Undergraduate Symposium on Research, Scholarship and Creative Endeavors

Sponsored by the Research and Sponsored Programs, Office of the Provost and University College

"The knowledge you gain in the classroom can only take you as far as the syllabus, but what can be learned during research is limited only by creativity and a desire to learn."

— Kyle W. Angermeier,
Senior, Applied Engineering

April 9, 2019

Kent Student Center
Ballroom
Kent Campus, 1-5 p.m.

KENT STATE
UNIVERSITY

Welcome From the President

Congratulations on your participation in Kent State University's sixth annual Undergraduate Symposium on Research, Scholarship and Creative Endeavors.

Your involvement reflects a commitment of time and energy for which you should feel a sense of pride and accomplishment. Likewise, I take great pride in the creative, enterprising research activities of our faculty and undergraduates and look forward to further promoting student and faculty involvement in undergraduate research, annually showcased in this dynamic symposium.

Whether you are a student researcher or faculty mentor, thank you for expanding Kent State University's mission of scientific discovery and engagement in diverse approaches to learning. Participating in research as an undergraduate student has the added benefit of clarifying career goals and improving critical thinking skills.

I look forward to seeing you at today's event.

Sincerely,

Beverly Warren

President

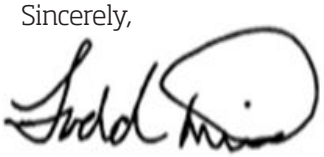
Welcome From the Office of Academic Affairs

It is my great pleasure to welcome you to Kent State's sixth university-wide Undergraduate Symposium on Research, Scholarship and Creative Endeavors. Upon graduation, you will go on to attend graduate or professional school, take a job in the private sector or in government, or volunteer in the community or abroad. No matter your choice, you will all face one challenge in common – how to use what you have learned here at Kent State in order to solve real-world problems.

By deciding to undertake a research project, a scholarly activity, or a creative endeavor during your Kent State experience, an activity that has led you here to this afternoon's symposium, you have chosen not to wait for the challenges to come to you after graduation. Instead, you have taken on these real-world challenges now!

Your research, scholarly, and creative work over the past months or years speaks volumes about your drive, energy, and enthusiasm for big challenges. I know that with this experience, you will go on to great things beyond Kent State. I congratulate you on your effort, and I urge you to take pride in the accomplishments you are presenting today.

Sincerely,



Todd A. Diacon, Ph.D.

Executive Vice President and Provost

Welcome From the Vice President for Research and Sponsored Programs

Welcome to all the undergraduates involved in the sixth annual Undergraduate Symposium on Research, Scholarship and Creative Endeavors!

This Symposium is a testament to Kent State's investment in research and its commitment to provide meaningful research experiences and creative scholarship opportunities for undergraduate students. Participation in the symposium has grown steadily over the past five years and it is our goal that the number of presenters will continue to grow.

As you all have learned by now, hands-on involvement in research and creative endeavors not only prepares you for your next step, whether it be graduate studies or launching your career, but also can be one of the most memorable learning experiences of your undergraduate years.

Congratulations on your posters/presentations and the culmination of all your hard work.

Sincerely,

Paul E. DiCorleto, PhD

Vice President for Research and Sponsored Programs

Message From Symposium Planning Committee Co-Chairs

Now in its sixth year, the annual Undergraduate Symposium on Research, Scholarship and Creative Endeavors continues to represent the "best and brightest" of Kent State University faculty and students. For many, this celebratory event is the culmination of months, or even years, of focused study, ardent investigation, daily rehearsals, and some of the most productive student-faculty teamwork around! Everyone involved deserves a hearty congratulations for academic work well done!

A brief personal note to all participating students: Whether your project involves scientific research, artistic creation, a performance, or an oral presentation, you are to be commended for your unique efforts. Likewise, you should feel a sense of pride for the valued contribution you are making to undergraduate research, scholarship, and creative endeavors at Kent State University and the world! We cannot help but marvel at the range, depth, and merit of the work being done by Kent State students in collaboration with our experienced, talented faculty members.

On behalf of this year's planning committee, we extend our best wishes for your continued academic success!

Sincerely,

Douglas L. Delahanty, Ph.D.

Professor, Psychological Sciences and Associate Vice President, Research and Faculty Development

Ann Gosky

Director, Office of Student Research

About the Symposium - A Thank You

Hosting a symposium is a collaborative effort, and this year's planning committee would like to thank all the departments and individuals who assisted in making this a successful event. We are grateful to all the involved chairs, directors, and mentors; to Sheila Pratt, Douglas Nehez, and the highly-skilled IT team. Also, a special thank-you is extended to Liz Richardson, Hilary Kennedy, Vanessa Earp and Michael Hawkins from University Libraries, Zach Mikrut at LaunchNET, Harshasri Gadipelli, Hailey Tarbet, Lisa Thomas, and all of our faculty, staff, judges, and volunteers who collectively "made the difference" for our student researchers.

Again, thank you for your hard work, dedication, and expertise. We appreciate your assistance and look forward to future collaborations on behalf of undergraduate student research at Kent State University.

Sincerely,
The 2019 Undergraduate Symposium Planning Committee

Special Thanks

Sheila Pratt has worked at Kent State University for more than twenty-one years. For the past thirteen years, Sheila has worked in Research and Sponsored Programs in the area of Technology Commercialization where she assists in managing invention disclosures, patents, and the licensing of technologies invented by KSU faculty, staff, and students. Sheila has also been assisting the Office of Student Research with projects and special events.

Hailey Tarbet edited and compiled the Undergraduate Research Symposium's event program. She is a senior English major with this being her second semester working with the Office of Student Research through the Writing Internship Program. This past fall, Hailey also assisted with Kent State's Three Minute Thesis Presentations, and she managed the Office's student profiles. She looks forward to working on future projects.

Harshasri Gadipelli is pursuing her master's in Digital Sciences. She has been working as a student assistant for the Office of Student Research since 2018. Primarily, Sri works on web pages and their maintenance, but she also does graphic design for research events. Last year, she was involved in the Undergraduate Research Symposium and managed the event through an app called Whova. For this year's symposium, Sri has designed the cover page for the event program, and will continue use and oversight of the Whova app.

Student Research Ambassadors serve as the face of undergraduate research by recruiting student researchers, sharing their experiences across campus with students and faculty, mentoring new and emerging student researchers, and working with other research ambassadors to assist with research programming. Most importantly, Student Research Ambassadors connect with students in a high-impact practice and encourage everyone to pursue their passions.

Meet Kent State's Student Research Ambassadors for the 2018-2019 academic year:

- Jenna Bloom, Senior, Sociology
- Ya'el Courtney, Senior, Biological Sciences
- Alyssa Fernandez, Senior, English
- Sidney Fimiani, Junior, Psychology
- Gracen Gerbig, Senior, Biological Sciences
- Nyla Henderson, Senior, Journalism
- Alexandra Henry, Junior, Psychology
- Kendra Hughley, Junior, Journalism
- Brett Lowden, Senior, Integrated Life Science
- Nicholas Manning, Senior, Geology
- Leanna Maguire, Senior, Anthropology
- Anna Mika, Senior, Anthropology
- Zoe Nare, Senior, Computer Engineering
- Mary Kay Palazzo, Senior, Crafts/Jewelry
- Joram Rana, Senior, Biotechnology
- Hayley Shasteen, Junior, Psychology
- Marielle Snyder, Senior, Speech Pathology and Audiology
- Chase Steele, Senior, Biological Sciences
- Aimee Wildrick, Senior, Psychology

Thank you Student Research Ambassadors for all your hard work and dedication!

Undergraduate Contributors

Katherine Abreu....26
Prakash Adhikari....60
Shivani Agarwal....36
Oluwasemilore Ayomide Akintelure....61
Arwa Aljohani....15
Fiona Allan....61
Vanessa C. Allen....13
Abdulaziz Aloliqi....36
Bylasan Alsaadawi....15
Gabriella Amato....34
Janell Anderson....22
Elizabeth Anderson....28
Kyle Angermeier....52
Benjamin Arigo....62
Olivia Arnold....50
Eliott Arroyo....45,47
Emily Ashton....63
Sami Azeroual....35

Brooke Baker....65
Isabella Banyai....43
Maximillian Barczok....48
Megan Barrett....61
Symone Baskerville....15
Shreya Basu....63
Taylor Baumberger....15
Gabriel Beadle....66
Lauren Beagle....61
Desiree Bechtol....66
Hanna Beck....23
Madison Becker....23
Brooklyn Bennett....41
Claudia Bennight....66
Ariel Benya....63
Nick Berger....66
Stephanie Berhosky....63
Raman Bhambra....35
Sydney Bihn....47
Stephanie Birkmeier....16,22
Nick Blower....67
Haley Bohman....16
Kylene Boka....44,46
Desmond Bolden....59
Robert Q. Borja....22
Tayla Bott....67
Marissa Boughman....52
Veronica Bousquet....35
Rachael Bower....18
Sarah Boyer....28
Joseph Brandhorst....60
Eleanor Brems....15
Lauren Breslow....23
Michaela Broadnax....73
Jaclyn Brooks....60
Jacob Bryda....10
Margaret Busche....19
Tori Butera....27
Catherine Bywalski....24

Ruby Joan Callen....72
Jordan Campanelli....36
Katelyn Cartwright....23
Cecelia Catcher....55
Maryrose Ceccarelli....63
Logan Chancey....29
Darlene Chapman....61
Sachi Chaudhari....29,37
Katya Chiti....36
De'Ann Cobbs....73
Julie Coleman....9
Lindsey Colvin....29
Katherine Connell....48
Ya'el Courtney....36
Dominic Cristiano....30
Cydney Critchlow....24
Michael Crowell....48
Nicole Crowl....64

Talia Dagan....63
Madison Daniel....24
Katherine E. Darling....69
Nicholas Davis....13
Erin Davis....40
Tristan Davis....77
Danielle DeCristofaro....55
Angela Deibel....52
Janki Desai....29,37,61
Nicolle Di Domenico....48
Rebekah Dodge....24
Storm Dolfi....16
Tasia Doshak....43
Rebecca Douglas....30
Bryan T. Dowdell....46
Alyssa Dressman....62
Anna Droz....30
Taksh Dubé....65
Cody S. Dulaney....43,45,47
Leah Dunlevy....64
Drew Durben....62
Gracie Durham....13
Amy Dutko....47

Andrew Eagar....33
Leah Eberts....63
Maya Efrat....19
Sean Eisentraut....63
Olivia Eitzman....11
Jordan Ely....61
Annie Eramo....23
Abigail Ernst....63
Marley Evans....61

Sloane Facemyer....16
Monica Faust....67
Taylor Feldt....30
Emily Ferguson....60
Alyssa Fernandez....41,56
Brianna Fernandez....63
Adam Fertig....47
Sidney Fimiani....67
Andrea Fischer....24
Natalie Flamik....56
Kylie Marie Fletcher....62
Brittany Followay....46
Mia Forren....36
Sloan Fox....16
Sara Fox....62
Megan Fraley....24
Lana Frankle....39
Kirstan Franklin....63
Antonie French....61
Sean Frisbie....52
Lindsey Fron....65
Taylor Fulton....30

Kirsten Gable....61
Kayla Galton....51
Kimberly Gapinski....11
Keshav GC....53
Emily Gebler....25
Bridget Gee....44
Gracen Gerbig....31
Megan L. Gibson....37
Brandon M. Gibson....43,45
Sydney Gilmer....61,63
Brooke Golden....63
Niarra Gooden-Clarke....61
Bailea Grant....64
Georgia Grant-Manning....63
Emily Graydon....56
Kellie Greene....68
Katherine M. Greskovich....53

Kendall Grice....25
James Griffin....56
Kayleigh Ground....61
Rebecca Grunder....44

Suzanne Hales....36
Svea Hall....62
Camilla Hall....60
Elisha Hamric....17
Sheena Hanly....61,73
Tori Hargett....44
Zachery Harmon....31
Kelly Harper....14
Sarah H. Harper....46
Rachel Harris....61
Tricia Hart....45,47
Emaly Hart....65
Caitlin Hawkins....53
Alexandra Heffner....57
Gabrielle Henderson....47
Nyla Henderson....41
Melissa Henry....51
Alexandra Henry....68
Haylee Hermann....40
Noah Hersey....64
Barbara Hickin....62
Leslie Hill....29
Kristine Hilles....61
Paige Himburg....17
Kevin Hineman....37
Casey Hoelle....17
Elisabeth Hofinger....62
Taylor Holland....24
Emma Holodnak....68
Samantha Hoppe....18
Ra'Janir Horton....62
Lillian Horvat....62
Samantha Horwitz....64
Kathleen Huber....17
Jacqui Huebner....67
Kendra Hughley....41
Stacie Humm....43,46
Samantha Hyme....37

Katelynn Iacianci....15
Savanah N. Insana....68

Ian Jameson....60
Sierra Jamison....18
Kumudie Jayalath....39,53
Sahana Jayaraman....64
Bohuai Jiang....19
Amber Sue Joglar....27
Madeleine Johnson....63
Lindsay Johnston....28
Ebone Jones....64
Jessica Jones....65
Victoria Jones....61

Konstantinos Kasamias....49
Sean Kellar....57
Jenna Kerns....62
Aaron Kessler....74
Jin Hyun Kim....46
Anne King....62
Madelyn M. Kist....53
Kazimir Klein....64
Hannah Knotts....18
Mathew Knox....63
Renee Knudstrup....50
Sarah Kois....21
Ashley Kopchak....18
Dana Koretz....25
Jesse Kowalski....39
Alana Kracht....18
Michael Kratcoski....62
Divya Krishnamoorthi....60
James Krzoska....29,37
Nick Kubiez....62
Adam Kulp....29,37

Elisabeth Kunz....25

Madeline Lacourt....17
Robert Lagunovich....74
Sarah Lancione....63
Sarah Landek....23
Kelsey Lanese....64
Bridget Langguth....64
Jordan Latta....9
Syndey Laubscher....48
Joseph A. Laudato....43,45
Hailey Lawler....62
Modesto A. Lebron....45
Yi Hin Lee....57
Madeline Leon....26
Amanda Leon-Martin....11
Sarah Levasseur....19
Taylor Lewis....31
Brett Lewis....62
Kyle LoPresti....59
Allison Losco....62
Brett Lowden....29,37
Ethan Lower....64
Tabitha Ludwiczak....65
Zoe Luiz....25
Melina Lynn....60

Leanna Maguire....74
Brooke Mahan....57
Madeline Mahler....19
Alex Mailhot....49
Natalie Majc....62
Nicholas Manning....49
John Michael Manzano....22
Jonathan Markle....74
Erica Marshall....43,44,46
Leonitia Mason....19
Alyssa Massey....14
Devan Mathie....31
Macy McClure....61
Madeline McCord....63
Miles McDaniel....58
Jillian McGarry....26
Aleesia McKinney....63
Kiersten McMahon....32
Joseph McNeely....58
Natalie M. Menassa....32
Anna Mika....75
Brandon A. Miller....45
Sara A. Miller....45
Sara Miller....64
Jessica Miller....65
Natalie Mills....19
Jordan Mirto....54
Anna R. Montazzoli....38
Cameron Moodie....58
Jessica Moore....25
Meggie Moore....32
Tiera Moore....60
Thimberley Morgan....75
Cathrine Mortimore....26
Aliyah Moyé....69
Adam Mueller....20
Halimah Muhammad....72
Trinity Murray....15
Joshua Myers....9

Ellen Nachtrab....23
Joseph Nash....61
Evan Neal....20
Molly Neidig....26
Steven Neville....69
Malorie Newingham....23
Madison Newingham....58
Andrew Newsom....63
Timothy Niepokny....39
Caroline Nitirahardjo....32
Jessie Nowjack....33
Marlon Valladares Nunez....54

Padraigin O'Flynn....60
Joseph Obermeier, Jr....65
Drew Ohman....66
Emery-Arsene Olama....42
Olivia Ols....50
Cyd Ortiz....63
Molly Otteson....10,25
Blessing Oyedele....10

Nina Palattella....64
Mary Kay Palazzo....12
Elliott Palmer....42
Brittany Palowitz....28
Maia Pancost....54
Katherine Pandolfo....61
Taylor R. Parker....64
Alysha Parkhurst....20
Jason Parks....43,44,46
Abigail Peed....62
Maria Perez-Viscasillas....14
Samantha Pesick....26
Gariella Phillips....20
Olivia Pickard....20
Mary Plauche....49
Noel-Marie Plonski....32,34
Brandon S. Pollack....46
Casey Pollock....27
Zackery Popovich....16
Katrina Potter....69
Kaleigh Pratt....62

Lindsey Rice....65
Christian Richardson....38
Ellyse N. Ridgway....30
Cassidy Ridley....29
Amanda Riley....33,39
Jessica M. Roberts....28
Katarina Roby....19
Kyra Rogers....26
Tara Rogers....38
Christian Ross....54
Casiera Rotunna....63
Faith Roush....14
Kamryn Rozier....61
Jenna Ruedlinger....70
Katelyn J. Rygel....38

Jacob Sagan....11
Alexis Salvatore....22
Paige Sammons....62
Victoria Sanborn....67
Jessica Sankovic....46
Katherine Sarver....22
Alexis Sayre....70
Emily Schaefer....51
Elizabeth Schmidt....65
Nicole Schnabel....26
Margaret Schocken....26
Amanda Schwaben....65
Sydney Schwegler....75
Alexis Scott....27
Kristen Septaric....75
Andrew Shafer....27
Taylor Sharosky....75
Samuel Harlan Sharp....33
Hayley Shasteen....70,71
Jenna Shearer....62
Katie Sheldon....71
John Shelestak....39
Ashley Shemery....37,39
Clarissa V. Shields....69
Kaitlin Shvach....33
Oriena Sidiqi....20
Caroline Smith....16,21
Therese Smith....44,46
Mollina So....27
Thomas Sonnanstine....29
Amy Spanos....16
Chase Steele....37,38
Rachel Stine....21

Ellen Stingel....27
Alexandra Stoicovy....27
Desiree Stribling....76
Sadie Strouse....64
Nick Sturr....31
Ashley Sumpter....34
Taylor Susi....61
Alary Sutherland....15

Emily C. Tagesen....43,45
Yu Lun Tai....44
Isabella Tassiello....50
Kasey Taylor....31
Tierra Taylor....67
Dipendra Thapaliya....31
Miara Thomas....17
Dalton Thompson....50
Jeff Timmons....49
Amber Titus....30
Minhchau To....39,53
Alexandra Tolich....71
Riley Tomor....39
Cardyl P. Triofante....43
Travis Tucci....59
Maya Tucker....21

Cara Vaccariello....28
Christopher Vadala....65
Octavio Valdez....42
Alexandra Valentino....61
Kathryn Van Arsdale....65
Madelynn VanderHart....20
Clara Varndell....63
Alena Varner....46
Jeremiah A. Vaughan....46
Teloria Vega....19
Ashleigh Viaene....21

Jacob Wagner....39
Montria Walker....12
Artisha Walker....64
Haley Warden....73
Deondre Washington....24
Madeline Waters....28
Lauren Watson....47
Riley Weatherholt....34
Caitlyn Webb....55
Sydney Weiss....64
Kendall Wells....62
Dana'Sha White....61
Deven White-Revere....76
Natori Wicker....59
Aimee Wildrick....76
Alexander Wilk....47
Dylan Wilkerson....63
Rachel Williams....22
Savannh Wills....62
Saraina Wise....63
Madison Wolf....54
Fred Wolfe....10,11
Jarret Wonders....62
Mallory Woods....62

Maya Yates....65
Sarah Yerkey....68

Chloe Zebrak....61
Vala Zeinali....40
Yaoxian Zhang....22

ARCHITECTURE

Posters

Julie Coleman, Senior, Architectural Studies

Mentor: Brett Tippey, Ph.D.

History's View of Denise Scott Brown

Much of architectural history is dominated by male figures. This fact begs the question of whether the discipline's disregard of women is due to women's lack of production or to a more nefarious gender bias among architectural historians. Denise Scott Brown, who is an American architect and principal at the firm Venturi, Scott Brown and Associates, presents one such case. Brown has authored many of the most significant texts and buildings in postwar architecture, both individually and collaboratively with her husband Venturi. However, historians often attribute these texts and buildings solely to Venturi. This provides an interesting opportunity to take a critical look at how historians present and understand the contributions of women to architectural production and discourse in comparison to their male partners.

Jordan Latta, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

1929 in Spain: An Analysis of the Barcelona International Exposition and Ibero-American Exposition

Between its loss of empire in 1898 and the middle of the twentieth century, Spain oscillated between historicism and modernism in architecture. This debate was evident in two international exhibitions in 1929: the Ibero-American Exposition in Seville and the Barcelona International Exposition. This paper will analyze these two expos and answer questions about the inspirations and implications of each environment, particularly when considering historicism and modernism. The Seville and Barcelona exhibits were pivotal moments in Spanish architectural history and should be examined in context and connection, rather than as isolated events. To show meaning and connection between each exhibition, this paper will consult period Spanish journal articles (such as Arquitectura or A.C. Documentos) and travel documents (such as Evelyn Waugh's Labels) as well as historiographical accounts.

Joshua Myers, Senior, Architecture

Mentor: Jean Jaminet, M.Arch

Dirty Business

Architecture is particularly adept in producing waste. The skillful collection of waste at a domestic scale and its distribution within a vast network of undetectable conduits is relevant to contemporary circumstances, which prevent any meaningful reconciliation of the personal impulse to accumulate with the universal desire for equilibrium. Readymade goods play a significant disciplinary role in a culture that has completely abandoned resistance to commodification, instead favoring the spectacle and sensations produced by these objects. Dirty Business suggests a hypothesis that the integration of the readymade, which is the architectural antithesis of monumentality, is actually establishing a new monumentality in the age of the post-digital. This view is critical of Reyner Banham's observation of readymades and mechanical systems' integration into American architecture as avoiding monumentality.

Molly Otteson, Senior, Fashion Merchandising

Mentor: Trina Morris, M.A.

