemical pollution of the Housatonic and remedial strategies thereof. This includes a brief history of the issue, a brief analysis of some remedial options, and my conclusions as to the efficacy of the proposed solution.

Environmental Science

Samuel Adams '20, Environmental Science

Faculty Sponsor: Professor Tim Parshall

Land Management Plan for Native Plants and Animals

The aim of my project was to create a management plan for the native plants and animals at a wetland/upland site in Southampton, MA. The management plan includes creating a plan for removing invasive species, installing birdhouses, planting beneficial native species, and delineating the wetland.

Daizha Baptiste '21, Environmental Science

Faculty Sponsor: Professor Tim Parshall

Does the Inclusion of Native Communities in Conservation Projects Influence Outcomes and Avoid Conservation Refugees?

The growing issue of displacement and expulsion of native people in the name of conservation and biological protection has resulted in a considerable amount of human rights violations and debates over environmental ethics. In this senior research project, I examine how community-based conservation approaches interact with both social and environmental institutions in an effort to find the most sustainable route for modern-day conservation.

McKenna Bento '21, Environmental Science

Faculty Sponsor: Professor Michael Vorwerk

The Impact of Residential Development on Cyanobacteria Colonization in Ponds of Plymouth, MA

Cyanobacteria are microscopic organisms found in ponds and other bodies of water, and when a bloom occurs it can be extremely toxic to the organism and to the environment. I sampled ten ponds in Plymouth, MA to determine the correlation between residential development and the amount of cyanobacteria present and have found that ponds with more residential development had more cyanobacteria.

Erica Burton '21, Environmental Science; **Gillian Pinciario** '21, Environmental Science

Faculty Sponsor: Professor Michael Vorwerk

Impacts of Small Massachusetts' River Impoundments on Macroinvertebrate Communities

Aquatic Macroinvertebrates can serve as bioindicators of water quality because species can vary in sensitivity to pollution and oxygen concentrations. We sampled Aquatic Macroinvertebrates upstream and downstream of ten dam impoundments in Massachusetts to determine the impact that small dams have on aquatic ecosystems.

Dean Conrad '21, Environmental Science; **Tristan Courtemanche** '21, Environmental Science

Faculty Sponsor: Professor Michael Vorwerk

A Comparison of Massachusetts' Freshwater Lake and Stream Acidity Between 1990 and 2020

We sampled the pH in 71 lakes and streams across Massachusetts and mapped out the results using GIS. We compared present day acidity levels with data from 30 years ago to calculate how much conditions have improved as a result of stricter air quality regulations; this is important because acidity levels play a major role in aquatic ecosystem health.

Kristen Couture '21, Environmental Science; **Ryan Judd** '21, Environmental Science

Faculty Sponsor: Professor Michael Vorwerk

A Comparative Study of Diet Fluctuations of Dissolved Oxygen and pH Between a Deep Tail-Water Release River and a Shallow White-Water River

We sampled dissolved oxygen and pH every half-hour for a 24-hour diel cycle on the Swift (MA) and Scantic (CT) Rivers, and compared the results using stream survey characteristics. We found the highly productive Swift River had dramatic diel fluctuations, whereas the less productive Scantic River had only modest diel fluctuations.

Bryant Dana '21, Environmental Science and Regional Planning; **Chris Leclaire** '21, Environmental Science; **Carey Marshall** '21, Environmental Science

Faculty Sponsor: Professor Tim Parshall

The Effects of Different Management Techniques on Invasive Plants and on Ixodes Scapularis (Black-Legged Ticks) Population

Previous research has demonstrated a relationship between invasive shrub abundance and tick populations, which may be related to microclimate conditions such as soil moisture and humidity. To

investigate this relationship, we visited the area of interest twelve times to measure tick abundance, microclimate, and vegetation regrowth of four plots one year after each were treated with different invasive management techniques to evaluate which technique was the most effective and time efficient.