Matters Magazine

Matters Magazine is going to be a creative, collaborative, and educational fashion magazine, focusing on mental health. We hope to be able to help communicate the struggles of mental health to people who have and haven't dealt with it through inspiring, beautiful images and text written by Kent students and mental health professionals. This project will challenge our ability to take a creative concept and bring it to life, starting a conversation about mental health on Kent State's Campus and bringing an exciting new way to get people interested in talking about serious subjects. Our mission is to humanize mental health, decreasing the stigma that comes with it and making students more comfortable with getting help for themselves or others.

Blessing Oyedele, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

Political Influence in the 1970s in Spanish Architecture

Spanish architecture in the 20th century not only conveyed the artistic and functional aspect of society, but also disclosed the political nature of the economy at a time when Spain's architecture was struggling to strive. This research investigates and explains how changing political or social factors are reflected in Spanish architecture. The political involvement in Spanish architecture has led to numerous findings, and this research aims to unveil the pros and cons of the role politics had to play in Spanish architecture. This project also explains why it is important to understand the role of Spanish politics before using this time period as a reference in present, modern architecture.

Fred Wolfe, Senior, Architecture and Amanda R. Harrer, Senior, Architecture

Mentor: Rui Liu, Ph.D. and Mark Mistur, M.S.

Tw[Ice]

TW-ICE, a self-supporting ice pavilion, explores the relationship between form and force. Developing a form with a sense of interiority derived from a structure abiding by the physical constraints of ice, which only acts in compression, guided the design process. The resulting cone form is one that effectively distributes the self-load of the ice shell to the base. The study explores form-finding methods and an innovative construction method employed to form scalloping panels and a natural parabolic arch at the intersection to contribute to the structural integrity.

ARCHITECTURE

Oral Presentations

Jacob Bryda, Senior, Architecture

Mentor: Brett Tippey, Ph.D.

The Macià Plan: A Modernist Revision of the Cerdà Plan

The Eixample district of Barcelona, designed by Ildefons Cerdà, gained notoriety in the early 20th century. Rather than continue the urban dynamic of the old city, Cerdà's proposal spread out the urban fabric. Almost 70 years later, Le Corbusier developed his urban design theories. After his seminal work Ville Radieuse, Le Corbusier designed the Macià Plan for Barcelona, one that directly implemented his urban theories, while simultaneously acknowledging and challenging Cerdà's Eixample extension. This paper will examine how Le Corbusier's Macià Plan serves as an understanding and questioning of Cerdà's plan and an implementation of Le Corbusier's modernist planning. Specifically, this paper will examine the similarities in design between the plans, the challenges Le Corbusier proposes to Cerdà's plan, and the connection between the plans.

Fred Wolfe, Senior, Architecture

Mentor: Rui Liu, Ph.D.

Metaheuristic Applications in Architectural Topology Optimizations

The goal of applying a metaheuristic function is to generate feasible solutions within an acceptable time scale. This investigation is intensified, focusing on metaheuristic algorithms and their application to the field of architecture in a method to explore the relationship between inputs of physical parameters, such as forces, and the output of physical form. Through a case study using a plug-in in Grasshopper which employs a bi-directional evolutionary structural optimization, the study discusses how to address challenges such as available data, quality of data, and time when applying metaheuristic algorithms in architectural design.

ART

Artistic Pieces

Olivia Eitzman, Senior, Fine Arts and Amanda Leon-Martin, Junior, Fashion Merchandising

Mentor: John-Michael Warner, Ph.D.

Warriors of the Colony

This is a socially-interactive art installation of hand-made ants individually designed to reflect a femme who was interviewed on their personal story. Afterwards, we will add the warrior to the colony together as a symbolic moment of mutual love and support. Our mission is to empower women and people who are survivors of the "othering" done by society. Participation is on a volunteer basis, so there is no forced vulnerability or sharing of personal information, and they will remain anonymous as desired. The well-being of the colony is dependent on participation and community. Without them it would be empty. We feel that this project will help to create an inclusive environment for people relating to our mission.

Kimberly Gapinski, Sophomore, Theatre Studies

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Something Old, Something New, Something Greek, Something Blue

As humans, we seek to make the world around us beautiful. Sometimes that beauty requires the defacement of public property. The presence of graffiti and street art has been apparent in ancient cities like Pompeii and Herculaneum. These subsects of art have always existed alongside and within urban areas. Now it cohabitates alongside the antiquated streets of Athens, which has become a center for street artists. Art in many of its different forms has looked to the Classical Greeks for inspiration for thousands of years. By incorporating both the ancient and modern forms of art found in Athens, a piece can be created that embodies the essence of this ancient city. This piece will include a dress, a wig, and a pair of earrings.

Jacob Sagan, Junior, Fine Arts

Mentor: Daniel-Raymond Nadon, Ph.D.

Ancient Greek Visual Rhetoric Experience

In my trip to Athens alongside my Theatre, Performance, Gender, and Sexuality in Greek History class, I plan to study gender-nonconformity, pederasty (and other various homoerotic relationships), and creatures that exist in Ancient Greek Civilization and mythological culture. I will be exploring a new visual rhetoric that can be applied to my own art-making as a sculptor in terms of design (such as moods, patterns, textures, colors, shapes, weights) and concept by documenting literal pieces of art or folklore relating to homoeroticism, creature-mythology, and relevant iconic architectural-structure and costume aesthetics.

Montria Walker, Senior, Theatre Studies

Mentor: Jen Korecki, M.Ed.

Life Room

The title of my project is "Life Room" which incorporates art and music. The music goes through a journey of my most personal feelings and memories, along with the art. Through each original song, art is highlighted from beginning to end by artist Noelle and Lacy. In the middle of the performance, there will be a live painting happening while I'm singing and is to be completed by the end of the song. I have a passion for both music and abstract painting. I'm passionate about this project because it's an original concept with the combination of art and music. I think it will be beautiful to create an atmosphere for people to feel at-home, included, and inspired. I want them to be very responsive during this performance; it's a very interactive piece. It's interactive because of the space itself. I want to have furniture for people to sit on that will be directly on the stage. The rest of the seating in the black box will come in at an angle to make it more intimate. Before entering the space, there will be a white photo backdrop that people can take pictures in front of. On the backdrop it will say "I Am." My vision is to have sticky notes so people can write different things like "Beautiful," "Talented," or "Worthy"; something encouraging. Before they walk into the room, they will write something they don't like about themselves anonymously and will take out a random one at the end of the show and rip it up to the last song. Each team member is so important to making this work because each component is just as important with art and music being one. This show is what I think the community needs; it's healing and I believe it will bring people together in a way that's never happened before. I think this will encourage students to think outside the box, and if they have more than one passion, to figure out innovative ways to tie them together. With contributions towards this project, I will be creating most of the music and only a few will be cover songs potentially. The artist will be creating all their pieces from scratch because it will be going along with the music. From beginning to end, this process will probably start February 1st to get all the needed materials. I would imagine starting rehearsals mid-February, which could take place in music classrooms and practice rooms. My show will run April 23rd and 24th. I'm going to evaluate the process by having a meeting with the team once a week to track our progress, make improvements, and speak with a designated recorder. I will know how successful this project was from a short questionnaire that people will be able to fill out at the end of the show. I think this project has the potential to be very powerful and memorable!

ART

Oral Presentations

Mary Kay Palazzo, Senior, Crafts

Mentor: Rachel Smith, M.F.A.

Encapsulating Play in Tactile Contemporary Jewelry

My research through the Summer Undergraduate Research Experience involved studying psychological principles of sensory learning and child development and building a body of work consisting of three pieces of contemporary jewelry that reflected my scholarly research. My work began with studying the work of child psychologists and psychoanalysts, such as Joan Erikson. Psychological studies informed the concept of my research and provided the foundation for the forms and materials that I chose to use. Moving onto material research, I worked with latex balloons and eventually transitioned to using textile in conjunction with metal. By using these materials in conjunction with abstracted imagery derived from children's toys, I was able to create a body of work that promotes sensory engagement between each piece and the wearer.

ART/FASHION DESIGN/FASHION MERCHANDISING

Art Posters

Vanessa C. Allen, Senior, Visual Communication Design

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Comparing Ancient Greek and Italian Renaissance Sculpture

After participating in a trip to Athens for research, this project explores my interest in fine art by comparing sculpture esthetics and techniques of ancient Greece to those of ancient Rome and Renaissance Italy. In narrowing this topic down, I am taking a close look at two specific sculptures in art history: Michelangelo's David and Pythokritos's Winged Victory of Samothrace. There are many similarities between these two art pieces because Italian artists took much of their inspiration from the Greeks; however, there are also many characteristics of the sculptures that set them apart. Artists of the Renaissance are known for building their art unproportionally, posed in the contrapposto stance, and as more feminine, whereas the Greeks embraced masculinity, movement, and anatomically-correct proportions. In the instance of these two statues, the big giveaway is that the Greeks tended to only create with the Gods in mind; Roman Renaissance artists were moved by everyday people and religious figures.

Nicholas Davis, Junior, Music

Mentor: Kristin Coen-Mishlan, M.M.Ed.

Sound Beyond Music: The Use and Perception of Creative Sound Beyond Musical Thought and Pedagogy

The traditional use of creative sound is music. The traditional pedagogy of the western harmonic and engraved systems of music molds how we hear and envision the use of sound. I explore creative uses of sound beyond that of only music by explaining how artists implement and perceive sound to benefit the aesthetic choices within their mediums. Through a comparative analysis, I compare western thoughts on musical systems against thoughts on sound from a non-musical, artistic perspective. I analyze the use of sound and harmonic variables in nontraditional mediums. Moving beyond the compartmentalization of sonic art as only music is necessary for grasping sound as an art form as well as having a better understanding of sound as it relates to physics, acoustics, and acoustic imitation.

Gracie Durham, Pre-College, Communication Studies/Applied Communication

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Escaping the Patriarchy: The Depictions of Women and Goddesses in Ancient Greek Art

My research will be comparing the depiction of women and Greek goddesses in Ancient Greek art. Much of the art shows the power and freedom that goddesses had that common women lacked. The art also shows Greek mythology mirrored, which perpetuated the life of a common woman during the Greek patriarchy. Women were only to marry, bear children, and provide around the house. Men were all-powerful and dominating, while women were shameful and deceitful. Ancient Greek mythology blames women for the downfall of men. Considering the social restraint women faced, there were, ironically, a plethora of powerful female goddesses depicted in Greek mythology. I will explore depictions of these real and mythological women by examining both written materials and on-site research.

Kelly Harper, Sophomore, Theatre Studies

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Greek Music: Then and Now

Ancient Greece was a mecca of art and culture, and many of these achievements are preserved today. One artifact that could not be preserved was the music that filled Greece in those formative years. In my research, I will explore how music affected the culture, how it influenced religious traditions, how the instruments originated, and what musicologists believe the music sounded like. During our faculty-led trip to Athens in March 23-30, 2019, I will visit various museums to find artifacts of life and music to substantiate my literary research. The second phase is to find current live music, from street performers to coffee shop musicians, and see the impact of music on the current culture of Athens. Afterwards, I will compare the old and new.

Alyssa Massey, Junior, Theatre Studies and Fabio Polanco, M.F.A.

Mentor: Fabio Polanco, M.F.A.

Best Practices in Musical Theatre Audition Material Location and Selection

Though universally acknowledged as a less-than-perfect form of evaluation, the audition remains the best standard for artistic personnel to determine an actor's appropriate fit for a role. This study investigates the best practices for finding and selecting effective musical theatre material by surveying actors on where they find their audition material, how they select the material, and how successful they have been with using this material in actual audition situations. The results identify trends in material location and selection and provide insights into the most important criteria to consider in order to increase the likelihood of finding and selecting effective musical theatre audition material.

Maria Perez-Viscasillas, Junior, Theatre Studies

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Ancient Greek Armor

This semester I will be researching and compiling information about Ancient Greek armor as part of the Athens Experience theater course, where we will travel to Athens, Greece in order to do on-site research. As a Costume Design major, it is important for me to be able to analyze costumes through a historical lens and to see how it has impacted modern fashions. My goal is getting an in-depth view of the history of armor between the beginning of the Trojan War c.1260 BC and into the Peloponnesian War in 401 BC, looking at how armor evolved through that time along with the crafting techniques, symbolism in design, and its influence in future fashions.

Faith Roush, Junior, Theatre Studies

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Medusa as an Example of Female Sexuality in Both Ancient and Present Times

The myth of Medusa has been viewed through two distinct lenses over time: the male gaze and early feminism. Through Medusa's transformation from a beautiful maiden into a gorgon by Athena, regulation of female sexuality in ancient Greece prevails. After her rape in the Temple of Athena, Medusa faces punishment justified by the goddess through rage at the despoiling of her temple. The myth is important today, highlighting issues of sexual assault, treatment of women, and suppression of female sexuality compared to male sexuality throughout time. Using on-site research in Greece, articles from Studies in Gender and Sexuality Journal, and Hesiod's Theogony, this research will demonstrate the importance of folklore in maintaining male dominance in ancient Greek culture while still acknowledging a possibility for female empowerment.

Alary Sutherland, Senior, Theatre Studies and Katelynn Iacianci, Senior, Studio Arts

Mentor: Daniel-Raymond Nadon, Ph.D.

Stonewall 50+: Building the Wall

This coming year will be the 50th anniversary of the Stonewall Riots, a pivotal point for LGBTQ+ rights. As such, a group of students and faculty here at Kent State began plans for a play. This project features a wall, not to close people out or even blockade progress but as a path to invite change and cooperation. This wall will represent Kent State, students, and faculty alike, as well as any allies or LGBTQ+ people who worked on it. After the show closes, the wall will separate into two halves and become an art installation to inspire and support LGBTQ+ individuals. This piece shows that we, as students and people, won't forget those who came before us, those alongside us, and those after us.

ART/FASHION DESIGN/FASHION MERCHANDISING

Fashion Design

Posters

Arwa Aljohani, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

Bylasan Alsaadawi, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Confidence

My design is a little, black, evening gown dress made of thick, Polyester fabric. The side is sheer with ruffled fabric, and the dress is lined. The dress shows the beauty of a woman's body. My inspiration was this quote from Coco Chanel: "I don't care what you think about me. I don't think about you at all."

Symone Baskerville, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Adventures in Couture

Taylor Baumberger, Senior, Fashion Design; Eleanor Brems, Senior, Fashion Design; and Trinity Murray, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Cotton in the Rain

The purpose of this project was to create cohesive looks, as a student design group, that function for specific tasks and are made of cotton or cotton-based materials. The chosen circumstances to work towards were three looks for the active life of a hiker. After interviewing individuals from the demographic, according to those who have hiked the Appalachian Trail, there were some key needs that we found were not being met by the outdoor clothing that they used. The absence of breathable garments was clearly evident, specifically in rain gear, as their clothing became restrictive early into the trek.

Stephanie Birkmeier, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

Haley Bohman, Senior, Fashion Design; Zackery Popovich, Senior, Fashion Design; and Caroline Smith, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Cotton in the Rain

Rain gear and the outdoor apparel industry are dominated by synthetics because they can wick away moisture from the body and prevent the absorption of external water (Prudeng, 2017). However, effective synthetic material tends to make garments stiff and unbreathable, which causes rain gear to utilize function over form. Traditional outdoor-gear companies spend years developing technically superior products, but these strides in innovation don't appeal to all markets. The technological advances of cotton have allowed for new styles of rain gear to be possible. Storm Denim and Storm Cotton have created the ability to have garments that are both functional and fashionable. The main goal of the collection was to create a new normal for the on-the-go, stylish customer caught in the rain.

Storm Dolfi, Senior, Fashion Design

Mentor: Linda Ohrn-McDaniel, M.F.A.

Inclusive Representation of Middle Size Ranges in Fashion

Though the fashion industry identifies market segments by size, these market segments prove confusing for many consumers and can negatively impact their self-esteem. Customers that fall between size ranges are inaccurately represented in the industry, and this niche is seldom given the attention it needs. Designing for this specific "in-between" size range will improve the industry by providing a new market for the target customer and by giving her the confidence she needs to actively participate in fashion. The inclusion of more products targeted for the average-sized woman will both increase sales and make the customer feel empowered.

Sloane Facemyer, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

The Business Dress

The project dress itself is based off of the history and process of creating a men's button up shirt. It will also include research and imagery in support of the de-stigmatization of sexual experiences in sex workers and others that may have experienced traumatic sexual experiences.

Sloan Fox, Senior, Fashion Design and Amy Spanos, Senior, Architecture

Mentor: Vincent Quevedo, M.F.A.

3D Printed Fashion

Using 3D printing software, I collaborated with an architecture student, Amy Spanos, to develop a new design process that I applied to fashion. This way of designing is new to the industry and has a lot of potential to create zero-waste products using up-cycled plastic filament.

Elisha Hamric, Senior, Fashion Design

Mentor: Linda Ohrn-McDaniel, M.F.A.

FemiMENity

New breakthroughs in material generates a problem in the construction department of design. Expanding our minds to new fabrics, such as Tencel®, can lead to new doors opening to make an impact on the environment and fashion industry. Sustainable aspects pertaining to fashion contain certain techniques, strategies, and alternative processes that are useful in determining a better future for the environment and the fashion industry. Alternative construction techniques, home furnishing, utility fabrics, and even decommissioned fire gear can be repurposed to create distinctive, durable garments. Multiple weight garments are garments that include woven and knit fabrications, which isn't a typical combination in the fashion industry due to the construction difficulty. Researched construction techniques will be produced through sustainable design and integrated use of materials.

Paige Himburg, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Denim Done Differently

"Denim Done Differently" is a research and design project that explores the uses of denim in untraditional ways. Denim is seen as a working class fabric, and worn mainly in tradition jeans, and jacket silhouettes. The concept of this design is to explore a gender neutral silhouette, and to make denim a novelty fabric instead of a traditional fabric. Through the use up cycling old jeans, denim can be patched together to create new silhouettes that don't conform to the traditional ideals of how denim should be worn.

Casey Hoelle, Senior, Fashion Design; Madeline Lacourt, Senior, Fashion Design; and Miara Thomas, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Transformable Travel

Transformable Travel is a transformable capsule collection designed and brought to life by three fashion design majors. The collection's intended customer is the woman who enjoys traveling and is full of wanderlust. The garments transform in several ways to benefit the customer. These garments can transform, creating several looks out of one garment, and allows the customer to personalize their own look.

Kathleen Huber, Senior, Fashion Design

Mentor: Linda Ohrn-McDaniel, M.F.A.

A Study of Form

This thesis collection explores the relationship between architecture and fashion design by investigating the challenges of creating garments with sculptural and architectural forms. Comparisons were made between the process of designing buildings and garments by identifying characteristics of the design process that overlap across the two industries. The approach to designing garments started with analyzing the forms of various buildings and posing the questions, "What if this form was placed on the human body? How could it be adapted for movement?" Research was conducted to evaluate which fabrics and construction techniques were best suited to achieve structure and body. Muslins were created to test and revise each garment. The final collection reflects research and experimentation on the integration of fashion design and architecture.

Sierra Jamison, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

How to Create a Modern Wedding Gown Using Sewing Techniques from My Mother's Wedding Dress

My work includes researching types of fabric best for wedding gowns, types of neck lines, and bodice types. I also research draping and pattern making to create the right fit for my dress.

Alana Kracht, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

Hannah Knotts, Senior, Fashion Design; Samantha Hoppe, Senior, Fashion Design; and Rachael Bower, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Denim Remixed: Workwear Capsule Collection

The purpose of this collection was to provide sustainable and functional workwear for men and women. It was essential to include several features that would make laborers' day-to-day tasks easier. This collection reinvents monotonous uniforms into a unique utilitarian wardrobe. The design process began with researching different brand proposals made by merchandising students. The brand, Denim Remixed, consists of a target market, ethical strategy, and a purpose for the mission statement to follow. Denim Remixed centers around sustainable practices in denim clothing by cutting out harmful chemicals used during the regular production of denim and by offering a fusion of fashion and technology through laser cutting, digital printing, and embroidery design with cotton-based fabrics. Expanding on this proposal, our focus is functionality and workwear. This is important for us because there are so many blue-collar jobs and so little clothing that helps to accommodate these consumers and aid them in their day-to-day life. Our inspiration comes from machinery-based occupations, such as avionic mechanics, vehicle mechanics, heavy machinery workers, and sawmill workers, and creating gender-neutral, practical applications. The target market for this collection consists of blue-collar men and women of all ages. Our next step was getting to know our audience. We interviewed aircraft workers who fit into our target market and asked them questions about desired features in their uniforms and about wear and tear. Key information after this consultation was the need for longevity of design, storage features, ventilation, and performance. Based on these concerns, we decided to incorporate pockets, laser cutting for ventilation, and adjustable elements in this capsule collection.

Ashley Kopchak, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

The Kleibacker Method

My project is putting into play the Charles Kleibacker method of manipulating a biased dress into a perfect fit. Charles is a huge supporter of Kent State University and the Ohio State University. I am recreating a gown designed by Christian Siriano with my own modern twist to it. Some challenges I have faced through this project is fabric manipulation, a perfect fitted dress, and mastering another fashion designer's method of sewing. My finished product will be a black and purple draped dress that is short in length with ruffled sleeve accessories.

Sarah Levasseur, Senior, Fashion Design and Katarina Roby, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

The Rules of Clothes

This project is one big "what if" exploration. We asked questions such as: What if a disaster breaks out and we lose resources for clothing? What if the fashion industry is too hard on the planet and restrictions are put in place? What if the capsule wardrobe becomes a go-to for a new generation? What would we have to do in order to keep style and function while keeping the garment simple, quick, and efficient enough for whatever reason we might need to switch? As a guideline for this problem, we will look at the 1940s and what restrictions were put in place during this era. We will look at these guidelines and see how it might be incorporated in the modern era. How can use what we learned in the past to be better prepared for the future?

Madeline Mahler, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

Leonitia Mason, Senior, Fashion Design; Teloria Vega, Senior, Fashion Design; and Bohuai Jiang, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

SlimFit Activewear

SlimFit is a performance wear line used to benefit women of all shapes and sizes to feel comfortable and beautiful in activewear. We used body-shaping technology to shape the body for a slim look on the outside. We also used gel padding between the thighs to prevent chafing. We have created a stylish body suit, leggings, a sports bra, Joggers, and a hoodie incorporating these techniques.

Natalie Mills, Senior, Fashion Design; Maya Efrat, Senior, Fashion Design; and Margaret Busche, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Pluviophile

The purpose of this project was to create a cohesive collection based upon business plans created by Sophomore merchandising students at Kent State University. The business plan that the designers chose was called Cotton in the Rain. The business plan proposed "developing a new look for the raincoat through environmentally friendly approaches and to encourage consumers to be eco-friendly shoppers." The "company's" mission statement was to "reduce waste of cotton and to use environmentally friendly dyes to produce sustainable, high quality raincoats and jackets."

We incorporated these practices by using one-hundred-percent organic cotton fabrics. The garments created in this collection were designed to either transform within themselves or into varying sizes of bags. This design project shows the designers' interest in the ways of transformable and functional garments while remaining a contemporary design aesthetic. Through this design process, designers were able to create a fresh take on weatherproof garments through sustainable fabrics and creative uses of hardware.

Adam Mueller, Junior, Fashion Design

Mentor: Noel Palomo-Lovinski, M.F.A.

Share the Slopes

This project examines the lack of diversity in the outdoor industry. It includes statistics that show the demographics that participate in outdoor recreation regularly as well as reasons that minorities participate less. The project aims to make outdoor recreation more accessible to minorities by providing modular apparel so that people can purchase one garment rather than two or three. Share the Slopes also examines the positive mental and physical effects spending time in nature has, and why it is important for people to get outside.

Evan Neal, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

Alysha Parkhurst, Senior, Fashion Design; Oriena Sidiqi, Senior, Fashion Design; and Madelynn VanderHart, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Heartbeat Lifestylewear

Our colorful and modest cotton-fabric collection for Cotton Works has garments that are geared toward Muslim women since everything created for them has been limited to neutral colors, and there is a gap in their market for fashionable active wear. Silhouettes include high necks, modern Hijab wraps and hoodies as well as long sleeves, leggings, joggers, sweatpants, elastic, and hidden pockets for functionality and comfort when exercising. Style lines and details focus around the heart and the Heartbeat Lifestylewear logo. The colors chosen were pink, gray, and yellow, so that the collection would be bright but not overwhelming. With these silhouettes, we also wanted to include women of other nationalities, and the garments can be styled in a way that would also be suitable for them.

Gabriella Phillips, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

Olivia Pickard, Senior, Fashion Design

Mentor: Linda Ohrn-McDaniel, M.F.A. and Kerry Jo Bauer, M.F.A.

Decadence: The Shape of Fashion

"Decadence: The Shape of Fashion" is an Avant Garde collection focusing on the technical aspect of manipulating fabric to create new proportioned forms reminiscent of historical costume from the sixteenth through the nineteenth centuries. Taking the female body and exaggerating certain aspects has been in play for centuries. By utilizing age old techniques like boning and extending them to create overstated points of focus, new proportions for the body can be created. One of the main directions is being able to give the wearer the ability to "design" the garment in a sense. Another aspect of the collection is bringing in neoclassical and baroque architecture characteristics to adorn the body in physical sculptures. The point is to make each piece a masterpiece of decadence.

Caroline Smith, Senior, Fashion Design

Mentor: Kendra Lapolla, M.F.A.

Empowered Print Design

The purpose of this research study is to understand the impact of creative, design-based therapies on lower income populations of women located in homeless shelter facilities. The goal is to empower these women through the development of print designs that are unique and personal to them. Interviews and visual work done in creative journals were used to create multiple prints that represent participant's individual personalities and stories. The participants provide feedback on the print designs and select one to be placed on an item of their choosing. Upon receiving the print design, the participant will complete follow-up questionnaires in the months after receiving the design. This study will help us to better understand the effects of personalized prints and new collaborative design approaches.

Rachel Stine, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

Maya Tucker, Sophomore, Fashion Design and Sarah Kois, Graduate Student, Conducting

Mentor: Janine Tiffe, Ph.D.

Wear What Makes You Comfortable, but Looks Professional

Recently, Sarah Kois, a female graduate student studying conducting, was preparing for her first concert at Kent State. Though she asked her professor what to wear, she did not receive an adequate answer. Had she been male, she would have worn a tux. However, even now, there is no standard attire for female conductors, and there are clear divides between male and female genders. Our Flash Grant project has explored the depths and essence of musical conducting to design a suit specifically for women. The goal was to create a design that displays both femininity and command, while being comfortable, breathable, and professional. The final product, designed and created by fashion design major Christelle (Maya) Tucker, will be debuted at the Communiversity Band concert on April 30th in Cartwright Auditorium.

Ashleigh Viaene, Junior, Fashion Design

Mentor: Archana Mehta, M.A.

Viaene Racing

Motocross is a type of motorcycle racing for both men and women; however, there is a significant difference in the amount of gear sold for male and female riders. The lack of gear targeted toward women encourages female riders to wear men's gear. Men's gear fits the women's body poorly, taking away from the amount of protection the gear is made to provide. One is required to wear clothing with complete coverage to protect the body; gear should allow the body to breathe to prevent from over-heating while protecting the body from burns and crashes. I strategically placed textiles on the body to protect the rider in differing locations. Additionally, I experimented with alternative seamlines which allows easy movement. Through the placement of these materials and alternative seamlines, the pants are comfortable, protective, and fashionable.

Rachel Williams, Senior, Fashion Design; Janell Anderson, Senior, Fashion Design; and John Michael Manzano, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Cutting Edge

The collection utilizes technologies in ways that everyday people can wear all of the time. Going into this project, we looked at our target customer and thought of the best way to integrate her into technology options while giving her something that she would be comfortable with. The answer was laser cutting.

Yaoxian Zhang, Senior, Fashion Design

Mentor: Vincent Quevedo, M.F.A.

Fashion Collaboration

Results will be presented.

ART/FASHION DESIGN/FASHION MERCHANDISING

Fashion Design
Artistic Pieces

Katherine Sarver, Senior, Fashion Design; Amy Dutko, Senior, Fashion Design; and Gabrielle Henderson, Senior, Fashion Design

Mentor: Ja Young Hwang, Ph.D.

Nightlife Cotton and Denim Based Anti-Theft Garments

The purpose of this project was to create clothing for young, traveling women who often participate in nightlife activities. Through these garments, women should not only feel stylish and trendy, but also safe from pickpocketing and theft while they are out. Often, women are targeted at night clubs when they use their phone or set down their purse or personal belongings on a table. These issues are very present in large cities in which nightlife is extremely popular: "NYPD reports 3,000 pickpocket incidents a month in New York City" (Safes International). These numbers steadily increase in European cities, and even more incidents are left unreported to local police. Many Kent State University students have experienced these issues firsthand while studying in Florence or New York City. Some have witnessed or experienced phones being taken right out of their friend's hands or personal belongings going missing.

ART/FASHION DESIGN/FASHION MERCHANDISING

Fashion Design
Oral Presentations

Stephanie Birkmeier, Senior, Fashion Design

Mentor: Tameka Ellington, Ph.D.

Designing Digital: Outlining the Past, Present, and Future of Digital 3D Technology in the Fashion Industry and University

In our fast-forward culture, we live to work by constantly striving for new technologies, innovations, and efficiencies. Companies are releasing new gadgets and software to make our lives easier every day. Some companies are starting from scratch, while others are building from key elements already established in other platforms. 3D design software has bound together elements of 2D pattern making and 3D CAD technology to create photo-realistic renderings of garments. Through this groundbreaking creation, large corporate companies and manufactures can increase the speed and accuracy of the supply chain system.

ART/FASHION DESIGN/FASHION MERCHANDISING

Fashion Merchandising

Posters

Hannah Beck, Senior, Fashion Merchandising and Alexis Salvatore, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Cotton and the Athleisure Market: How Are Brands Incorporating Cotton into Their Athleisure Lines?

A current national trend follows the shift of athletic clothing being used for casual everyday clothing. The athleisure wear trend is unbiased and anyone, athletic or not, can take part in this comfortable, sporty trend. This study will be digging deeper into the bigger question of whether companies are doing more to include cotton in their athleisure wear, and if so, what exactly they are doing. The study will research brands and their athleisure wear collections to see which brands are incorporating cotton into their lines to keep the cotton industry competitive. Overall, this study expects to increase the demand of cotton within the industry and will help individual brands to thrive in the athleisure market.

Madison Becker, Senior, Fashion Merchandising and Robert Q. Borja, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Knowledge of Sustainability and How It Affects Consumer Purchasing Decisions

With technology at our fingertips 24/7, consumers have access to the sustainable initiatives that retailers are incorporating into their business models. As sustainability in the fashion industry becomes a prevalent topic in the media, it starts to become a priority in the mind of consumers. By adapting and refocusing efforts to promote positive change and transparency, the fashion industry can decrease the size of its environmental footprint. To increase initiatives, fashion retailers are partnering with organizations that aim to push environmentally friendly production, such as the Textile Exchange, which promotes sustainable cotton and textiles. The purpose of this study is to analyze if a consumer's knowledge of sustainable practices is positively correlated to purchasing sustainable apparel.

Lauren Breslow, Senior, Fashion Merchandising and Annie Eramo, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Excessive Use of Natural Resources and Water in the Fashion Industry

Through content analysis research and surveys, we studied the misuse of water and natural resources in today's fashion industry. Through the survey, we found that there are many consumers who are aware of this excessive use that the industry has taken part of. In addition to negative perceptions, there were also neutral feelings about fashion trends, cost efficiency, and being eco-friendly.

Katelyn Cartwright, Senior, Fashion Merchandising and Ellen Nachtrab, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Sustainability and Laundering in the Consumer Use Phase of the Apparel Life Cycle

The laundering process and its negative effects on the environment are still relatively new topics, and there is a critical need to assess consumers' awareness and current perceptions of their role in the apparel life cycle. In this study, we used the content analysis method and a survey to determine consumers' awareness of various laundering topics. After reviewing the data, we concluded that consumers are becoming increasingly aware of how various aspects of the laundering process affect the environment and that some have even adopted more sustainable habits though their reasons are not necessarily because of environmental conservation.

Cydney Critchlow, Senior, Fashion Merchandising and Sarah Landek, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Consumer Preference in the Fashion Industry: Inter-Fiber Competition

For this project, we studied consumer preferences between cotton and synthetic fibers. We studied this topic by using consumer comments from social media platforms, blogs, etc. We also used exploratory research to better understand what consumers want. We found that some consumers prefer cotton over synthetic fibers though the majority of consumers do not have a preference.

Madison Daniel, Senior, Fashion Merchandising and Malorie Newingham, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Fashion and Natural Resources: Water Usage

The fashion industry can be redeemed both environmentally and socially by shifting consumers' perceptions of cotton textiles and water conservation.

Andrea Fischer, Senior, Fashion Merchandising; Taylor Holland, Senior, Fashion Merchandising; and Catherine Bywalski, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Consumer and Environmental Awareness in Athleisure Trend

Consumers are desiring garments that are not as harmful to the environment as they once were. To keep up with growing demand, brands are attempting to be more sustainable by not using as many natural resources. Consumers and brands have long relied on cotton as a staple natural fiber due to its comfort, ease of care, and ability to be produced sustainably. However, cotton is struggling to stay relevant in the successful athleisure trend. This trend uses mostly synthetic fibers for the utmost athletic comfort and performance. The goal of this case study is to explore how the cotton industry is attempting to battle the growing popularity of synthetic fiber usage in the athleisure market.

Megan Fraley, Senior, Fashion Merchandising and Deondre Washington, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Customer Reaction Toward Sustainable Versus Unsustainable Cotton Products

In today's apparel industry, there are many concerns regarding sustainability. Because there is a rising number of textiles produced due to fast fashion, the industry depends on the world's water sources for apparel production. Out of all the fibers used throughout the world, cotton is one that uses a considerably large amount of water to produce. This has contributed to an increase in water scarcity throughout the world and has the potential to become dangerous if sustainable practices are not implemented to produce cotton goods. The purpose of this case is to determine how consumers react to cotton products that are made through sustainable practices, as opposed to cotton products that are not sustainable. To find this data, we will observe consumers' feedback and responses on various social media platforms such as Facebook, Twitter, and Instagram. We will specifically be looking for responses made between the years of 2016 and 2018. Through the data that we collect, we expect consumers to have an overall better awareness of cotton sustainability. We predict that consumers with this knowledge will have a positive reaction to sustainable cotton and a greater willingness to buy sustainable cotton versus non-sustainable cotton. In conclusion, this study aims to investigate consumer perceptions about the cotton products that they may purchase and the effect this has on their purchasing decisions.

Emily Gebler, Senior, Fashion Merchandising and Rebekah Dodge, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Consumer Knowledge of Sustainability Throughout the Apparel Life Cycle

We studied the environmental impact that apparel has throughout its life cycle as well as which of its life cycle stages is the biggest contributor to the damages apparel creates on the environment. Through our research, we learned that consumers have a very slim understanding of what exactly is hurting the environment when it comes to the apparel life cycle.

Kendall Grice, Senior, Fashion Merchandising and Molly Otteson, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Biodegradable Cotton and Consumer Behavior

We studied consumer beliefs and knowledge on the issues of apparel disposal and biodegradability in order to determine whether these were marketable apparel characteristics. We used content analysis to build a library of consumer comment data based on the concepts that emerged most prevalently throughout our literature research. We used both priori and interactive coding, but, even after taking these results to create a survey that targeted the information, we still lacked direct consumer feedback regarding specific topics. We used many Likert scale questions to gauge our population's thoughts and feelings in our survey, which was shared with snowball distribution. Our biggest takeaway was that young consumers were more likely to be informed on the issues of biodegradability and clothing disposal and that they would be susceptible to marketing based on these concepts.

Elisabeth Kunz, Senior, Fashion Merchandising and Jessica Moore, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Consumer Perception of Cotton Sustainability

Throughout our extensive research, we studied consumer perceptions of sustainable cotton apparel to better understand their level of awareness and their purchasing decisions. We found our information from literature research as well as from conducting our own survey to gauge consumer perceptions. Our findings show that they have an awareness, but not extensive knowledge, on the subject, and they favor certain aspects of sustainable apparel over others.

Zoe Luiz, Senior, Fashion Merchandising and Dana Koretz, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Consumer Preferences on Cotton

This research investigates why cotton has lost its favorable spot as the number one fabric. To do this, we studied background literature on the subject, analyzed content collected from web comments, and conducted our own research. We found that consumers still view cotton favorably, but they simply no longer care about the fabric make-up of their garments. Although consumers associate cotton with positive attributes, they are not paying attention to the fibers that go into the clothes they wear at the time of making the buying decision. Consumers also found synthetic fibers to be very innovative, especially in categories like athletic wear. Through our survey, we discovered that consumers did not see the potential for cotton to be an innovative fiber. Overall, our research found that the main reasons for cotton's market share loss is due to consumer's indifference towards what fibers go into their garments and the rise of innovative synthetics.

Jillian McGarry, Sophomore, Fashion Merchandising

Mentor: Catherine Amoroso Leslie, Ph.D.

Personality Perceptions Based on Body Type

Weight discrimination has been identified as one of the most common forms of discrimination in American society today. The purpose of this research is to identify if this extends to assumptions of personalities/attributes. A quantitative survey investigated whether negative assumptions are made about overweight women's personalities based on body shape/size. The study also distinguishes some of the assumptions most commonly made based on weight. This research serves to inform people on what assumptions they are making about overweight individuals they encounter, consciously or subconsciously. Once these subconscious prejudices have been brought to light and some of their potential sources investigated through background research, steps can be taken to help assuage the problem of weight discrimination and personality assumptions made about overweight women.

Molly Neidig, Senior, Fashion Merchandising and Katherine Abreu, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Natural High-Tech: Engineering Natural Fibers

This project aimed to study consumer attitudes towards GM cotton used in their apparel. This study was conducted in three parts. The first part consisted of literature research. The second was based on data collection and research from consumers through various internet platforms. The third part of our research consisted of a survey meant to determine consumer attitudes towards GM cotton, so we could understand the potential reasons for these attitudes.

Samantha Pesick, Senior, Fashion Merchandising and Madeline Leon, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Genetically Engineered (GE) vs. Organic Cotton: Does Consumer Awareness Impact Purchase Decisions?

This study plans to analyze consumer awareness of the type of cotton used in clothing–GE or organic cotton–and whether this awareness affects consumer desire to purchase a specific product or a certain brand. We will use a survey method to gather data and opinions regarding consumer purchasing habits.

Kyra Rogers, Senior, Fashion Merchandising and Nicole Schnabel, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

From Cradle to Grave: Apparel Product Life Cycle

There are many factors that go into the apparel life cycle, and both manufacturers and consumers contribute to the effects that the apparel industry has on the environment. In order to strike change and lessen the apparel industry's impact on the environment, it is important to study factors directly affecting the environment and deduce whether consumers or manufacturers have a larger impact.

Margaret Schocken, Senior, Fashion Merchandising and Cathrine Mortimore, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Sustainable Athleisure: Influence of Social Media on the Purchase Decisions of Millennial Women

Activewear is an ever-growing market in the fashion industry that is advertised and showcased across social media platforms. Sustainable athleisure brands such as Patagonia, Outdoor Voices, and Groceries Apparel rely heavily on their Instagrams for increased exposure of their product. This research study examines the product promotions, reposts, hashtags, influencers, and events posted by the brands in order to explore the involvement of the consumer following. Determining consumers' perception and involvement with each sustainable brand on Instagram will determine which advertising technique is most successful and provide a pathway for improvement in future marketing strategies on social media.

Alexis Scott, Senior, Fashion Merchandising and Amber Sue Joglar, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

The Fashion Industry and Natural Resources

The fashion industry relies heavily on several natural resources. Consumers and manufacturers are slowly gaining awareness of their impact on today's resources, but the public still faces a lot of unfamiliarity with the intensity of the issue. Water is a major resource of concern when it comes to the manufacture of cotton and its widespread use in the fashion industry. With the continuous growth of the population, water scarcity is evident. The objective of this case is to study and evaluate consumers' concern with water usage within the industry. The case also intends to evaluate the state of the industry's efforts to cut back the use of natural resources. In other words, the study examines the use of water pertaining to cotton and the fact that the waste the fashion industry produces is a growing topic of concern.

Andrew Shafer, Senior, Fashion Merchandising and Tori Butera, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Quantitative Assessment of Consumer Resonance with Respect to Responsibly-Sourced Cotton Initiatives

This research focuses on examining consumers' awareness, perception, and resonance towards responsibly-sourced cotton initiatives across the demographic scope of fashion consumers. After relevant exploratory literature research, we conducted content analysis of online articles relating to sustainable sourcing and administered a subsequent online survey. We analyzed the data, which allowed us to make several conclusions. Consumers have moderate awareness of responsibly-sourced cotton initiatives, and this awareness correlates with a positive notion of trust. Additionally, consumers are most sensitive to quality, price, and environmental impact (in that order). Lastly, surprisingly few differences exist in priority and likelihood of purchasing between younger and older generational cohorts.

Ellen Stingel, Senior, Fashion Merchandising and Mollina So, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Consumer Disposal Habits

Fast fashion encourages high consumer consumption habits and cheap clothing has a shorter life cycle, leading to more textile waste. This study will investigate the relationship between fast fashion consumers' shopping behavior and disposal practices. Content analysis of social media marketing will give insight into consumer knowledge of textile disposal habits. The study will use a quantitative survey method consisting of questions pertaining to the knowledge of shopping behaviors and textile disposal practices. Findings from this study will show that if consumers frequently shop at fast fashion retailers, they are less likely to recycle their clothing. This study aims to find a connection between frequent fast fashion consumers and unknowledgeable textile recycling habits, while looking to improve educating consumers about textile recycling programs.

Alexandra Stoicovy, Senior, Fashion Merchandising and Case Pollock, Senior, Fashion Merchandising

Mentor: Jewon Lyu, Ph.D.

Ethical and Sustainable Cotton Initiatives in the Fashion Industry: Are Consumer Purchase Decisions Influenced by Corporate Education Strategies?

In today's retail climate where corporate social responsibility is not only desired but expected of companies, consumers are increasingly aware of how the products they purchase are produced. Despite efforts from companies to adopt sustainability policies, actively employing change within internal systems continues to be challenging. With a growing emphasis on creating a transparent supply chain that allows consumers to understand the production process, fashion companies have employed education initiatives focused on informing their customers about the steps they take to be ethically, socially, and environmentally responsible. The goal of this case study is to determine whether the educational resources and initiatives presented to consumers from retail companies surrounding their sustainable cotton initiatives affect potential consumer purchase decisions.

Cara Vaccariello, Senior, Fashion Merchandising and Lindsay Johnston, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Cotton, Consumer Disposal Habits

Today, wastefulness and excess consumption are integrated into our way of life. Our disregard for the latter end of a garment's life has created great damage to developing countries and the environment. While many companies in the fashion industry are striving to change these habits, it is the average consumer's choices that will alter this pattern of destruction.

Madeline Waters, Senior, Fashion Merchandising and Brittany Palowitz, Senior, Fashion Merchandising

Mentor: Mourad Krifa, Ph.D.

Cotton and the Athleisure Market

The focus of our research is to examine the athletic wear and athleisure market as well as to evaluate the effectiveness of recent technological advancements within the cotton industry that strive to place cotton as a top competitor in this market. Through our efforts to investigate the needs and wants of consumers within this market, we found that the consumers are more focused on the way the garments fit rather than fabric content and that they are also uneducated on the advancement of technologies for cotton performance fabrics.

BIOLOGY/ECOLOGY

Posters

Elizabeth Anderson, Senior, Biology

Mentor: Paul Bagavandoss, Ph.D.