Olivia Footit '21, Environmental Science

Faculty Sponsor: Professor Tim Parshall

Non-Native Insects and Their Impact on the Eastern Hemlock

Non-native insects have the potential to dramatically reduce tree populations and lead to major changes in forest composition. In this senior seminar project, I have measured the abundance of two non-native insects - the hemlock woolly adelgid (*Adelges tsugae*) and the elongate hemlock scale (*Fiorinia externa*) - in two locations in western Massachusetts, to determine how eastern hemlock (*Tsuga canadensis*) is being affected by their presence.

Eric Harris '21, Environmental Science; **Chad Hauptman '21**, Environmental Science; **Paul Soucy '21**, Environmental Science

Faculty Sponsor: Professor Michael Vorwerk

An Analysis of the Effects of Shoreline Development on Lower Trophic Level Freshwater Organism Diversity and Abundance in Massachusetts

We analyzed the effects of shoreline development along pond/lake ecosystems to determine its impact on lower trophic level aquatic life. We sampled fifteen pond/lake ecosystems in Massachusetts weekly for five weeks, using bait fish traps to measure species diversity, abundance, and characteristics, which was then compared to shoreline development using satellite imaging.

Kailyn LaPointe '21, Environmental Science

Faculty Sponsor: Professor Tim Parshall

Ecological Management Plan for Recreation and Biodiversity at Springdale Forest in Westfield, Massachusetts

This project is an ecological management plan for a section of forested area off of Springdale Rd. in Westfield, Massachusetts. The management plan draws from field data on invasive species and current recreational use and provides guidance on how to restore the land to a state that promotes biodiversity and supports passive recreational activities.

Jonpierre Levesque '21, Environmental Science; **Thomas Morin '21**, Environmental Science

Faculty Sponsor: Professor Michael Vorwerk

The Effect of River Impoundments on Fish Catchability and Aquatic Ecosystem Health

Over the course of 2 months, we fished upstream and downstream of 5 impoundments, 5 times each, to determine the catchability of fish as a measure of the impact of those impoundments on aquatic ecosystem health. At this point (halfway through the study) we have not found any strong indication that catchability differs upstream versus downstream.

Nicolas Pietroniro '20, Environmental Science

Faculty Sponsor: Professor Lauren DiCarlo

N.O.I. Proposal for Restoring the Westfield State University Research Area

This project proposes a restoration plan for two degraded sites within the Westfield State University's research area. This plan has two objectives: 1) remove multiple exotic species to encourage the growth of native plants and 2) involve students in the removal process and vegetation monitoring.

Paige Pressey '21, Environmental Science and Biology

Faculty Sponsor: Professor Tim Parshall

The Influence of Urbanization on Ecosystems and Humans

Pollution from urbanization tends to disproportionately impact certain demographics, including BIPOC, so it is essential to consider this while analyzing how well Massachusetts manages urbanization. In this senior seminar project, I investigate the relationship between urbanization and air pollution in Massachusetts counties.

Matthew Rowell '21, Environmental Science

Faculty Sponsor: Professor Tim Parshall

Mowing's Effect on Climate Change

Soil is a non-renewable resource that we have been draining carbon from since the earliest days of civilization through agriculture and land management. In this senior seminar project, I am investigating how much carbon may be added back to soil after the cessation of mowing in the research area at Westfield State University.

Judd Ryan '21, Environmental Science

Faculty Sponsor: Professor Michael Vorwerk

An Assessment of Current Habitat Conditions and Macroinvertebrate Populations in the Swift River and Scantic River

This poster focuses on analyzing the current habitats available on the Swift and Scantic Rivers. Macroinvertebrate were are collected in various river habitats on both rivers and were their populations were also assessed.

Liam Tomasetta '20, Environmental Science

Faculty Sponsor: Professor Tim Parshall

Santuit Cranberry Bog Restoration

In this senior capstone project, I create a restoration plan for an abandoned cranberry bog located in Mashpee and Barnstable Massachusetts. The goal is to restore the abandoned cranberry bog to a natural wetland habitat, included in the plan is the site location description, goals and objectives, methods, and multiple restoration options depending on the project's budget.

Michael Virgilio '21, Environmental Science

Faculty Sponsor: Professor Tim Parshall

Alford Springs Nature Preserve, Forestry Project, and Interpretive Trail Sign

The focus of the project was to collect specific data about wildlife habitat and vegetation for Berkshire Natural Resources Council in regards to the Forestry project that resulted in the heavy cutting of trees along the Father Loop trail at Alford Springs. The cutting has been evaluated for its potential to serve ecological benefits associated with early successional habitat for wildlife, ability to maintain production of high quality lumber, as well as what the project will look like in the future for BNRC to install an educational interpretive sign on the trail that will engage recreational users with the significance of the property.

Psychology

Rebecca Brice '21, Psychology; Kennedy Mckelvey '21, Communication; Amy Natarelli '21, Psychology

Faculty Sponsor: Professor Princy Mennella

The Power of Social Media on Anxiety and Depression*

Given the pandemic and increases in social media use, the purpose of this study was to determine if time spent in social media could be related to anxiety and depression levels. Results indicate a significant positive correlation between social media utilization and both anxiety and depression levels.

Cortlyn Clark '20, Psychology; Allison Foley '21, Psychology; Tucker O'Neil '21, Psychology

Faculty Sponsor: Professor Princy Mennella

Stressin', Depressin', and Social Media Flexin': Social Media Use and Its Effects on Anxiety and Depression*

With increased use of social media during the pandemic, the present study examined the quantity of social media use and its effects on anxiety and depression. No amount of social media per day was found to significantly affect levels of anxiety or depression.

Elizabeth Ferrara '21, Psychology and Art

Faculty Sponsor: Professor T. Alex Daniel

Mood and Mindful Art: Do Flow States Improve Mood?

Through a remote survey (because of COVID-19) students complete a mood inventory prior to and directly after completing a flow inducing task. The goal is to see if the act of creating mindful art can change a person's mood.

Janya Hernandez '20, Psychology; Ashley Hockenberry '21, Psychology; Ashley Saccamando '21, Psychology

Faculty Sponsor: Professor Princy Mennella

Does Depression Make You a Bad Decision Maker?*

In addition to changes in mood, people suffering from depression experience alterations in cognitive functions as well. In line with this thinking, in the present study, we observed that subjects who experienced depression, determined by the Hamilton Depression Rating Scale, made significantly worse decisions on the Melbourne Decision Making test ($p < 0.05$) than subjects who were not depressed.

Fergie Perez '21, Psychology; Priscilla Rucks-Smith '21, Psychology; Kyana Santos '21, Psychology

Faculty Sponsor: Professor Princy Mennella

La Comparación of Being Bilingual and Monolingual Effects on Working Memoria*

The purpose of our study was to investigate whether bilingual individuals have improved cognitive functioning and therefore perform better on working memory tasks than monolingual individuals. No significant differences in performances were observed between the groups, on either task administered.

Valentina Rodriguez-Pino '21, Psychology and Criminal Justice; Alexis Taupier '21, Psychology and Criminal Justice; Allison Webster '21, Psychology

Faculty Sponsor: Professor Princy Mennella

Sleep Less, Remember Less? The Effects of Sleep on Working Memory*

Sleep can have powerful impacts on cognitive function and for that reason we examined if there was a relationship between sleep and working memory, using the digit span task. We found little evidence to support a correlation between sleep quantity and working memory performance.

Allison Webster '21, Psychology

Faculty Sponsor: Professor T. Alex Daniel

Does Virtual Pet Therapy Really Work?*

My research studied the effects of virtual canine therapy in reducing anxiety and promoting positive moods. We specifically looked into if a canine unleashed or leashed promoted more positive outcomes.

Tessa Whitaker '21, Psychology

Faculty Sponsor: Professor Summer Williams

The Relationship Between Caffeine and Anxiety in College Students

I've been conducting a study on how caffeine affects levels of anxiety as well as sleep patterns among students at Westfield State University. 148 participants have taken a survey with basic demographic information as well as questions about levels of caffeine consumption, anxiety symptoms and sleep patterns.