Differential Effects of Cannabigerol and Epigallocatechin-3-Gallate on SKOV3 Ovarian Cancer Cell Migration and Matrix Metalloprotease Expression

Both cannabinoids and catechins exhibit antiproliferative effect toward different cancer cells. In this study, I studied the effects of the cannabinoid cannabigerol (CBG) and the catechin epigallocatechin gallate (EGCG) on SKOV3 ovarian cancer cell proliferation and migration on tumor-derived basement membrane extract (BME). I hypothesized that these compounds would inhibit these two hallmarks of cancer phenotype. Both CBG and EGCG, alone and in combination, inhibited the proliferation of SKOV3 cancer cells and induced their death. However, only EGCG inhibited the migration of the cells. The EGCG-induced inhibition of migration was associated with a decreased expression of the matrix metalloprotease 2 (MMP-2, a gelatinase associated with tumor cell metastasis). Combination treatment with CBG and EGCG offers a better approach for compromising ovarian cancer cell physiology.

Sarah Boyer, Senior, Zoology and Jessica Roberts, Senior, Zoology

Mentor: David Ward, Ph.D.

Islands of Fertility: Termite Mounds Enhance Soil and Grass Richness in South African Savannahs

Termite mounds reportedly increase soil quality in South African savannas, which could potentially affect surrounding grass species and abundance. We hypothesized that sites closer to termite mounds would have increased levels of soil respiration and greater diversity of plant species. The biomass of the grass *Panicum maximum* was also predicted to have an inverse relationship with mound distance. Soil samples were collected at increasing distances away from three mounds and assessed for soil fertility by soil CO_2 respiration. Grass biomass and number of plant species was also measured at each soil collection site. Both soil respiration and *P. maximum* biomass had a strong negative correlation with mound distance. These findings support our hypotheses that soil fertility and *P. maximum* abundance would be greater closer to the termite mounds.

Logan Chancey, Junior, Zoology and Leslie Hill, Junior, Zoology

Mentor: David Ward, Ph.D., and Christian Combs, Research Technician

Who Guards the Troop? Vigilance in Vervet Monkeys

Vigilance within troops plays a key role in the survival of vervet monkeys (***Chlorocebus pygerythrus***) and their fitness. We hypothesized that males would display more vigilant behavior than females and juveniles. We observed troops of vervet monkeys in different moderately-forested areas within Wits Rural Facility near Acornhoek, South Africa. The behaviors observed included vigilance, idleness, grooming, playing, sleeping, foraging, and roaming. Males were found to display more vigilant behavior (50%), than females (27.8%) and juveniles (9.4 %). All comparative data between males and females, males and juveniles, and females and juveniles were significant. These data support our hypothesis that male vervet monkeys display the most vigilant behavior within a troop, suggesting that males are the guardians of their troop.

Sachi Chaudhari, Pre-College, Biology; Adam Kulp, Graduate Student, Neurosciences; Brett Lowden, Senior, Pre-Medicine/Pre-Osteopathy; James Krzoska, Junior, Chemistry; Cassidy Ridley, Sophomore, Biology; Janki Desai, Sophomore, Biology; and John Johnson, Ph.D.

Mentor: John Johnson, Ph.D.

The Effect of Il-1β Signaling in the Basolateral Amygdala on Chronic Stress Enhanced Fear Memory

Chronic stress can cause a wide range of behavioral disorders including anxiety, depression, and post-traumatic stress disorder (PTSD). Stress activates two pathways: the hypothalamus-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS). This stress results in enhanced anxiety-like behaviors, specifically fear memory. The mechanism behind the enhancement of fear memory following chronic stress is currently unclear. One proposed mechanism is that the SNS signaling results in enhanced fear memory. Previous studies have demonstrated that a central administration of proinflammatory cytokine interleukin-1β (IL-1β) enhances fear memory, but the location of IL-1β signaling was not studied. This investigation hypothesizes that chronic stress enhances contextual fear memory by the signaling of IL-1β in the basolateral amygdala–an important brain region for fear memory. The results are under observation.

Lindsey Colvin, Junior, Biochemistry; Thomas Sonnanstine, Senior, Chemistry; and Gail Fraizer, Ph.D.

Mentor: Gail Fraizer, Ph.D.

The Science of Teaching and Learning in Genetics

Students face numerous challenges and misconceptions when learning genetics. Once identified, additional class time can be allotted to overcoming these challenges. Our hypothesis was that providing "peer coaches" for in-class problems would enable deeper understanding of the material. Our approach employed Honors student peer coaches who assisted students with in-class problems and tracked topics that caused confusion. Student satisfaction and approach effectiveness was assessed with surveys and exam questions. Increased student satisfaction resulted from peer coaches providing an additional resource with alternative explanations and a less intimidating environment for questions. The coaches enhanced their understanding of the material by serving as secondary instructors. Our ultimate goal is for students to have a deeper understanding of genetics concepts and to apply them inside and outside of the classroom.

Dominic Cristiano, Senior, Biology and Mark Kershner, Ph.D.

Mentor: Mark Kershner, Ph.D.

Spring Waterfowl Diversity and Migration Timing Among Portage County Lakes, Ponds, and Reservoirs

Climate change effects on waterfowl will range from shifting migration patterns to impacts on habitat/food availability. We were interested in how waterfowl migration in aquatic habitats in Portage County, Ohio, has shifted during the past few decades. During weekly trips to multiple locations from early February to early April, we conducted avian point count surveys, identifying/counting waterfowl and other avian species. By comparing our observations to previous years, we were able to identify trends in migration among various species in this region. Further, by comparing these field data to data available on eBird (a community-data website), there is high variability in migratory patterns, with increased species diversity across the season and changes in migration timing across years. This is information that may aid waterfowl conservation efforts.

Rebecca Douglas, Junior, Zoology; Ellyse N. Ridgway, Senior, Biotechnology; Elena Sánchez Brenes, Ph.D. (Universidad de Costa Rica); Amber R. Titus, Graduate Student, Cell Biology; Elizabeth K. Mann, Ph.D.; and Edgar E. Kooijman, Ph.D.

Mentor: Amber R. Titus, Graduate Student, Cell Biology; Elizabeth K. Mann, Ph.D.; and Edgar E. Kooijman, Ph.D.

Interactions of a Perilipin 3 Truncation at the Oil-Water Interface

Lipid droplets (LDs) are dynamic energy-storage organelles commonly found in adipose tissue. The structure of LDs consists of a neutral lipid core surrounded by a monolayer of phospholipids and associated proteins. There are two types of LD associated proteins: those that stay bound to LDs and those that exchange between LDs and the cytosol. We are interested in the mechanism the exchangeable proteins use to bind with LDs. Data from our lab suggest that a C-terminal bundle of amphipathic α-helices of the exchangeable protein, perilipin 3, is strongly associated with LDs. We examine the binding of a C-terminal truncation of perilipin 3, at varying concentrations, to an oil droplet using pendant drop tensiometry. We also discuss future plans to develop mutants of perilipin 3.

Taylor Feldt, Senior, Biological Anthropology

Mentor: Anthony Tosi, Ph.D.

Analysis of Duplication Events and Copy Number Differences in Macaque Y-Chromosomal Genes

Why are some genes multi-copy? Additional gene copies may confer an advantage by generating more output of a critical protein. It has been hypothesized that an autosomal CDYL gene is the progenitor of the Y-chromosome chromodomain (CDY) genes, created via duplication and retrotransposition events. To investigate whether CDY copy number differences may be associated with increased fitness in primates, we have designed a Copy Number Variation (CNV) assay and applied it to samples of two macaque monkey species, Macaca mulatta and M. fascicularis. Hybridization of these species has led to Y-chromosome introgression from the former into the latter. We hypothesize the successful introgression may be due to a greater CDY copy number because this gene plays a major role in chromatin condensation in the testes.

Taylor Fulton, Junior, Biology; Anna Droz, Graduate Student, Ecology; and Christopher Blackwood, Ph.D.

Mentor: Christopher Blackwood, Ph.D.

Biological Components of Green Roofs: How Do These Affect the Water Quality of Runoff?

The increasing urbanization of land has produced expansive amounts of impervious surfaces, therefore producing greater quantities of runoff. This may carry pollutants into nearby waterways and negatively impact the quality of runoff. A possible solution for reducing runoff is green roofs. To access this possibility, a green roof test site was built with experimental plots that differ in combinations of plant community type, substrate type, and the presence of mycorrhizae. Water samples were collected and tested for nitrate, ammonium, and phosphorous. Plant community type had a significant effect on the total nitrogen. Phosphorous levels were consistently high, which may be due to the presence of substrate. This is important when addressing the potential of green roofs to cause water quality issues and detract from their perceived benefits.

Gracen R. Gerbig, Senior, Biology; Dipendra Thapaliya, M.P.H.; Marieke H. Rosenbaum, M.S. (Tufts University Cummings School of Veterinary Medicine); Ruairi G. White, M.S. (Tufts University Cummings School of Veterinary Medicine); Jean Mukherjee, M.S. (Tufts University Cummings School of Veterinary Medicine); Tara C. Smith, Ph.D.; and Jessica H. Leibler, Ph.D. (Boston University School of Public Health)

Mentor: Tara C. Smith, Ph.D. and Dipendra Thapaliya, M.P.H.

Epidemiology of Staphylococci Collected from Boston-Area Wild Rodents

As Staphylococcus aureus strains evolve and gain resistance to antibiotics, the risk of bidirectional transmission of resistant strains between humans and animals increases. The objective of this study was to identify and type S. aureus among wild rodents in Boston, Massachusetts, in order to examine their genetic relationship to common human and animal isolates. A total of 168 bacterial isolates collected from 45 Brown rats (Rattus norvegicus) in Boston proper were analyzed. Our results indicate that wild rats from Boston, MA, are carriers of S. aureus. One isolate was deemed to be MRSA and others presented antibiotic resistance to common antibiotics, such as benzylpenicillin and erythromycin. At least one strain identified is proposed to be widely dominant among rodents, and further molecular testing is being performed.

Zach Harmon, Senior, Zoology and Nick Sturr, Senior, Environmental Conservation Biology

Mentor: David Ward, Ph.D.

The Janitors of the Savanna: Dung Beetle Diversity in Three Habitats in South Africa

We studied dung beetle diversity in three savanna habitats (grassland, woodland, and ecotone) at a nature preserve in South Africa. We hypothesized that grasslands will show higher species diversity and a higher number of individuals due to the high diversity of grazing ungulates in South Africa. Our traps captured beetles which were assigned to a genus and, where possible, a species. The numbers of each species and each species richness were compared among three habitats in the preserve. Grassland was found to have the most individual beetles. Ecotone and grassland had the same average number of species per trap. Our results were partially consistent with our hypothesis that grassland would have the most species and individuals. We found that grassland had the most individuals, but not the most species.

Taylor Lewis, Senior, Zoology and Kasey Taylor, Senior, Zoology

Mentor: David Ward, Ph.D.

Great Grey Destructors: How Much Damage Do Elephants Cause to Marula Trees and Mountain Aloes?

We compared responses of marula trees (Sclerocarya birrea) and mountain aloes (Aloe marlothii) between areas with and without elephants and in an area where elephants had previously broken in. We hypothesized that marulas would be shorter with smaller trunk diameter and higher browse height, while the aloes would be shorter and have shorter leaf length in areas with elephants present. We found that there were no live aloes in the area with elephants present, but the aloes near the elephant break-in were taller with longer leaf length, on average. Marula trees were not statistically different in the parameters we measured.

Devan Mathie, Senior, Biology and David Costello, Ph.D.

Mentor: David Costello, Ph.D.

Assessing the Patch Dynamics of Organic Matter Decomposition and Respiration Using Cotton Strips

Organic matter decomposition is a spatially variable process, and a patch dynamics perspective may provide an effective method of understanding variability in stream ecosystem function. Using a cotton-strip assay, decomposition and respiration rates were measured in diverse substrate and flow patches within Breakneck Creek in Kent, Ohio. Cotton strips were placed at three depths in each of twelve sites. Strips were tested by tensile strength and respiration rates were measured. Strips in coarse substrate decomposed faster when placed higher in the water column, but strips in patches of fine substrate decomposed at the same rate regardless of water column placement. These results show that differences in organic matter processing in different patches can be explained by substrate size and flow velocity.

Kiersten McMahon, Senior, Environmental Conservation Biology

Mentor: David Ward, Ph.D.

Plants Have Superpowers Too

Lantana camara is a bird-dispersed invasive plant with allelopathic properties. I examined the dispersal of *L. camara* under and away from trees in both a communal area and a conserved area. I hypothesized that *L. camara* would be more common in communal areas than in conserved areas. *L. camara* should inhibit the germination rate of radish and grass seeds. I surveyed subcanopies and intercanopies near Acornhoek, South Africa and germinated the seeds in soil from under *L. camara* bushes and open areas. *L. camara* was most common in the conserved area in the subcanopy and in intercanopies in the communal area. Radishes had a higher average germination rate in open-area soils than in *L. camara* soils, while the opposite was true for grass seeds.

Natalie M. Menassa, Senior, Biology

Mentor: Sarah Sternbach, Graduate Student, Neurosciences; Jennifer McDonough, Ph.D.; and Ernest Freeman, Ph.D.

The Role of BHMT in the Progression of Neurodegenerative Symptoms

Causes of multiple sclerosis (MS) have been attributed to an increase in oxidative stress, which leads to downregulation of the folate-vitamin B12 pathway and decreases cellular methylation. Induction of a separate methylation pathway independent from the folate-vitamin B12 cycle using the enzyme betaine-homocysteine methyltransferase (BHMT), which influences gene expression, could be used to decrease progression of MS symptoms. We sought to examine how different treatments affect the way BHMT binds to chromatin to obtain a deeper understanding of how this alters gene expression. The ways in which BHMT binding was altered through exposure to varying degrees of oxidative stress allowed us to identify which treatments caused the most chromatin remodeling. Our data suggest these changes in gene expression are involved in MS pathology.

Meggie Moore, Junior, Biology

Mentor: David Ward, Ph.D.

Burning Hot! The Effects of Fire and Soil Space on Eastern Redcedars, Juniperus Virginiana

Invasive species can be burned by fire to hinder their growth, although this method poses a risk to human property. We examined the effect of fire on the native invasive species, eastern redcedar, *Juniperus virginiana*. We hypothesized that burned trees will allocate more nutrients belowground for storage than aboveground for growth. Additionally, the control group is expected to have a greater biomass than the burned treatment. We measured above and belowground nutrient content and found no significant difference between the control and experimental groups. However, the total biomass of the control group was greater than the experimental group ($p = 0.026$). In conclusion, we found that fire decreases the overall biomass of eastern redcedars but does not affect their nutrient re-allocation.

Caroline Nitirahardjo, Senior, Biology; Noel-Marie Plonski, Graduate Student, Cell Biology/ Molecular Biology; and Olena Piontkivska, Ph.D.

Mentor: Olena Piontkivska, Ph.D.

Distribution of Neurological and Neurodegenerative Symptoms in Flaviviral Infections

Viruses in the Flaviviridae family, such as West Nile Virus and Dengue, are threats to global health. Flaviviruses are primarily spread by mosquitoes and ticks. Due to the abundance of vectors and the nature of flaviviruses, it is important to better understand the workings of the viruses. Through a literary review, we were able to find flaviviruses that were associated with psychiatric, neurodegenerative, and developmental disorders. We also looked at the role flaviviruses had in interacting with the host's TLR3 pathway. We determined that a history of infection could be used to help find those at risk of developing neurological disorders. The knowledge on the TLR3 pathway can help develop treatments. It is crucial to understand the symptoms and molecular workings of flaviviruses to provide better treatment.

Jessie Nowjack, Senior, Biotechnology; Andrew Eagar, Graduate Student, Ecology; Oscar Valverde-Barrantes, Ph.D.; and Christopher Blackwood, Ph.D.

Mentor: Christopher Blackwood, Ph.D.

Species Identification of Root Samples Using Gene Sequencing

Tree species are typically identified using leaf and bark traits because identifying species by roots would not be feasible by morphological features. Currently, our lab is in the process of identifying roots from mixed species forests. We will use gene sequencing to identify tree roots. Four different genes (Matk, psb-trn, Rbcl, and ITS) have been identified as possible candidates for sequence identification. To test these genes, sequences have been downloaded from NCBI and analyzed. Using a combination of ITS and Rbcl for single tree specimen samples 35/41 species were able to be identified. These results will be validated by additional sequencing. Results of this sequencing will then be compared like the downloaded sequences. This information will be used to conduct our larger experiment.

Amanda Riley, Junior, Biology

Mentor: Robert Clements, Ph.D.

Use of Fluoro-Gold to Image Mice Neuroendocrine Circuits

The purpose of this study was to utilize Fluoro-Gold, a retrograde tracer, to label neuroendocrine cells in mice brains and generate digital reconstructions. The efficacy of Fluoro-Gold was tested by injecting a Fluoro-Gold solution into mice, sacrificing them and removing the brains for analysis via confocal microscopy and optical projection tomography. Results show that Fluoro-Gold labels neurons in centralized regions of the hypothalamus including the paraventricular nucleus and the median eminence. This is an important study because the data will be used as a baseline to investigate and compare blood-brain barrier and neuroendocrine dysfunction in an animal model of demyelination, as well as to understand mechanisms and identify potential therapeutic treatments of Multiple Sclerosis associated with neurodegeneration and demyelination of the axons found in these regions.

Samuel Harlan Sharp, Sophomore, Anthropology and Richard Currie Smith, Ph.D.

Mentor: Richard Currie Smith, Ph.D.

Fostering a Semiotic Framework Towards the Conservation of Mexican Gray Wolves

The Mexican gray wolf (Canis lupus baileyi) is one of the most endangered wolves in the world, with approximately one hundred individuals existing in the wild. Much of their native habitat is experiencing ecological degradation resulting from their absence. Restoration of Mexican wolves could potentially cause a trophic cascade, or major ecological revamping of the region's entire ecosystem. Two decades of restoration efforts have not yielded consequential results, suggesting that a new approach toward their conservation is needed. It is asserted that the application of a semiotic or relational approach applying frame theory could direct effective restoration; this successful physical and semiotic return of wolves would foster latent resilient qualities of self-organization and emergence, allowing the ecosystem to regenerate and stabilize.

Kaitlin Shvach, Senior, Zoology and Mark Kershner, Ph.D.

Mentor: Mark Kershner, Ph.D.

Food Web Structure in a Constructed Wetland

Wetlands have high animal/plant diversity. While natural wetlands have complex food webs, constructed wetlands are simpler with reduced biodiversity (that may still reflect typical inter-specific interactions). To explore this idea, food web interactions were investigated in KSU's constructed wetlands. In each wetland, fish and tadpoles/frogs were trapped for eight weeks to document population size and organismal size distributions. Next, to assess mammal/bird activity, game cameras were placed in each wetland. Finally, dragonflies/damselflies were identified/counted in each wetland. Fish/amphibian species richness was low, while many mammal, bird, and dragonfly species were detected. Analyses suggest a strong, negative relationship between predaceous sunfish and frog/tadpole abundance/development. Lastly, beaver/heron distribution was associated with available food resources. Thus, while simpler, constructed wetland food webs were structured similarly to natural wetlands.

Ashley Sumpter, Junior, Biology; Anthony Minerovic, Graduate Student, Ecology; Christopher Blackwood, Ph.D.; and Oscar Valverde-Barrantes, Ph.D.

Mentor: Oscar Valverde-Barrantes, Ph.D., and Christopher Blackwood, Ph.D.

Exploring the Linkage Between Root Chemistry and Belowground Microbial Communities

The goal of this project was to understand which plant traits affect the potential for a tree's root carbon (C) to be stored in the soil to better improve accounting of C in forests and changing climates. The roots of four tree species were analyzed and their chemical composition was quantified. Preliminary results suggest that root morphology influences the fate of decomposed C. A significant trend was observed where thicker roots–roots that are more chemically labile and easier to break down–result in greater microbial respiration. Surprisingly, however, both thick and thin roots yield the same amount of microbial biomass. These results indicate that microbial communities decomposing different root types may have different respiration rates per cell.

Riley M. Weatherholt, Senior, Earth Science and Lauren E. Kinsman-Costello, Ph.D.

Mentor: Lauren E. Kinsman-Costello, Ph.D.

Road Salt Runoff in Freshwater Constructed Wetlands: A Year in the Life

Road salt runoff contributes to the problem of increasing salinity in freshwater ecosystems. We measured conductivity, concentration of road salt ions, and salt content in plant tissue in two constructed wetlands near Kent State University to assess seasonal trends in road salt runoff and estimate a mass balance for salt ions. We found a net storage of salt ions, which differed with flow regime. This notable imbalance in the salt budget is symptomatic of unsustainable road salt practices, and it could result in a large release of saline water into downstream freshwater ecosystems. These findings can be used to inform management decisions not only in Kent, Ohio, but also in any city to better balance ecosystem function with public safety.

BIOMEDICAL SCIENCES

Posters

Gabriella Amato, Senior, Public Health; Noel-Marie Plonski, Graduate Student, Cell Biology/Molecular Biology; and Helen Piontkivska, Ph.D.

Mentor: Noel-Marie Plonski, Graduate Student, Cell Biology/Molecular Biology and Helen Piontkivska, Ph.D.

Promoter Evolution of ADAR Genes and Consequences for RNA Editing

Dysregulation of RNA editing, via transcriptome regulatory gene ADAR, is hypothesized to have played a role in microcephaly cases during the 2015-2016 Zika epidemic due to ADAR's role in editing viral and neural genes. ADAR is a family of three genes and deaminates adenosine (A) to inosine (I) in pre-mRNA, which is then read as a guanine (G). Important isoform, ADARp150, has an interferon-stimulated response element (ISRE) in its promoter region, providing a link with the host innate immune system. Current mice models appear unsuited for studying this. To find a better animal model, an evolutionary analysis of ADARp150 and ADAR2 genes was performed. Results show sequences from larger mammals, like sheep, are more similar to humans than mice, offering a better model.

Sami Azeroual, Senior, Biological Sciences and Farid Fouad, Ph.D.

Mentor: Farid Fouad, Ph.D.

Sensitive Electrochemical Detection of Peroxynitrite Using Bis-(4-amino-aryl)-Selenide Modified Interfaces

In this work, we present the synthesis and grafting of 4,4'-diaminodiaryl selenides on graphite and indium-tin oxide electrodes for peroxynitrite sensing interfaces using voltammetry and dose-response amperometry. Modified interfaces are characterized by scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDS), and X-ray photoelectron spectroscopy (XPS). The selenide modified electrodes showed a significant enhancement in peroxynitrite oxidative current compared to controls. The enhancement in peroxynitrite signal is the result of an electrocatalytic mechanism where the grafted selenide compound at the oxidized state mediates the oxidation of peroxynitrite at the electrode surface. To the best of our knowledge, this is the first time a selenium-based compound electrochemically grafted at an electrode surface is used for catalytic detection and quantification of peroxynitrite.

Raman Bhambra, Senior, Pre-Medicine/Pre-Osteopathy

Mentor: Denise Inman, Ph.D. (NEOMED); Amelia McMullen, Graduate Student (NEOMED), Pharmaceutical Sciences; Tyree Lewis, Senior, Biology

Effect of Ketogenic Diet on Liver

In neurological diseases such as glaucoma, the ketogenic diet has been shown to mitigate inflammation and axon degeneration. However, long term maintenance of the ketogenic diet may have adverse side effects on the liver. We investigated whether the ketogenic diet used to treat for glaucoma in mice can have peripheral effects. Mice genetically predisposed to secondary glaucoma were placed on a ketogenic diet to promote mitochondrial function while limiting glycolysis. The liver tissue was collected then stained with Oil Red-O or Hematoxylin and Eosin. High accumulated fat or disrupted hepatocytes would indicate that the ketogenic diet negatively impacts liver health in these animals. More exhaustive analysis is ongoing though it appears that eight weeks of the diet were well-managed by the liver in these mice.

Veronica Bousquet, Senior, Biology

Mentor: Jennifer McDonough, Ph.D.; Ernest Freeman, Ph.D.; and Sarah Sternbach, Graduate Student, Neurosciences

BHMT in Multiple Sclerosis Pathology: Remyelination of Axons

DNA methylation plays a critical role in regulating gene expression in various neurological pathways, including pathways that drive neurodegeneration in multiple sclerosis (MS). S-adenosylmethionine (SAM), a metabolite in the methionine cycle, is involved in numerous methylation reactions within cells, including on histones and DNA. SAM is downregulated in MS, resulting in decreased gene expression, but can be restored by betaine homocysteine methyltransferase (BHMT) and the BHMT-betaine methylation pathway. Furthermore, studies have shown DNA methyltransferase 3a (Dnmt3a) is dependent on SAM and necessary for remyelination. The focus of this study was to elucidate the interaction between BHMT and Dnmt3a providing insight into how BHMT can affect remyelination mechanistically. This study will assist in the investigation of the impact of epigenetic changes and MS pathology.

Jordan Campanelli, Senior, Biology; Shivani Agarwal, Senior (Bio-Med Science Academy), Pharmaceutical Sciences; Amelia McMullen, Graduate Student (NEOMED), Pharmaceutical Sciences; Assraa Hassan, Graduate Student (NEOMED), Pharmaceutical Sciences; and Denise Inman, Ph.D. (NEOMED)

Mentor: Amelia McMullen, Graduate Student (NEOMED), Pharmaceutical Sciences; Assraa Hassan, Graduate Student (NEOMED), Pharmaceutical Sciences; and Denise Inman, Ph.D. (NEOMED)

Impact of ADP-Ribose Analog INV-102 on Retinal Ganglion Cell Transport Function in Glaucoma

Glaucoma, a pathologic condition associated with increased intraocular pressure (IOP), affects more than 2.5 million Americans. Our lab group aimed to study the potential efficacy of the Invirsa compound INV-102, hypothesized to protect the retinal ganglion cells affected in glaucoma, amidst increased IOP. Measure of this compound's therapeutic effect was done by quantifying retinal ganglion cell and axon number in retinal tissue, optic nerve, and brain. Afluorescent dye known as Cholera Toxin B, or CTB, was intraocularly injected into each rat. Analyzing brain sections allowed CTB density to be measured as a reflection of retinal ganglion cell axon transport function. Our lab group predicted that rats treated with INV-102 will have less retinal ganglion cell degeneration and improved transport over controls.

Katya Chiti, Sophomore, Pre-Medicine/Pre-Osteopathy; Abdulaziz Aloliqi, Graduate Student, Cell Biology/Molecular Biology; Suzanne Hales, Senior, Biology

Mentor: Gail Fraizer, Ph.D.

Does Cx43 Enhance Prostate Cancer Cell Motility?

Prostate cancer (PC) is a very common type of cancer in males. When the cancer is able to move from its initial site to the surrounding tissues and organs, it often leads to death. Connexins (Cx) proteins are important for cell communication and motility. Some prostate cancer cells, PC3, express high amounts of Cx43 and are highly migratory. In contrast, LNCaP cells do not express Cx43 and are not migratory. We have engineered LNCaP cells to express high levels of Cx43 and, conversely, silenced Cx43 in PC3 cells. Silencing Cx34 reduced the motility of the migratory PC3 cells, and over-expressing Cx43 in LNCaP cells enhanced their motility. Understanding the influence Cx43 has on motility can help us further develop better methods of prostate cancer therapy.

Ya'el Courtney, Senior, Biology and Gemma Casadesus-Smith, Ph.D.

Mentor: Gemma Casadesus-Smith, Ph.D.

Characterization of Luteinizing Hormone Location and Production in the Brain

Luteinizing hormone (LH) is a heterodimeric glycoprotein gonadotropin that plays a critical role in reproduction and has recently been linked to changes in cognition and plasticity, especially as LH levels change during aging. Studies have identified LH protein in several brain regions, but it is not clear where it is produced or from which region it has been transported. This study uses molecular techniques in the mouse brain to identify and localize LH mRNA transcripts. Furthermore, analysis of RNA sequencing data identifies what types of cells are responsible for producing LH and suggests possible mechanisms for LH involvement in plasticity. This provides a foundation for further experiments to understand the mechanism by which LH affects cognition and plasticity.

Mia Forren, Senior, Chemistry

Mentor: Harry Kestler, Ph.D. (Lorain County Community College)

A 32-Base Pair Deletion in CCR5 Receptor and its Role in the Inhibition of HIV

The human immunodeficiency virus (HIV) functions to weaken the immune system by targeting healthy CD4 cells. Infection requires the virus to first bind to a CD4 receptor followed by the binding of a co-receptor (either CCR5 or CXCR4). A specific mutation to the CCR5 receptor at position D32 results in a 32-base pair deletion and is hypothesized to inhibit expression of the CCR5 receptor on the cell surface of T-cells. It has been found that individuals who are homozygous for D32 mutation are resistant to HIV infection whereas those heterozygous for the mutation exhibit a slower onset of symptoms. Using the gene editing tool CRISPR/Cas9, we expect that only HIV that can utilize CXCR4 as a co-receptor would be able to infect CCR5 knock out cells.

Megan Gibson, Junior, Pre-Medicine/Pre-Osteopathy; Ashley Shemery, Graduate Student, Neurosciences; and Colleen Novak, Ph.D.

Mentor: Colleen Novak, Ph.D. and Ashley Shemery, Graduate Student, Neurosciences

Ferret Odor, but Not Mild Stress, Rapidly Induces Sustained Muscle Thermogenesis

Weight gain results from a consistent imbalance between calories consumed and calories burned. One untapped potential source for increasing energy expenditure is through muscle thermogenesis. Exposing rats to predator odor (PO) induces a robust increase in muscle thermogenesis. However, it's unknown whether the PO-induced thermogenic response is a general stress response or PO-specific. We address this concern by measuring the skeletal muscle temperature at multiple timepoints following control odor exposure, mild stress by 1 min of physical restraint, and PO. Compared to control odor, PO induced a significant change in temperature across time. This suggests that the thermogenic response to predator threat is distinct from the response to other types of stressors.

Kevin Hineman, Junior, Biology

Mentor: Gary Koski, Ph.D.; Lori Showalter, Senior, Enology; and Chase Steele, Senior, Pre-Medicine/Pre-Osteopathy

Th1 Cytokines Sensitize Human Pancreatic Cancer Cell Lines to Treatment with Lapatinib

Pancreatic cancer is the second-leading cause of cancer-related deaths, with a dismal 5-year survival rate of 7%. We are therefore seeking alternate and improved therapeutic modalities. Recent trials using an experimental vaccine for early breast cancer has shown promising results, and important effectors of vaccine-induced immunity appear to be soluble immune system factors IFN-γ and TNF-α which cause apoptotic cell death in breast cancer cells. In order to test the feasibility of deploying a similar vaccine for pancreatic cancer, we have tested the sensitivity of a panel of human pancratic cancer cell lines to these cytokines, plus a small molecule inhibitor of HER-family oncodrivers, lapatinib. The combination maximized markers of apoptotic cell death, suggesting this is a feasible approach.

Samantha Hyme, Sophomore, Biochemistry and Jennifer McDonough, Ph.D.

Mentor: Jennifer McDonough, Ph.D.

BHMT Expression Constructs in Neurons to Determine if Betaine Increases H3K4me3 Levels by Activating BHMT Activity

Research has connected the decreased mitochondrial respiratory capacity in multiple sclerosis (MS) with the methionine metabolism cycle. In this cycle, enzyme betaine homocysteine methyltransferase (BHMT) is involved in converting homocysteine to methionine, with betaine being the methyl donor. Betaine has been reported in lower amounts in MS cortex, and betaine supplementation has been shown to rescue mitochondrial respiratory capacity. The purpose of this study was to confirm the importance of BHMT in the entrance of betaine into the methionine metabolism cycle. We made BHMT expression constructs, both wild type (WT) and BHMT mutant constructs, that we will transfect in primary neurons. We will treat with betaine and measure levels of H3K4me3 by Western Blot to determine if betaine is increasing H3K4me3 by activating BHMT activity.

Brett Lowden, Senior, Pre-Medicine/Pre-Osteopathy; Sachi Chaudhari, Pre-College, Biology; James Krzoska, Junior, Chemistry; Janki Desai, Sophomore, Biology; Adam Kulp, Graduate Student, Neurosciences

Mentor: John Johnson, Ph.D.

Glucocorticoids' Role in the Formation of Enhanced Fear Memories Following Chronic Stress

Following a stressful event, the Hypothalamus - Anterior Pituitary - Adrenal (HPA) axis mediates the release of the stress hormone cortisol (corticosterone in rodents) (CORT). This CORT response serves to liberate energy and overcome stressors by binding to glucocorticoid receptors (GR). Under conditions of chronic stress, the release of CORT can be sensitized and lead to an increased CORT response to fear conditioning. Rodents exposed to chronic stress demonstrate the formation of enhanced contextual fear memories, and previous research has shown that the basolateral amygdala (BLA) is a key brain region in the formation of contextual memories. It is hypothesized that CORT is necessary for the chronic stress induced enhancement of fear memory. Therefore, GR antagonist RU38486 was administered into the BLA 30 minutes prior to fear conditioning.

Christian Richardson, Senior, Biochemistry

Mentor: Jennifer McDonough, Ph.D.; Sarah Sternbach, Graduate Student, Neurosciences; and Ernest Freeman, Ph.D.

Detection of BHMT in Oligodendrocytes

Multiple sclerosis (MS) is a neurodegenerative disease in which the body's immune system attacks the nervous system, leading to degradation of the myelin sheath surrounding nerve cells. In MS, inflammation and increased reactive oxygen species lead to a buildup of homocysteine, which can be prevented by activation of BHMT by betaine. BHMT is present in oligodendrocytes which may be neuroprotective. The focus of this project is to look at BHMT expression and potential co-localization with other proteins through immunocytochemistry.

Tara Rogers, Senior, Biology and Min-Ho Kim, Ph.D.

Mentor: Min-Ho Kim, Ph.D.

Investigation of Alpha-Toxin Secretions in Biofilm-Conditioned Medium as a Potential Proinflammatory Disruptor to Macrophages

S. aureus biofilm infections, common in patients with chronic wounds or artificial implants, are clinically significant due to their ability to subvert the human inflammatory immune response and to result in persistent illness. This study investigates the *S. aureus*-produced protein alpha toxin as a potential disruptor of macrophage-mediated inflammation. In this study, antibacterial receptor agonists are used to synthetically stimulate macrophages while they are co-cultured in conditioned medium from wild-type or alpha toxin-knockout *S. aureus* biofilms. The pro-inflammatory response of macrophages in either environment can then be quantified and compared to assess the effect of alpha toxin on several receptor-mediated pathways. Characterization of this host-microbe interaction can lead to the development of targeted therapies against *S. aureus* biofilm infections.

Katelyn J. Rygel, Senior, Biology; Anna R. Montazzoli, Sophomore, Biology; Manasi Agrawal, Graduate Student, Cell Biology/Molecular Biology; Samantha Bailey, B.S.; and Kristy Welshhans, Ph.D.

Mentor: Kristy Welshhans, Ph.D.

Altered Adhesion and Cellular Morphology in Down Syndrome Fibroblasts

Down Syndrome is a complex developmental disorder caused by the triplication of human chromosome 21. It results in many phenotypes including slow wound healing and intellectual disability. To better understand these phenotypes, we used fibroblasts from apparently healthy individuals (euploid fibroblasts) and individuals with Down Syndrome (T21 fibroblasts) to examine changes in cellular morphology and adhesion. We found that there was a significant increase in the area and perimeter of T21 fibroblasts. We also found that members of the focal adhesion complex were significantly increased in T21 fibroblasts. In addition to fibroblasts, these results have implications for neurons, which use similar mechanisms to regulate cell motility. Thus, this research provides important insight into the molecular and cellular mechanisms underlying multiple phenotypes of Down Syndrome.

Chase Steele, Senior, Pre-Medicine/Pre-Osteopathy

Mentor: Gary Koski, Ph.D. and Lori Showalter, Senior, Enology

Simvastatin Enhances Th1 Mediated Cell Death in Pancreatic Cancer Cell Lines

Effects of an autologous dendritic cell vaccine used to treat early stage breast cancer may be mediated, in part, through the action of Th-1 cell secreted cytokines Interferon-gamma (IFN-γ) and tumor necrosis factor alpha (TNF-α). We therefore sought to determine if the addition of an HMG-CoA reductase inhibitor (simvastatin) would enhance the effects of Th1 cytokines in pancreatic cancer cell lines. We observed evidence of impaired metabolic activity, fewer viable cells, and apoptotic cell death induced by simvastatin plus cytokine treatment (as compared with cells treated only with individual agents). These studies suggest that vaccines may be enhanced by addition of targeted drugs like simvastatin.

Minhchau To, Freshman, Chemistry; Kumudie Jayalath, Graduate Student, Chemistry; and Sanjaya Abeysirigunawardena, Ph.D.

Mentor: Sanjaya Abeysirigunawardena, Ph.D. and Kumudie Jayalath, Graduate Student, Chemistry

Investigating the Binding Orientation of Protein RsuA

The accuracy of protein biosynthesis of ribosomes heavily depends on its structural integrity. Ribosomal RNA (rRNA) modifications can influence local structural perturbations that can influence functional efficiency of ribosomes. The Abey Lab focuses on understanding the ability of nucleotide modifications and their respective modification enzymes in modulating biogenesis of functional ribosomes. This study looks at the binding mechanism and binding orientation of modification enzyme Pseudouridine synthase A (RsuA). RsuA is responsible for modifying uridine to pseudouridine at position 516 in the 16S rRNA. However, binding thermodynamics, binding mechanisms, and binding orientations of protein RsuA have yet to be discovered. We use site-directed hydroxyl radical footprinting together with a FRET-based assay to determine the binding orientation of protein RsuA.

Riely Tomor, Senior, Biology; Robert Clements, Ph.D.; John Shelestak, Graduate Student, Neurosciences; Lana Frankle, Graduate Student, Neurosciences; and Amanda Riley, Senior, Biology

Mentor: Robert Clements, Ph.D. and John Shelestak, Graduate Student, Neurosciences

Methods to Enhance Contrast in MRI Using Targeting Probes

Magnetic resonance imaging (MRI) scans use a combination of radio waves and magnetic fields to create an image of tissues within the body. Using contrast agents in MRI, it is possible to gain enhanced detail in acquired images to help resolve disease symptoms and tissue activity while improving the signal of tissues during a scan. Contrast agents are used in patients with Multiple Sclerosis to detect lesions in brain tissue. An issue with current contrast agents is their lack of specificity and toxicity at relatively low doses. Targeting agents decrease the number of molecules needed for desired image enhancement by binding to specific areas of the tissues being studied. This research is based around developing and evaluating nanoparticle-targeting agents as contrast enhancing probes with tissue specificity.

Jacob Wagner, Senior, Biology; Jesse Kowalski, Graduate Student, Cell Biology; Timothy Niepokny, Graduate Student, Neurosciences; Ashley Shemery, Graduate Student, Neurosciences; Eric Mintz, Ph.D.; and Colleen Novak, Ph.D.

Mentor: Colleen Novak, Ph.D.

Genetically-Altered Endocannabinoid Receptors: Relationship to Non-Shivering Muscle Thermogenesis

Inducing thermogenesis can be used to combat weight gain. Energy expenditure is regulated by multiple pathways, and one of these is the endocannabinoid system. This includes the primary brain receptor: CB1 receptor. I sought to determine if this receptor was part of the brain pathway regulating the induction of muscle thermogenesis. To do this, I used genetically altered CB1 mice. We have found that a reliable inducer of thermogenesis in mice is the odor of a predator. Temperatures were measured using transponders implanted into the muscle and a transponder reader. I found that predator odor induced muscle thermogenesis in wild-type mice but not in CB1 deficient mice. This supports the hypothesis that CB1 plays a role in suppressing baseline thermogenesis rather than in inhibiting its induction.

COMPUTER SCIENCE/MATHEMATICS/BUSINESS

Posters

Erin Davis, Senior, Economics; Eric Johnson, Ph.D.; and Curtis Lockwood Reynolds, Ph.D.

Mentor: Eric Johnson, Ph.D. and Curtis Lockwood Reynolds, Ph.D.

Determining Factors of College Major Decision

In a previous study, economists at Duke University concluded that expected salary and students' skills are strong factors in determining how students choose their major. However, the students at Duke University are not representative of the overall college population, and students at other universities, such as Kent State University, may differ in their choices. Data is collected by surveying students about their major and prospective earnings. Students are asked to identify earnings in their major category and eight other categories and decide where they would place themselves on those spectrums. Our preliminary analysis indicates that students' decisions are more based on interests and skills than on future earnings.

Vala Zeinali, Junior, Computer Science

Mentor: Gokarna Sharma, Ph.D.

A 2-Approximation Algorithm for the Online, Tethered, Coverage Problem

We consider the problem of covering an unknown planar environment possibly containing obstacles using a robot of square size. D × D attached to a fixed point, S, by a cable of finite length L. The environment is structured as a cell layout with resolution proportional to the robot size D × D, imposed on it. Starting at S, the task for the robot is to visit each cell of the environment (not occupied by obstacles) and return to S with the cable fully retracted. In a single time-step, the robot can move from one cell to one of its four adjacent cells. The cable length of L allows the robot to visit a cell that is the farthest distance of L (i.e., L/D cells in the environment at increasing distance) from S. Our goal is to minimize the total distance traveled by the robot to fully cover the unknown environment while avoiding tangling the cable. In this paper, we present the first online, tethered, coverage path planning algorithm that achieves 2-approximation for the total distance traveled by the robot, and we compare it to the distance traveled using an optimal offline algorithm. Our algorithm guarantees that the cable never tangles. Moreover, our algorithm significantly improves the 2L/D-approximation achieved by the best previously known algorithm designed for this problem. Furthermore, we show that there are instances for which no online algorithm achieves better than 2-approximation, which implies that our algorithm is essentially optimal. Simulation experiments illustrate the usefulness and efficiency of our proposed algorithm.

COMPUTER SCIENCE/MATHEMATICS/BUSINESS

Oral Presentations

Haylee Hermann, Senior, Marketing

Mentor: Haithem Zourrig, Ph.D.

Understanding Consumer Cyber-Smearing: A Conceptual Framework

This article proposes a conceptual framework of cyber-smearing, referred to here as consumer intentional effort waged to damage the reputation of a business using the Internet as a medium. Drawing upon equity theory (Adams, 1963) and the retributive theory of punishment (Wasserstrom, 1978), we build a conceptual model explaining how betrayed customers may turn into cyber-smearers. Several cases involving cyber-smearing are discussed. Through this analysis, the key antecedents of cyber-smearing are identified as well. Finally, future research considerations are offered to conclude.

ENGLISH/LANGUAGE/COMMUNICATION

Posters

Brooklyn Bennett, Senior, English

Mentor: Noelle Bowles, Ph.D.

Dissemination Project: A Website Designed to Spread Information About Women's Reproductive Rights

The "Dissemination Project" is a website created as a resource for and about women's rights, specifically in relation to women's legal rights and reproductive health care. There is a far-reaching need for better dissemination of information to ensure continued progress on women's social and sexual welfare. Through the development of my website, I work to spread knowledge, awareness, and resources for women, men, and others who wish to continue the fight for women's right to control their own body through preventative health care and education.

Alyssa Fernandez, Senior, English

Mentor: Edward Dauterich, Ph.D.

Examining the Influence of Continental Philosophy on Postmodern Literature: A Nietzschean Reading of Don DeLillo's White Noise

What can Continental philosophy help us understand about how we read and explicate meaning in literature? Many modern and postmodern authors mirror the same central tenets as the ideas of Continental philosophers, such as a rejection of absolutes, truth, and meaning outside of human consciousness. Through a critical philosophical analysis of Don DeLillo's White Noise, conducted in dialogue with the philosopher Friedrich Nietzsche, this case study seeks to reveal the ways in which an education in Continental philosophy may enrich our understanding of modern and postmodern literature. By reading DeLillo and Nietzsche in tandem, we may gain an understanding of the philosophical problems presented by DeLillo, an elucidation of Nietzsche's ideas, and a grasp of potential problems with modernity and how we perceive truth.

Nyla Henderson, Senior, Journalism

Mentor: Asantewa Sunni-Ali, Ph.D.

Seedz of Revolution: An Ethnographic Look at the African Diaspora

Throughout time, people across the African diaspora have expressed their cultures in ways that differ from one another. However, one resounding aspect of those African cultures is the idea of "liberation." During the summer of 2018, I went into surrounding communities such as Akron, Youngstown, and Cleveland to see different expressions of liberation and revolution. By asking a guiding question around liberation or revolution, I allowed for the subject to ponder over what those terms meant personally. This research project acted as a platform by allowing the "four seasons of ethnography" to naturally give my subjects the space necessary to express themselves openly and candidly. My research is only but a small fragment of a bigger research and film documentary series titled ***Seedz of Revolution***.

Kendra Hughley, Junior, Journalism

Mentor: Mwatabu Okantah, M.A.

Reach for the S.T.A.R.S.

In obtaining knowledge of personal history, a strong sense of cultural identity emerges. As a result, cultural awareness nurtures an individual's self-esteem and sense of belonging and can increase their engagement amongst others. As of Fall 2018, 28,122 undergraduate students were enrolled at Kent State University's main campus. Of that, 25,353 (77.4%) are Caucasian, 2,536 (7.7%) are African- American, 1,170 (3.6%) are multiracial, 1,094 (3.3%) are Hispanic/Latino, and 61 (0.2%) are Native American. The upshot of this research encompasses the influence of cultural awareness and its effects on college students of color (African-American, Hispanic-American, Native American, Multiracial, etc.) on Kent State University's main campus.

Emery-Arsene Olama, Junior, Chemistry

Mentor: Denise Harrison, Ph.D.

Violence and Its Visibility by the Decades

In this poster presentation, we will compare the perspectives of two generations and how they view the impact of violence. The number of school shootings, extremist attacks, and violent police-directed homicides have seemingly increased in the past two decades. Has how the public received this information drastically changed across generations? By using figures to track the number of attacks, the personal accounts from present-day teenagers, and the recollections of horrifying events by our older adults of today, we should be able to show the effects of overexposure to violence by way of social media.

Elliott Palmer, Senior, Russian Translation

Mentor: Tatyana Bystrova-McIntyre, Ph.D.

An Investigation of Russian Law and Legal Translation

With the collapse of the Soviet Union and the opening of the Russian market to foreign businesses, the need for skilled legal translators became incredibly important. Unfortunately, for most translators, their education consists of broad theory alongside other students of various language pairs. Additionally, there is a very little practical instruction in Russian Legal Translation. Through the research of Russian Legal Theory and through the translation of many different legal text types, I have created a corpus which can be used for teaching and reference purposes for students of Russian Legal Translation.

ENGLISH/LANGUAGE/COMMUNICATION

Oral Presentations

Octavio Valdez, Junior, Spanish Translation

Mentor: Luis Hermosilla, Ph.D.

Tentacles of Violence from the Most Well-Organized Gang in the World

The Central American gang commonly known as the MS-13 was formed in Los Angeles, CA, by mostly Salvadoran inmates during the 1980s. Due to the high rate of violence inside the prisons where they were incarcerated, many of its members were deported to their home country, where they soon emerged as organized gangs without control from the State. In addition to highly corroding the Salvadoran society, this criminal organization has spread to nearby countries and other parts of the world like the U.S., Middle East, and Spain. Despite efforts by the governments from the affected countries to eliminate them, they have either partially succeeded or have not succeeded at all. Considering the rapid growth of MS-13, will this criminal organization ever come to an end?

EXERCISE PHYSIOLOGY

Posters

Isabella Banyai, Junior, Exercise Science; Jason Parks, Graduate Student, Exercise Physiology; Erica Marshall, Graduate Student, Exercise Physiology; Stacie Humm, Graduate Student, Exercise Physiology; and J. Derek Kingsley, Ph.D.

Mentor: J. Derek Kingsley, Ph.D.

High-Intensity Heavy Rope Exercise on Pulse Wave Reflection in Resistance-Trained Individuals

PROBLEM: The effects of high-intensity heavy rope exercise (HI-HRE) on pulse wave reflection are unknown.

METHODS: Heart rate (HR), brachial and aortic blood pressure (BP), and pulse wave reflection were collected at rest and at 15, 30, and 60 minutes post-exercise.

RESULTS: There were significant main effects of time for HR such that it was always augmented post-exercise compared to rest. There were no significant main effects for brachial or aortic BP. There was a significant main effect of time for the augmentation Index (AIx) and the AIx normalized at 75bpm.

CONCLUSION: These data demonstrate that recovery from high-intensity heavy rope exercise has a significant effect on pulse wave reflection lasting up to 60 minutes post-exercise.

Tasia Doshak, Senior, Exercise Science; Brandon M. Gibson, Graduate Student, Exercise Physiology; Joseph A. Laudato, Graduate Student, Exercise Physiology; Cody S. Dulaney, Graduate Student, Exercise Physiology; Cardyl P. Trionfante, Ph.D. (Miami University); Adam R. Jajtner, Ph.D.; and Emily C. Tagesen, Graduate Student, Exercise Physiology

Mentor: Adam R. Jajtner, Ph.D. and Brandon M. Gibson, Graduate Student, Exercise Physiology

Hematological Effects of a Mechanical Aid on Muscular Performance and Recovery Following Resistance Exercise

PURPOSE: Examine leukocyte response to an acute squat protocol while wearing knee wraps and not wearing knee wraps.

METHODS: Seven resistance-trained men completed four visits. Participants completed 8x10 repetitions at 70% of 1-RM. Blood samples were collected before exercise, immediately after exercise, one hour after, 24 hours after and 48 hours after. Blood was analyzed for leukocyte count, lymphocyte, monocyte and granulocyte number and ratio.

RESULTS: Significant time effects observed for LY%, LY#, MO#, GR%, and GR#. LY%, LY#, and MO# increased at IP across time, while GR% reduced at IP across time. GR# increased at 1H compared to PRE, 24H, and 48H. GR% and GR# were greater at 24H versus 48H, while LY% at 24H were lower than 48H.

CONCLUSIONS: Resistance exercise elicits an immediate increase in circulating leukocytes.

Bridget Gee, Senior, Exercise Science; Yu Lun Tai, Graduate Student, Exercise Physiology; Erica Marshall, Graduate Student, Exercise Physiology; Jason Parks, Graduate Student, Exercise Physiology; and J. Derek Kingsley, Ph.D.

Mentor: J. Derek Kingsley, Ph.D.

Upper and Lower-Body Resistance Exercise With and Without Blood Flow Restriction on Pulse Wave Reflection

PROBLEM: Acute upper-body RE (URE) and lower-body RE (LRE) with blood flow restriction (BFR) on pulse wave reflection is unclear.

METHODS: Pulse wave reflection was assessed at rest and during recovery with or without BFR in resistance-trained individuals.

RESULTS: There were significant group-by-time interactions for brachial systolic blood pressure (BSBP), brachial diastolic blood pressure (BDBP), aortic systolic blood pressure (ASBP), and aortic diastolic blood pressure (ADBP). BDBP and ADBP were elevated at R10 and R25 from LRE compared to URE and rest, and there was no difference at R40 or R55. There were significant interactions for augmentation index (AIx), and AIx normalized to 75bpm.

CONCLUSION: These data suggest that BFR has no effect on blood pressure or pulse wave reflection.

Rebecca Grunder, Senior, Exercise Science; Therese Smith, Senior, Exercise Science; Jason Parks, Graduate Student, Exercise Physiology; Erica Marshall, Graduate Student, Exercise Physiology; and J. Derek Kingsley, Ph.D.

Mentor: J. Derek Kingsley, Ph.D.

Reductions in Vagal Tone After Acute Resistance Exercise Are Similar Between Resistance-Trained and Untrained Individuals

PROBLEM: Autonomic modulation between resistance-trained (RT) and untrained (UT) individuals in response to resistance exercise (RE) are unclear. Therefore, we compared vagal modulation during recovery from RE in RT (n=18) and UT (n=8) individuals.

METHODS: Vagal modulation was assessed using heart rate variability [high-frequency power (lnHF)], as well as heart rate complexity [Sample Entropy (SampEn) and Lempel-Ziv entropy (LZEn)]. Data were collected at rest, 15 minutes (Rec1), and 30 minutes (Rec2) post-exercise.

RESULTS: At rest, there were no differences in vagal modulation between groups. There were significant two-way interactions for lnHF, SampEn, and LZEn, such that they were reduced at Rec1 and Rec2 compared to rest, with similar responses between groups.

CONCLUSIONS: These data demonstrate that both groups responded similarly to resistance exercise using weight machines.

Tori Hargett, Junior, Exercise Science

Mentor: Adam R. Jajtner, Ph.D., and Kylene Boka, Graduate Student, Exercise Physiology

The Effect of Heat Exposure on Heart Rate and VO_2 During Time to Exhaustion Exercise

PURPOSE: To examine the effects of heat exposure on heart rate (HR) and VO_2 during a time to exhaustion (TTE) exercise bout.

METHODS: College-age men completed 3 experimental trials: a VO_2max test and two cycling trials with 90% VO_2 max in 22°C (MT) and 35°C (HT). TTE exercise continued until volitional fatigue while HR and VO_2 were measured continuously. PRE, MID, and POST time points were also calculated for each participant.

RESULTS: HR was significantly greater in HT compared to MT at PRE, while VO_2 was significantly greater in MT vs HT at POST. TTE was significantly longer in MT than HT.

CONCLUSIONS: This data suggests that the participants were able to perform at a higher intensity and for a longer duration in MT compared to HT.

Tricia Hart, Senior, Exercise Science; Eliott Arroyo, Graduate Student, Exercise Physiology; Emily C. Tagesen, Graduate Student, Exercise Physiology; Brandon A. Miller, Graduate Student, Exercise Physiology; and Adam R. Jajtner, Ph.D.

Mentor: Adam R. Jajtner, Ph.D.

Hematological Responses to High-Intensity Interval Training, Sprint Interval Training, and Moderate-Intensity Continuous Training

PURPOSE: To compare the effects of high-intensity interval (HIIT), sprint interval (SIT), and moderate-intensity continuous (MCT) training on leukocyte counts and subsets.

METHODS: Recreationally active men (n=2) completed a HIIT trial, fifteen 90-second bouts at 85% VO_2max; SIT trial, fifteen 20-second bouts at 130% maximum wattage; and MCT trial at 65% VO_2max, all lasting 53 minutes. Blood was collected before trials (PRE), immediately after (IP), 30 min after (30M), 2 hours after, 6 hours after, and 24 hours after. Leukocyte count and number and ratio of lymphocytes, granulocytes, and monocytes were analyzed.

RESULTS: MCT elicited the largest decrease in WBC at 30M relative to PRE compared to the other trials.

CONCLUSION: Preliminary data suggest that MCT may lead to the largest suppression in WBC comparted to HIIT and SIT.

Modesto A. Lebron, Senior, Exercise Science; Joseph A. Laudato, Graduate Student, Exercise Physiology; Brandon M. Gibson, Graduate Student, Exercise Physiology; Cody S. Dulaney, Graduate Student, Exercise Physiology; Cardyl P. Trionfante, Ph.D. (Miami University); and Adam R. Jajtner, Ph.D.

Mentor: Joseph A. Laudato, Graduate Student, Exercise Physiology

Relationship Between Isometric Mid-Thigh Pull, Isometric Squat, and Back Squat 1-RM

PURPOSE: Establish whether the isometric mid-thigh pull (IMTP) or isometric squat (ISQT) relate to a back squat 1RM.

METHODS: Eight resistance trained men completed two visits: a preliminary visit where participants completed a back squat 1RM and IMTP and ISQT familiarization and at least 72 hours later, completed the IMTP and ISQT. IMTP was set at 110° at the hip and 75% of their height for ISQT. Participants completed 3 maximal effort, 6s attempts for IMTP and ISQT, separated by 3min. Pearson Product Moment Correlation was used to observe relationships between variables.

RESULTS: A significant positive correlation was observed between the peak rate of force development (RFD) of ISQT and 1RM load ($r=0.746$, $p=0.034$).

CONCLUSIONS: Peak RFD for ISQT had the greatest relationship with 1RM.

Sara A. Miller, Senior, Exercise Science; Joseph A. Laudato, Graduate Student, Exercise Physiology; Brandon M. Gibson, Graduate Student, Exercise Physiology; Cody S. Dulaney, Graduate Student, Exercise Physiology; Cardyl P. Trionfante, Ph.D. (Miami University); and Adam R. Jajtner, Ph.D.

Mentor: Joseph A. Laudato, Graduate Student, Exercise Physiology

Influence of Knee Wraps on Force Production During Passive Isometric Quadriceps Contractions

PURPOSE: Examine the effect of knee wraps on passive force production.

METHODS: Nine recreationally active men (22.9±3.7 yrs; 177.3±5.7 cm; 84.9±17.4 kg) completed one visit. Participants first had anthropometrics recorded, then completed a back squat one-repetition maximum (1-RM), requiring a load ≥ 1.5x their body weight to qualify. Participants then completed passive force tests on the HUMAC Isokinetic Dynamometer at various angles (70° - 110°), performing two trials with the knee wrapped (KW), and two unwrapped (UW).

RESULTS: A significant condition x angle interaction was observed ($F=218.677$; $p\leq0.0001$, $\eta p^2=0.965$). Paired samples t-tests revealed significantly greater force production in KW compared to UW at all angles ($p\leq0.05$) excluding 70°($p=0.205$).

CONCLUSION: Knee wraps produce more passive force than unwrapped at all angles except at 70°.

Jessica Sankovic, Senior, Exercise Science; Kylene Boka, Graduate Student, Exercise Physiology; Jeremiah A. Vaughan, Graduate Student, Exercise Physiology; Brittany Followay, Graduate Student, Exercise Physiology; Ellen Glickman, Ph.D.; and Adam R. Jajtner, Ph.D.

Mentor: Kylene Boka, Graduate Student, Exercise Physiology and Adam R. Jajtner, Ph.D.

The Effect of Heat Exposure on the Inflammatory Response During Exercise

PURPOSE: Examine post-exercise (35°C) circulating IL-6, IL-10, IL-1ra, and TNF-α.

METHODS: Twelve men cycled 60min at 60%VO_2max, and to exhaustion at 90%VO_2max in 22°C and 35°C. Blood was analyzed at Pre, after 60% (60), after 90% (90), and after 1-hour recovery (Rec).

RESULTS: IL-6 increased from Pre to 60 and 90 in both conditions. Concentrations were greater in HT vs MT at 60 and Rec. IL-10 increased from Pre to 90 in both conditions and was higher in HT than MT at Rec. IL-1ra increased from Pre, 60, and 90 to Rec in both conditions. All concentrations were higher in HT than MT. TNF-α increased across time in HT.

CONCLUSIONS: The cytokine response suggests a greater anti- than pro-inflammatory response to exercise in the heat.

Therese Smith, Senior, Exercise Science; Jason Parks, Graduate Student, Exercise Physiology; Erica Marshall, Graduate Student, Exercise Physiology; Stacie Humm, Graduate Student, Exercise Physiology; and J. Derek Kingsley, Ph.D.

Mentor: J. Derek Kingsley, Ph.D.

Heavy Rope Exercise on Hemodynamics and Arterial Stiffness in Resistance-Trained Individuals

PROBLEM: Since the effects of heavy rope exercise on cardiovascular modulation is unknown, we evaluated heavy rope exercise on cardiovascular hemodynamics and arterial stiffness.

METHODS: Cardiovascular hemodynamics and arterial stiffness were collected at rest 15, 30, and 60 minutes after heavy rope exercise. Cardiovascular hemodynamics included heart rate (HR), mean arterial pressure (MAP), cardiac output (CO), stroke volume (SV), and total peripheral resistance (TPR). Arterial stiffness was measured via carotid-femoral pulse wave velocity (cf-PWV).

RESULTS: There were no significant main effects of time for MAP or SV. There were significant main effects of time for HR, CO, TPR. There was a significant main effect of time for cf-PWV.

CONCLUSIONS: These data demonstrate that acute heavy rope exercise increases cardiovascular workload for at least 30 minutes.

Alena Varner, Senior, Exercise Science; Bryan T. Dowdell, Graduate Student, Exercise Physiology; Jin Hyun Kim, Graduate Student, Exercise Physiology; Sarah A. Harper, Graduate Student, Exercise Physiology; Brandon S. Pollack, Graduate Student, Exercise Physiology; and Angela L. Ridgel, Ph.D.

Mentor: Angela L. Ridgel, Ph.D.

Does High Cadence Cycling Improve Symptoms of Depression in Individuals with Parkinson's Disease?

PURPOSE: To examine if three bouts of high-cadence cycling improves symptoms of depression in individuals with PD.

METHODS: Individuals with PD were divided into either a high-cadence cycling or a control group. The cycling group completed three sessions of high cadence cycling. Depression was assessed using Beck Depression Inventory (BDI-II) at baseline and 1 week later.

RESULTS: Overall, there were no significant changes in BDI scores after the intervention. Only the individuals who showed symptoms of depression (BDI score > 13) improved their depression score after high-cadence cycling.

CONCLUSIONS: Although three high-cadence cycling sessions did not result in significant improvements in BDI-II, it is possible that additional sessions of high-cadence cycling will promote further improvements in depression amongst individuals with PD.

Lauren Watson, Senior, Exercise Science; Cody S. Dulaney, Graduate Student, Exercise Physiology; Tricia Hart, Senior, Exercise Science; Eliott Arroyo, Graduate Student, Exercise Physiology; and Adam R. Jajtner, Ph.D.

Mentor: Cody S. Dulaney, Graduate Student, Exercise Physiology and Adam R. Jajtner, Ph.D.

Exercise Post-Oxygen Consumption in Response to Cycling at Various Intensities

PURPOSE: To assess exercise post oxygen consumption (EPOC) after high-intensity interval (HII) against moderate-continuous cycling (MC).

METHODS: Recreationally active men (n=2) completed two cycling trials: HII (fifteen 90-second bouts at 85%VO_{2Max}) and MC at 65% VO_{2Max}, with each lasting 53 minutes. Respiratory gasses were analyzed every 5 minutes during a 60-minute recovery.

RESULTS: Average EPOC was 3.87±0.83 mL/kg.min for HII and 3.91±0.52 mL/kg.min for MCT. EPOC declined from 5.32±0.48 mL/kg.min to 3.93±0.31 mL/kg.min at the end of recovery.

CONCLUSION: Despite differing intensity in exercises, the average incline in VO_2 response and decline in VO2 response was similar in both trials.

Alexander Wilk, Senior, Exercise Science

Mentor: John McDaniel, Ph.D.

Application of Occlusion Training

We assessed occlusion pressure and the variables that may affect it day to day in order to help improve prescribed pressures for exercise prescription. Eight subjects with no known cardiovascular or metabolic diseases were analyzed. Each session was forty-eight hours apart, and we measured occlusion pressure, blood pressure, and arm circumference. Subjects were also questioned about their last exercise session, last meal, last dose of caffeine, and the time they woke up. Amongst some subjects, a trend between blood pressure and occlusion pressure was noted. Further studies on occlusion pressure with larger subject pools included looking at the time of day and the effects of external variables, which may be necessary to explain seemingly random changes in pressures.

GEOLOGY/GEOGRAPHY

Posters

Sydney Bihn, Junior, Aeronautics; Adam Fertig, Junior, Aerospace Engineering; and David Stringer, Ph.D.

Mentor: David Stringer, Ph.D.

Improving Vertical Axis Wind Turbine Feasibility: Predicting Turbine Airfoil Performance Via Wind Tunnel Experimentation

Vertical-axis wind turbines have a unique advantage over traditional horizontal-axis wind turbines because they can operate at lower wind speeds. Performance challenges prevent these vertical configurations from being widely integrated. One design solution is a spherical vertical axis turbine employing a sequence of airfoils on the struts comprising the sphere. The objective of this research is to measure and assess the aerodynamic properties of different airfoils and predict their performance through one rotation using a subsonic wind tunnel. Correction factors and curve-fitting techniques are applied to the experimental data. Using the resulting data, the optimal airfoil placements can be predicted to create a working model for further testing and implications, thus positioning performance and operational feasibility of wind turbines as important sources of renewable energy.

Katherine Connell, Senior, Geology and David Hacker, Ph.D.

Mentor: David Hacker, Ph.D.

Geology of a Paleogene Garnet Bearing Rhyolite Intrusion, Northern Black Hills Igneous Province, South Dakota

The Northern Black Hills Igneous Province consists of a series of 58-50Ma intrusive centers that trend W-NW from South Dakota to Wyoming. This area provides an excellent opportunity to study mechanisms of shallow magma intrusions and associated volcanism. Eleven samples were examined in thin section for petrography, microprobe mineral chemistry, and whole rock chemistry. The results classify the rocks as rhyolite containing up to 2% phenocrysts of plagioclase, biotite, and garnet in an aphanitic groundmass. Electron microscope analysis of garnets revealed their composition to be primarily almandine which form under high temperature and pressure and therefore are rare in surface or near-surface rhyolites. We hypothesize the garnets crystallized in a low crustal depth magma and were preserved in rhyolite during rapid ascent to the surface.

Michael Crowell, Sophomore, Earth Science; Sydney Laubscher, Graduate Student, Geology; and Elizabeth Herndon, Ph.D.

Mentor: Sydney Laubscher, Graduate Student, Geology and Elizabeth Herndon, Ph.D.

Optimizing Soil Grinding to Measure Soil Manganese Content

This presentation will examine the differences between varying levels of Manganese among many different soil types, such as manganese dissolved in water, manganese oxides, manganese in pyrite-containing shale, and a control group with sand and peat. My role began with grinding soil samples into a specified (∓15g) mass to allow the fine fragments of soil to fit through a 75µm sieve. After grinding, the samples were pressed into a pellet and analyzed under an X-Ray Fluorescence spectrometer to look at the chemical makeup of the sample.

Nicolle Di Domenico, Senior, Geology; Maximillian Barczok, Graduate Student, Applied Geology; and Elizabeth Herndon, Ph.D.

Mentor: Elizabeth Herndon, Ph.D.

Using Sequential Extractions to Measure Potentially Bioavailable Phosphate in Soil Systems with Poorly Crystalline Iron Oxides

Rising global temperatures are affecting Earth's hydrologic cycle, which will in turn influence biogeochemical cycles. In some areas where soil systems are flooded due to melting of ice or increased precipitation, fluctuating water tables can create variable redox conditions. Iron-oxides may have more potential to adsorb phosphate formed in these fluctuating conditions than in more stable circumstances. When phosphate, an essential nutrient for plants, bonds to iron oxides, it is no longer bioavailable. Decrease in bioavailable phosphate in environments affected by global warming could affect vegetation growth in areas with fluctuating redox conditions. These conditions were studied through sample incubation in a vernal pond followed by sequential extractions of phosphate.

Konstantinos Kasamias, Senior, Geology

Mentor: Kuldeep Chaudhary, Ph.D. and Lu Zou, Ph.D.

How Roughness and Cleanliness of Rock Mineral Surfaces Control Its Wettability

To evaluate wettability of geologic minerals and rocks, their surfaces are first subjected to a polishing routine, which involves sequential polishing from coarse to fine grit papers. The polishing routine introduces a degree of "surface roughness," which likely affects the surface wettability measurements. Likewise, differences in surface cleaning procedures, such as usage of DI water, acetone, ethanol, and plasma cleaning, lead to differences in degree of "cleanliness" or contamination, which influences wettability measurements. In this study, we systematically subject both glass samples and soil minerals including quartz, calcite, and other minerals to different degrees of polishing, and then quantify surface roughness using "confocal microscopy." Afterwards, the samples are subjected to different cleaning procedures, followed by wettability determination from contact angle measurement of air-water system at ambient conditions. Our preliminary results show that polishing from coarse to fine size, which decreases the "surface roughness," transforms the wettability of quartz and calcite minerals from intermediately low wetting to strong wetting characteristics. Furthermore, we have been able to show control of surface cleanliness through a cleansing procedure, which contributes to tens of degrees of variation in measured contact angles.

Alex Mailhot, Sophomore, Anthropology; Mary Plauche, Graduate Student, Geology; Anne Jefferson, Ph.D.; and Jeff Timmons, Graduate Student, Geology

Mentor: Mary Plauche, Graduate Student, Geology; Jeff Timmons, Graduate Student, Geology; and Anne Jefferson, Ph.D.

Changes in Water Source in Urban Streams as a Response to Storms

Urban streams are as important as they are complex and interesting because people are living right beside them. Understanding where the water comes from in urban streams is useful because we could learn a lot about pollution dynamics and gauge how effective the stormwater management efforts are in the area. In urban areas, high amounts of rainfall are directed into the streams by manmade impervious surfaces: roads, roofs, storm drains, etc. Urban streams are important to study because they flow through our towns and by our houses, and a better understanding would improve our neighborhoods.

Nicholas Manning, Senior, Geology and David Singer, Ph.D.

Mentor: David Singer, Ph.D.

Separation of Acid Mine Drainage Colloids by Centrifugation

Acid mine drainage (AMD) is a common result of historic coal mining. Mine spoils, left over waste from decades ago, can serve as a transport medium for AMD, causing severe ecosystem impacts. Pollutants are transported in the colloidal fraction (1-1000nm) making them hard to mitigate. In order to be studied, the colloidal fraction must first be separated from the sample. This study attempted to use centrifugation to separate hydrated soil samples into their colloidal fraction. The size of the separated colloids was measured, along with the composition and morphology of the soil. Significant separation was determined, but future research will be needed to further confirm the composition of the colloids.

Olivia A. Ols, Pre-College, Geology; J. Bradford Hubeny, Ph.D. (Salem State University); Renee V. Knudstrup, Graduate Student (Salem State University), Geological Sciences; and Joseph D. Ortiz, Ph.D.

Mentor: Joseph D. Ortiz, Ph.D.

Analysis of Fluctuation in Algal Communities and Temperature Throughout the Holocene in Sluice Pond, MA Through Spectroscopy of a Lake Sediment Core

A core raised from Sluice Pond (Lynn, MA, U.S.A.), depicts changes throughout the Holocene in both algal communities and temperature. The variability in the core was studied using wavelet analysis of Visible Derivative Spectroscopy signals extracted by varimax-rotated, principal component analysis (VPCA). This information is plotted against time using an AMS 14C constrained age model. Thirteen separate constituents were present in the core as mixtures of six different orthogonal (or independent) VPCA components that account for 97.1% of the variance in the data set. Two of the components are presented in this project 6VPCA1 showing algal communities (related to Chlorite, Smectite, and phycocyanin) and 6VPCA4 indicating temperature (related to Hematite and Goethite) with dominant periods of oscillation at 4 ka and 7 ka, respectively.

Dalton Thompson, Junior, Geology

Mentor: Carrie Schweitzer, Ph.D. and Rodney Feldmann, Ph.D.

The Relationship Between Modern Chaceon Decapods and Ancient Chaceon Decapods, Kent, Ohio

Modern decapods exhibit trends in physical morphology with respect to their environment and predatory behaviors (Silva et. al., 2017). Comparing the physical characteristics of ancient and modern ***Chaceon*** specimens could provide insight on habitat, diet, and evolution. I hypothesized ancient and modern species of the ***Chaceon*** genus would be morphologically similar but exhibit differences in physical morphology. Results indicated significant morphological variations in both their carapace and claw dimensions. These differences in claw and carapace morphology between ancient and modern species provides key insight into the dietary habits of the ***Chaceon*** genus, indicating different lifestyles in different environments.

NURSING

Posters

Olivia Arnold, Sophomore, Nursing; Isabella Tassiello, Sophomore, Nursing; Dana Hansen, Ph.D.; and Mona Hebeshy, Ph.D.

Mentor: Dana Hansen, Ph.D. and Mona Hebeshy, Ph.D.

International Students Social Media Usage and Acculturative Stress

While our campus welcomes international students with open arms, many of them may experience acculturative stress while they endure the many challenges that come with attending college in a different country. Currently, there is insufficient research on the influence that social media use has on acculturative stress. Therefore, this study aims to address this gap and examine if international students' usage of social media for the purposes of both giving and receiving support can decrease their experience with acculturative stress. At the completion of the study, our results will inform faculty and university staff of the potential importance of access to web-based platforms and the importance of social support through social media for student success and coping with acculturative stress.

Kayla Galton, Senior, Nursing

Mentor: Kimberly A. Cleveland, J.D., M.S.N., R.N., C-M.B.C.

An Integrated Review of the Literature Concerning Ohio Abortion Legislation

INTRODUCTION: Examining the themes regarding changes in abortion regulation in Ohio and potential health impacts on those seeking abortion as an important first step in developing an evidence-based approach to patient care.

METHODS: A review of the literature and legislation.

RESULTS: Recent changes moved Ohio to a more restrictive regulatory approach. Themes have been identified following the impact of this change.

DISCUSSION: Abortion rates in Ohio have decreased since 2014. The cause of the decrease and the impact of recent legislation is unknown. A gap in the literature exists regarding how recent legislation will affect families.

CONCLUSION: Regulation of abortion has consequences on families in Ohio.

Melissa Henry, Senior, Nursing

Mentor: Dana Hansen, Ph.D.

Nutritional Management of Pediatric Patients with Short Bowel Syndrome

Short Bowel Syndrome (SBS) and associated nutritional deficiencies result from massive bowel resection. Significant research exists regarding the nutritional management of these patients in the immediate post-operative period via total parenteral nutrition and regarding the transition to enteral nutrition for short-term management. Other nutritional and psychological research shows that oral feeding should be the long-term goal for these patients due to the psychological and social benefits of the practice. Despite the mass of literature regarding types of nutrition management, little research exists regarding the transition from enteral nutrition to oral nutrition. This research project proposes additional study of the long-term impacts of oral nutrition on SBS patients and the optimal transition from enteral to oral nutrition.

Emily Schaefer, Senior, Nursing

Mentor: Amy Petrinec, Ph.D. and Yea-Jyh, Ph.D.

Development of Instructional Material for a Cognitive Behavior Therapy App

An intensive care unit admission and the stay of a critically-ill, adult patient is a stressful experience for families. They are at risk for developing Post Intensive Care Syndrome-Family (PICS-F), a syndrome composed of symptoms of depression, anxiety, post-traumatic stress, and decreased quality of life. Interventions aimed at preventing PICS-F are lacking for these highly stressed families. Cognitive behavior therapy (CBT), delivered by a mobile phone app, has been reported to decrease these symptoms in other populations. Subsequently, our focus is investigating the feasibility of using a CBT with family members of critically-ill patients. In preparation for enrollment, research was undertaken to guide the development of instructional materials for using a CBT intervention delivered via smartphone technology. Considerations used in developing the instructional materials included sample characteristics, ICU setting, and technological factors.

PHYSICS/CHEMISTRY/LIQUID CRYSTALS

Posters

Kyle Angermeier, Senior, Applied Engineering and Yanhai Du, Ph.D.

Mentor: Yanhai Du, Ph.D.

Comparative Assessment of Sustainability Lab Fuel Cells

Fuel cells possess the ability to convert energy in fuels directly into electricity. Different types of fuel cells are capable of using different types of fuel and different methods to convert the energy into electricity. The purpose of this research is to determine and record key differences between several types of fuel cells. This data can be recorded through repeatedly running each fuel cell type and taking note of those differences to determine possible advantages or disadvantages of using each type in different scenarios. The data produced can then be used to determine the best applications for each type.

Marissa Boughman, Senior, Aeronautics

Mentor: David Stringer, Ph.D.; Trent True, M.T.; and Darwin Boyd, Ph.D.

Magnus Effect Airfoil

An airfoil is a curved, cross-sectional area of a wing which generates lift so that humans can fly planes, jets, helicopters, and drones. The magnus effect is a force exerted on a rotating cylinder or sphere, which changes the original path of the object. By combining the two phenomena, we get an airfoil with an integrated rotating cylinder. This combination, in theory, may decrease the stall speed on an aircraft, proving to be an innovative asset in the safety of future aircraft. By increasing the lift generated on a wing, aircraft may have an increased rate of climb and a better fuel economy. Wind tunnel data may include generated lift at various angles of attack and various cylinder rpm's and will be compared to the original NACA 0012 airfoil for comparison.

Angela Deibel, Senior, Marketing

Mentor: Yanhai Du, Ph.D.

A Fuel Cell System

In the US and around the globe, over 60% of our electricity is from burning fossil fuels. Fuel cells can be twice as efficient and can dramatically change the way electricity is generated. When hydrogen and oxygen meet on the electrolyte plate, a catalyst spurs a reaction that creates H_2O and electricity, without greenhouse emissions. There is a unique opportunity to study a 150-Kilowatt Fuel Cell Module (FCM). The FCM weighs 720 pounds. 1 unit is disassembled. The objective of this project is to understand gas distribution and exhaust and operating conditions while focusing on the flow of hydrogen, oxygen, and water in the module. To achieve this objective, the 150 kW FCM will be disassembled and mapped.

Sean Frisbie, Sophomore, Chemistry and Kumudie Jayalath, Graduate Student, Chemistry

Mentor: Sanjaya Abeysirigunawardena, Ph.D.

RNA Pseudoknot Structure in 16S Helix 18 Destabilizes the Binding and Enzymatic Activity of Ribosomal RNA Modification Enzyme RsuA

Ribosomes are ribonucleoprotein complexes that are involved in protein biosynthesis in cells. Ribosomes are generated from the assembly of three different ribosomal RNAs (rRNAs) and more than 50 ribosomal proteins (r-proteins). My study focuses on understanding the impact of pseudoknot structure of 16S helix 18 on the binding of RsuA. Several rRNA mutants are incapable of forming 16S helix 18 pseudoknot, which was generated by using site-directed mutagenesis. FRET-based binding assay are used to measure the thermodynamic stability of RsuA-rRNA complexes. These findings will enable us to elucidate thermodynamically-preferred mechanisms of RsuA binding to rRNA.

Katherine M. Greskovich, Senior, Chemistry

Mentor: Songping Huang, Ph.D.

Testing the Efficacy of Gallium Complexes to Treat Staphylococcus Aureaus and Pseudomonas Aeruginosa Infections

Bacteria in the ***Staphylococcus*** and ***Pseudomonas*** genera have developed into antibiotic-resistant strains that have caused increases in infections and deaths in the United States. Gallium nitrate was just approved by the FDA to treat these infections; however, our group discovered that ***Pseudomonas*** develops drug resistance to this treatment in as little as four days of consecutive treatments, possibly due to the cationic nature of the gallium species and ***Pseudomonas*** control over its ion channels. In this research, we studied the effects of other gallium complexes, namely gallium acetylacetonate, on ***Staphylococcus*** and ***Pseudomonas*** bacteria. We tried different methods of solvating gallium complexes and then tested the effectiveness of these complexes in minimum inhibitory concentration (MIC) resistance studies.

Caitlin Hawkins, Senior, Biochemistry and Sanjaya Abeysirigunawardena, Ph.D.

Mentor: Sanjaya Abeysirigunawardena, Ph.D.

Development of FRET-Based Assay to Observe Binding of RNA Modification Enzyme RsmG to 16S Ribosomal RNA

Ribosomes are the molecular machines that carry out protein biosynthesis in all living organisms. They are composed of three different ribosomal RNAs and more than 50 ribosomal proteins. My project in Abey lab is to investigate how RNA modification enzyme RsmG influences ribosomal proteins binding to 16S ribosomal RNA. To achieve this goal, I have developed an assay to monitor binding of RsmG to ribosomal RNA, which will allow us to determine the binding affinity of RsmG to RNA and thus calculate thermodynamic cooperativity between RsmG enzyme and ribosomal proteins. Our findings give us more insight into how modification enzymes modulate the hierarchy of protein addition during ribosome biogenesis.

Madelyn M. Kist, Sophomore, Biochemistry; Minhchau To, Freshman, Chemistry; and Keshav G C, Graduate Student, Chemistry

Mentor: Sanjaya Abeysirigunawardena, Ph.D.

Investigating the Structural and Functional Consequences of the N-Terminal Domain of rRNA Methyl Transferase Enzyme RsmC

Ribosomes are the ribonucleoprotein particles that biosynthesize proteins in all forms of life. Functional veracity of ribosome is highly dependent on its structural accuracy. Ribosome biogenesis in bacteria is a complicated process that couples ribosomal RNA (rRNA) transcription, rRNA folding, assembly of ribosomal proteins (r-proteins), rRNA processing, and modification of rRNA and r-proteins. My project in the Abey Lab deals with modification enzyme RsmC, a methyltransferase that methylates guanine at 1207 of 16S ribosomal RNA of the 30S bacterial ribosomal subunit. RsmC is a tandemly duplicated protein, where only the C-terminal domain is catalytically active. The function of the N-terminal domain is unknown currently. We have generated a RsmC mutant lacking its N-terminal domain via site-directed mutagenesis. We are investigating the structural integrity of protein RsmC and its catalytic activity in the absence of the N-terminal domain. Our work will help us to determine if both domains of the protein RsmC are essential for generating functional ribosomes in bacteria.

Jordan Mirto, Senior, Chemistry

Mentor: Alexander Seed, Ph.D.

Liquid Crystal Synthesis Based on Thienothiophenes

In addition to the three most common states of matter–solid, liquid, and gas–there exists an intermediate phase of matter between the solid and liquid which has been characterized as a liquid crystal. One aspect of these materials that has been problematic is their response time when activated by an electric field. These compounds are relatively slow to relax on the order of milliseconds. However, our research is directed toward making this response time much faster, possibly on the order of microseconds. We plan to do this by chemically synthesizing various new sulfur-based liquid crystals called thienothiophenes. Developing a liquid crystal with a faster response time can in fact increase resolution, leading to the development of a more advanced high-definition display.

Maia Pancost, Junior, Physics and Madison Wolf, Sophomore, Physics

Mentor: Qi-Huo Wei, Ph.D.

Active Particles Under Spatially Variant External Driving Fields

Active particles, also known as self-propelled Brownian particles, can convert the energy of their surroundings into directed motion. Driven by the constant source of external energy, systems of these active particles are usually out of equilibrium, and thus behave differently from these equilibrium systems made of passive particles. The overall goal of this project is to explore the potential of controlling active systems with structured external fields. Here we use numerical simulations based on Langevin equations to study the behavior of single active particles subjected to a spatially variant external driving field. The environment will be minimal at first, just focusing on a spherical particle with only a random force acting on it. The final code will include a rod-shaped particle surrounded by similar particles, as well as the possible interactions between those particles and extraneous barriers placed throughout the environment. The movement and interactions of these particles in the coded environment will be analyzed and compared to the real-life movement of these particles.

Christian K. Ross, Senior, Physics

Mentor: Declan Keane, Ph.D. and Brett Ellman, Ph.D.

Differential Equations and Algebraic Operators in Quantum Mechanical Systems

Quantum Mechanics is an incredibly difficult subject to understand, even to physicists. To obtain solutions in the field of Quantum Physics, and hence to be able to make predictions in the physical world, there are two different mathematical methods that are utilized. However, it is not obvious that these two methods are actually equivalent, since they are incredibly different both visually and mathematically. The two alternative strategies physicists use to attack Quantum Mechanics are Calculus (Differential Equations) and Linear Algebra. This past summer, I set out to prove that these two methods are indeed equivalent by solving the Hydrogen atom wavefunction using both procedures. This demonstrates by construction that these two methods are indeed equivalent.

Marlon Valladares Nuñez, Junior, Physics

Mentor: Hamza Balci, Ph.D.

I-Motif DNA in Small-Molecule Analysis Through Optical Microscopes and Foster Resonance Energy Transfer (FRET) Techniques

I-motif DNA is an apocryphal form of DNA recently discovered to participate in cellular processes. The i-motif structure shows to be extremely sensitive to pH changes, making it a perfect instrument to observe cellular-level interactions. In this investigation, i-motif DNA was used to study the G-quadruplex DNA–sequences rich in the Guanine Hydrogen base that makes up DNA. The purpose of the investigation was to study the interaction and changes pH mostly has in G-Quadruplex structures, with an emphasis on small molecules and time intervals. The use of both techniques is vast to modern science. pH changes studied in this investigation are akin to biological changes and reactions often used as a way to 'signal' response to input within cells.

Caitlyn Webb, Junior, Biology and Marianne Prévôt, Ph.D.

Mentor: Marianne Prévôt, Ph.D. and Elda Hegmann, Ph.D.

Responsive 3D Liquid Crystal Elastomer: From a Bio-Ink to a Real Brain Model Tissue

3D bioprinting of human tissues is revolutionizing the tissue engineering field and is potentially the next step towards personalized medicine to achieve full viable organoids allowing to custom-design a multitude of desirable tissues. The use of smart materials as a bio-ink appear attractive for the future of 3D printed dynamic organoids. We have previously shown that liquid crystal elastomers (LCEs) provide an adjustable, multi-responsive environment that serves as a biocompatible scaffold to grow tissues. LCEs can promote, report, and direct cell growth. Our studies involve the integration of neuronal cell types into this elastomer-ink to become a suitable bio-ink. We propose here a 3D-micromodel that provides a new platform to study LCE-cell interactions and is another step toward dynamic brain-model tissues.

POLITICAL SCIENCE/PHILOSOPHY/HISTORY

Posters

Cecelia Catcher, Senior, History

Mentor: Matthew Crawford, Ph.D.

"…she must be a factory girl.": Changing the Social Perception of Factory Girls in Lowell, M.A. 1840-1845

Analysis of publications in the ***Lowell Offering***, printed from 1840-1845, shows evidence of an acknowledgement by female operatives of the negative connotations placed by society onto the stereotype of ***factory girl***. Through analysis of the stories, poems and songs published in the ***Lowell Offering*** magazine, a direct attempt by the female authors and subsequently the operatives of the textile mills in Lowell, Massachusetts is shown to counteract or disprove the negative stereotype of women employed in industrialization as immoral, uneducated, and unable to perform domestic responsibilities. The research as such shows that the women of Lowell, Massachusetts used the ***Lowell Offering*** as a platform to voice their opinions while actively negating the negative stereotype held by society towards female factory workers.

Danielle DeCristofaro, Junior, History

Mentor: Matthew Crawford, Ph.D.

Veteran Memory: The Experiences of U.S. Army Soldiers in Vietnam and the Role of Individual Memory

Veteran Memory takes an in-depth look at the experiences of U.S. Army Veterans who served in the Vietnam War. This two-part project aims to answer two questions: 1. How did soldiers feel about what they went through in combat, and how those thoughts differ between volunteers and draftees? 2. How do the use of memoirs enhance our understanding of experiences of historical events? This research focuses solely on U.S. Army Veterans of the Vietnam War, both volunteers and victims of the draft. Only memoirs are used to conduct this research. Since past scholarship only uses interviews and questionnaires to gain insight on experiences of the war, this is the first project where memoirs have been focused on.

Alyssa Fernandez, Senior, Philosophy

Mentor: Andreea Smaranda Aldea, Ph.D.

Minority College Students and Philosophy

What barriers do minority college students identify as problems when becoming philosophically educated? This study addresses the problem that philosophy is largely directed by white males; the majority populations responsible for most philosophical ideas predominantly do not represent minority populations. As a result, philosophy risks becoming stagnant in a world in which diversity is becoming increasingly important. This study examines the barriers that undergraduate minority students–women, ethnic minorities, and the LGBTQ population–at a midsized midwestern university in the United States identify in pursuit of philosophical education. When given a survey comprised of multiple-choice and short answer questions, 16 out of 21 students identified one or more barriers–cultural, linguistic, social, and financial–between themselves and philosophical education. This study pinpoints concrete obstacles with respect to philosophical education, identified by students themselves, which future research may utilize to better understand how to make philosophy more inclusive.

Natalie Flamik, Senior, History

Mentor: Matthew Crawford, Ph.D.

"The Most Obstinate Woman That Ever Was": Mary I's Impact on English Queenship, 1553-1558

Mary I of England had a substantial impact upon English queenship that is often forgotten when studying the evolution of queens and their role in early modern Europe.

Emily Graydon, Senior, History

Mentor: Matthew Crawford, Ph.D.

Communism or Oil? Why the United States Changed Iran Forever

In 1953, the United States, with the assistance of England, ousted Iran's Prime Minister, Mohammed Mossadegh, and installed the Shah as the new ruler. This would have great significance in the future of the Middle East, and other scholars argue it is the root of modern terror. In my research, I wanted to know why the United States agreed to help England to oust the Prime Minister. Was it the potential gain of resources–namely oil–in Iran, or was it the threat of Communism in Iran?

James Griffin, Senior, History

Mentor: Matthew Crawford, Ph.D.

The First Sectional Crisis: The 1844-1845 Texas Annexation Debate

The topic of this paper is the Texas annexation and the role of sectionalism. This paper examines Texas as the start the sectionalism issue within America and connects with political scholars that discuss the sectional crisis within this annexation. Additionally, this paper defines the Missouri Compromise as the act that began to split America along ideological and geographical divides. To see this, this paper engages four prominent voices from within the Democrat and Whig parties. The last section looks at four men who are key to understanding sectionalism. By understanding Texas as the start of the sectionalism crisis, one is given a clearer understanding of events to follow: the Mexican American War, Bloody Kansas, and the Civil War.

Alexandra Heffner, Junior, Theatre Studies

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Ancient Greek Technology in Warfare

The purpose of this project was to travel to Athens, Greece to study ancient Greek technology in war on-site. I also completed research prior to the trip that would further develop the project with first-hand knowledge and experiences. This study shows the influence the Grecians have had in developing technology as a precursor to what we have today, specifically in warfare. The Grecians were one of the first people to figure out how to create some of the earliest warfare technologies humanity has ever seen. There have been several great engineers who have emerged from the Greek culture such as Philon of Byzantium and Heron of Alexandria. Since then, we have taken the influence of Greek technology and advanced it decades further. While the United States has advanced technologically in warfare, it all started with the Greeks.

Sean Kellar, Senior, History

Mentor: Matthew Crawford, Ph.D.

The Re-Invention of the American Worker: Race, Masculinity, and the Decline of Unions in the U.S., 1964-1982

The decline of unions since 1964 has often been attributed to external forces such as anti-union culture among growing corporations, hostile legal and political policy, or the natural progression of globalization as its effects hampered union presence and influence. However, another significant facet of union decline was the rapid deterioration of the concept of solidarity within the union apparatus as the union demographic began to change. As union identity underwent transitioning from a collective consciousness to an individual-rights based consciousness, fragmentation permeated the union structure, weakening its efficacy during turbulent social and economic years. This fragmentation is most represented in the change of identity in the white male union worker, who started to abandon the democratic platform and lash out against the elevated social status of women and minorities.

Yi Hin Lee, Senior, History

Mentor: Matthew Crawford, Ph.D.

Different Experiences of the Jewish Population During the Holocaust and the Patriarchy Impact

By examining the experiences of the Jewish population, the Nazis' actions during the Holocaust, and Nazi ideology behind these two races, we can understand the fact that Holocaust was not just an event of extreme antisemitism, but also an event that involved extreme patriarchy.

Brooke Mahan, Senior, History

Mentor: Matthew Crawford, Ph.D.

"Us vs. Them": The Meaning of Violence Within Euro-American Tall Tales of the Frontier Era

Authentic tall tales from the nineteenth century American frontier contain a consistent theme of violence towards Native Americans. Through the study of these tales, I explore to what extent this hatred of Native American culture influenced the development of the Euro-American cultural identity.

Miles McDaniel, Senior, History

Mentor: Matthew Crawford, Ph.D.

The Promise of the Great Migration: Cleveland's Road to School Desegregation

My project examines Cleveland's struggle to provide adequate education to the public-school district. This issue is caused primarily by the improper implementation of desegregation within the school district. During desegregation, Cleveland's population changed significantly and the "great migration" occurred, again. The civil rights movement within Cleveland and Northeast Ohio was more of a struggle than many know, and that struggle had leaders, like Dr. King, engaged along the way. One of the most telling points in assessing Cleveland's history pertaining to Civil Rights is the way in which the city school district went about handling the integration of schools. This process took over forty years, from 1954-1996, and the effects of the handling of this process can still be seen to this day. The African American population within Cleveland grew heavily during WWII. From 1940-1960, the population grew from 85,000 to 251,000, and, during the 1960s, the African American population made up thirty percent of the city.

Joseph McNeely, Junior, History

Mentor: Ralph Menning, Ph.D.

Malicious Intent? A New Look at the July Crisis of 1914

The traditional view of the July Crisis of 1914 is that Britain was the only involved power that made a substantive proposal to defuse the crisis. Britain proposed a multilateral conference at which the antagonists could compose their differences. Germany, in not backing the proposal, blithely ignored the only real opportunity to resolve the crisis peacefully. My research shows that, on the contrary, it was the proposal itself that in fact ratcheted up tensions. Using documents from the British Foreign Office as well as the Five Power Memorandum on Serbia from 1909, I aim to show how Britain escalated the crisis instead of diffusing it.

Cameron Moodie, Senior, History

Mentor: Matthew Crawford, Ph.D.

Pillars of Knighthood: The Evolution of English Knights, 1066-1685

"Pillars of Knighthood: The Evolution of English Knights" focuses on how knights changed from the Late Middle Ages to the Renaissance in England. Knights, as a social class, went from a militaristic aristocracy to social nobility as knighthood became a status symbol. The project focuses on three pillars of knighthood: chivalry, armor, and nobility. Chivalry is how a knight interacted with people, from other knights to women. Armor is the protection knights wore during battle. And nobility is the knights' social class. In the end, knights went from a tool of war to a tool of society.

Madison Newingham, Senior, Political Science

Mentor: Matthew Crawford, Ph.D.

Creating an Oligarchy: An Intellectual History of the Electoral College

"An Intellectual History of the Electoral College" seeks to identify all major motivations of the Framers in creating the structure of the Electoral College in order to allow historical debate to become more inclusive and to provide a political lens. For contemporary politics, the academia and elected officials would benefit from a better understanding of the Electoral College in order to circumvent some of the challenges the system has posed since.

Travis Tucci, Senior, History

Mentor: Matthew Crawford, Ph.D.

The Ohio Company of Virginia's Impact on the Seven Years' War and the Ohio Region Native Americans

This project focuses on the Ohio Company of Virginia, the impact it had on the Seven Years' War, and the difficult circumstances into which the Ohio Company forced Native Americans. The Ohio Company of Virginia was established in 1748 by wealthy Virginians trying to establish territory and trading routes and to make a lot of money. The Ohio Company of Virginia impacted the Seven Years' War more than they get credit for: for example, the Native Americans were forced to fight with the French or the British because of the Ohio Company. This paper looks at the Ohio Company of Virginia's impacts, how the company escalated the Seven Years' War, the of Native Americans' choice of who to fight with, and the ultimate loss of their land.

Natori Wicker, Senior, History

Mentor: Matthew Crawford, Ph.D.

The True Intentions of the Treaty Party: Destroying Cherokee Country in the 1830s

On December 29, 1835, the Treaty Party signed the Treaty of New Echota. This treaty gave the United States government all rights to land south of the Appalachians that the Cherokee Nation occupied. Members of the Treaty Party signed this treaty without the consent of the National Council and without the support of most of the Cherokee Nation. This project researched the motivations of the twenty-five men from the Treaty Party that signed the treaty, and heavily focuses on three main figures: Elias Boudinot, Major Ridge, and John Ridge. From looking at the tribal newspaper the Cherokee Phoenix and letters from the members of the party, it seems that the party members were motivated by greed and a desire for political power and wealth. This greed is what led to the removal and, ultimately, the Trail of Tears.

POLITICAL SCIENCE/PHILOSOPHY/HISTORY

Oral Presentations

Desmond Bolden, Pre-College, History

Mentor: Matthew Crawford, Ph.D.

The Role of Rumors in Sparking the French Revolution in 1789

This paper examines the often-neglected role of rumors in the inception of the French Revolution in 1789. It argues that rumors were not necessarily a cause of this uprising, but they did build upon the tensions created by the revolution's causes, driving France's descent into a frenzied period that lasted for–at least–the next ten years. A series of contemporary journals and letters are used to provide evidence that the revolution's causes spawned various rumors, which spurned commoners into revolutionary action, in turn. This research helps one understand the fear-driven mindset of the revolutionaries and can provide a precedent for the emphasis on violence and paranoia that occurred later in the French Revolution.

Kyle LoPresti, Senior, History

Mentor: Matthew Crawford, Ph.D.

Containment and Continuous Revolution: The United States, Taiwan, and the Seeds of the Sino-Soviet Split

In the scholarship on the Sino-Soviet split, not enough credit has been given to the efforts undertaken by the United States to undermine the alliance between Mao's China and Nikita Khrushchev's Soviet Union. This paper argues that the American commitment to Taiwan in the mid-to-late 1950s, during the two offshore islands crises, played a role in exacerbating the ideological debate between the communist powers. The combination of American pressure and lacking Soviet support in these crises helped to undermine the Sino-Soviet alliance.

Tiera Moore, Sophomore, English

Mentor: Sara Koopman, Ph.D.

The White Helmets: Unneutral in the Syrian Conflict

The White Helmets of Syria claims to be an unarmed and neutral volunteer organization whose mission is to rescue civilians affected by the Syrian conflict. It is important to investigate volunteer groups such as the White Helmets to make sure that they remain true to their claims and uphold their mission especially when Western funding–private or public–is involved. This research addresses the question: are the White Helmets truly unarmed and nonpartisan in the Syrian conflict or are these claims merely a cover for an untold mission, such as regime change in Syria? Considering financial contributions to the White Helmets, media surrounding the organization, and the history of regime change in conflict zones, the review of literature suggests White Helmets are not entirely impartial in the Syrian conflict. Though the White Helmets do fulfill a need in the Syrian conflict by saving civilians, this does not mean that they are not susceptible to manipulation. Western funding is unknowingly supporting the mission of regime change because of the White Helmet's lack of neutrality in the Syrian conflict. In vying for regime change and choosing a side in the conflict, the White Helmets are encouraging the Syrian Civil War to continue.

Padraigin O'Flynn, Senior, Political Science

Mentor: Joshua Stacher, Ph.D.

Different Peaces, Similar Lives: Power Relations, Peace Agreements, and Lived Experiences in Palestine and Northern Ireland

This project compares the Oslo Accords and the Good Friday Agreement and is based upon an analysis of unequal power relationships during peace processes. It details the impact of such inequalities in negotiations on life after they end. There are many similarities between Northern Ireland and Palestine/Israel in the realms of settler colonialism, majority/minority power dynamics, and the lived experiences of Palestinians and the Irish. Despite these similarities, Ireland's peace agreement is seldom compared to Palestine's Oslo process. This paper provides a comparative lens through which to view the Oslo process and advances a fresh perspective on the 1990s era of peace processes. In doing so, it emphasizes the similar lived experiences of people who witnessed different formal outcomes.

PROFESSIONAL PRACTICE, OUTREACH, ENGAGEMENT

Posters

Prakash Adhikari, Freshman, Mechanical Engineering Technology; Joseph Brandhorst, Freshman, Psychology; Jaclyn Brooks, Sophomore, Nursing; Emily Ferguson, Freshman, Nursing; Camilla Hall, Sophomore, Accounting; Ian Jameson, Sophomore, Psychology; Divya Krishnamoorthi, Freshman, Psychology; and Melina Lynn, Freshman, Accounting

Mentor: Taylor Petti, Sophomore, Psychology

Golden Flashes Go (Home)!

The purpose of this app is to streamline rides home for all out-of-state students. These students have struggled to find reliable transportation, flights, bus routes, or Uber/Lyft rides long enough. It becomes a hassle trying to locate peers from your home state with so many people on campus and no efficient way of connecting with them. Uber is very effective for those looking to travel around Kent, but when going anywhere further, it becomes far too expensive. Our group will survey the student body and those who will be affected by this app, and different department heads will help us implement and create this app in order to create the most impressive, practical, and cost-effective app possible.

Fiona Allan, Senior, Public Health; Kristine Hilles, Senior, Public Health; Dana'Sha White, Senior, Public Health; Antonie French, Senior, Public Health; Megan Barrett, Graduate, Public Health; Sheena Hanly, Senior, Public Health; Sydney Gilmer, Senior, Public Health; Darlene Chapman, Senior, Public Health; and Taylor Susi, Junior, Public Health

Mentor: Cindy Widuck, M.P.H.; Molly Beutel, Graduate, Public Health; and Stephanie Schulda, Senior, Public Health

TouchPointe Program at AxessPointe Community Health Center

Social determinants of health (SDoH) are the conditions in which people are born, grow, live, work, and age (Healthy People 2020, 2018). Students from the college of Public Health developed the TouchPointe program to address SDoH in the waiting room at AxessPointe Community Health Center in Kent, Ohio. The program uses best practices for interviewing, cultural competency, Health Insurance Portability and Accountability Act (HIPAA), Collaborative Institutional Training Initiative (CITI), and National Association of Community Health Centers (NACHC). The PRAPARE is the core instrument used by the program and developed by the NACHC and other national collaborators. TouchPointe representatives train and receive certifications to conduct interviews with patients in the waiting room.

Lauren Beagle, Junior, Fashion Design; Marley Evans, Freshman, Fashion Merchandising; Niarra Gooden-Clarke, Freshman, Dance Studies; Kayleigh Ground, Sophomore, Visual Communication Design; Victoria Jones, Sophomore, Fashion Design; Macy McClure, Freshman, Psychology; Joseph Nash, Freshman, Fashion Design; Katherine Pandolfo, Freshman, Fashion Merchandising; and Alexandra Valentino, Freshman, Psychology

Mentor: Lauren Beagle, Junior, Fashion Design

Cooking Classes Around Students

Once out of the dorms, many students struggle to find healthy, cheap meal options. To better prepare students for the future, simple, easy, and culturally diverse cooking demonstrations should be implemented. The problem is that easy and quick meal options are frequently unhealthy, and when wanting to cook, students don't know any recipes. With help from a statistics professor, our surveys will provide information on what the student body would like to see. Dining services employees and employees in diversity will also be interviewed. A campus dietician will help with menus. The events will be accessible with meal swipes as well as worth Flashperks.

Janki Desai, Sophomore, Biology; Oluwasemilore Ayomide Akintelure, Freshman, Aeronautical Systems Engineering Technology; Jordan Ely, Freshman, Studio Art; Kirsten Gable, Sophomore, Biology; Rachel Harris, Sophomore, Art History; Kamryn Rozier, Freshman, Nursing; and Chloe Zebrak, Freshman, Nursing

Mentor: Janki Desai, Sophomore, Biology

Improving Medical Emergency Services on Campus

Kent State University has experienced safety issues in the past that students would like to address and improve. Major events like convocation, commencement, sporting events, concerts, Destination Kent State, and others have experienced situations where a major emergency has occurred, and because of the populated area they were not addressed in a timely manner. We've found that the response time for indoor emergencies are less than adequate, especially within populated areas. Addressing and improving our safety measures on campus could potentially help prevent more emergencies from happening or at least make them less severe. We plan to approach this problem by interviewing emergency services on campus and other students who may have experienced safety issues in the past and through research of other college campuses and their safety protocols. A few of our team's possible solutions include installing emergency buttons inside populated buildings on campus, implementing specific first aid training into FYE courses, and increasing overall safety awareness throughout campus.

Alyssa Dressman, Senior, Pre-Medicine/Pre-Osteopathy; Allison Losco, Freshman, Nursing; Anne King, Sophomore, Public Health; Barbara Hickin, Freshman, Environmental Studies; Benjamin Arigo, Sophomore, Engineering Technology; Hailey Lawler, Sophomore, Nursing; Lillian Horvat, Freshman, Public Health; Natalie Majc, Freshman, Construction Management; and Nick Kubiez, Freshman, Architecture

Mentor: Alyssa Dressman, Senior, Pre-Medicine/Pre-Osteopathy

Sustainable Dining

Kent State Dining Services throws away hundreds of pounds of food each day. This food goes to landfills and can never be decomposed. We would like to expand the university community garden to have more sustainable food options in the dining halls and Campus Kitchen while fertilizing campus grounds with compost made from leftover food. Collectively, this will decrease the University's impact on the environment while providing healthy, fresh options for students. This sustainable option will be implemented through compost bins within the dining halls that will be transported to a garden near Eastway. Produce from the garden will be harvested and given to nearby dining halls and Campus Kitchen. This process will be tested using the Nixon Community Garden and be further implemented across campus.

Drew Durben, Sophomore, Speech Pathology and Audiology; Abigail Peed, Sophomore, Nursing; Brett Lewis, Sophomore, Sports Administration; Jenna Shearer, Freshman, Nursing; Kaleigh Pratt, Junior, ASL/English Interpreting; Mallory Woods, Sophomore, Translation; Ra'Janir Horton, Freshman, Exploratory; and Sara Fox, Sophomore, Speech Pathology and Audiology

Mentor: Drew Durben, Sophomore, Speech Pathology and Audiology

De-Stress for Success

Kent State is a university that steadily improves to fulfill the needs of their students; however, these needs are not always met. We, as students, have developed a substantial issue within the campus library. Though it is said to be the heart of campus, it does not always beat perfectly. The problem that we have uncovered is that the library's aesthetic and lack of space to de-stress detracts from students' studying experience. As current students at Kent State, we feel that if changes are made, not only will you see a tremendous change in study habits and flow of traffic coming into the library, but also possibly in an increase of incoming students.

Kylie Marie Fletcher, Junior, Biology; Jarret Wonders, Freshman, Accounting; Kendall Wells, Freshman, Business Management; Michael Kratcoski, Freshman, Managerial Marketing; Paige Sammons, Freshman, Fashion Design; Savanna Wills, Junior, Fashion Design; Svea Hall, Freshman, Biology; Elisabeth Hofinger, Sophomore, Biology; and Jenna Kerns, Freshman, Biotechnology

Mentor: Kylie Marie Fletcher, Junior, Biology

Financial Literacy FYE

Incoming students at Kent State are required to take a first-year experience class which provides practical information for their future at Kent State. A topic that is missing from the curriculum of this course is financial skills and assistance. Adding education on applying for scholarships and loans and budgeting and making financially sound decisions will equip students with information that they will use well beyond their college years. Our assessment of current Kent State Students was done via online survey. This information demonstrated that there is a need to inform future students. Given the lack of knowledge that is present among incoming students, including this program in FYE will equip them with necessary skills for the future.

Sydney Gilmer, Senior, Public Health; Mathew Knox, Senior, Public Health; Casiera Rotunna, Junior, Public Health; Clara Varndell, Junior, Public Health; Cyd Ortiz, Junior, Public Health; Sarah Lancione, Senior, Public Health; and Sean Eisentraut, Senior, Public Health

Mentor: Cindy Widuck, M.P.H.

Price Elementary – Mini Public Health Fair

As students in Interventions II, our goal is to enhance the community education with fun and easy activities in hopes of preventing childhood obesity and mental health stigma. Therefore, we partnered with Price Elementary and planned a mini public health fair. On the night of February 26th, we have organized interactive activities and guest speakers to teach children and adults the importance of physical activity, proper diet, and mental health. There will be opportunities for children and adults to practice meditation, learn how to balance meals, and learn about easy ways to exercise at home. The mini public health fair will also have stations for people to get their blood pressure taken, participate in trivia, eat healthy snacks, and take some community resources home. All observations from the event will be recorded and a post-event survey will be handed to all attendees. Those will be used to evaluate our efforts and make changes for upcoming years.

Brooke Golden, Junior, International Relations; Andrew Newsom, Sophomore, Chemistry; Shreya Basu, Sophomore, Global Studies; Brianna Fernandez, Freshman, Geography; Stephanie Berhosky, Freshman, Fashion Design; Madeline McCord, Freshman, Fashion Design; Dylan Wilkerson, Freshman, Psychology; Georgia Grant-Manning, Freshman, Political Science; and Emily Ashton, Freshman, Exploratory

Mentor: Brooke Golden, Junior, International Relations

Class Study App

For many students, having a study group with their classmates is beneficial to their education. The following research was conducted to discover whether students would be interested in Kent State University adding an app to their blackboard classes that would allow for controlled communication with their classmates in order to select and reserve study areas on campus. This app would allow for specific individuals in the class to get together to study in a safe place. Our idea came about when we realized that some of us have encountered difficulties organizing study groups in our own classes.

Madeleine Johnson, Junior, Visual Communication Design; Saraina Wise, Sophomore, Music; Aleesia McKinney, Junior, Entrepreneurship; Kirstan Franklin, Sophomore, Chemistry; Abigail Ernst, Freshman, English; Leah Eberts, Freshman, Visual Communication Design; Talia Dagan, Freshman, General Business; Maryrose Ceccarelli, Sophomore, Visual Communication Design; and Ariel Benya, Sophomore, Chemistry

Mentor: Madeleine Johnson, Junior, Visual Communication Design

Composting at Kent

Kent State University does not currently have a composting system in place, which in turn causes large amounts of waste to go unused and hinders the environment around us. We hope to reduce the overall food waste on campus through our program, and we also want to help educate the community on eco-conscious eating. Composting helps the environment through lowering the amount of greenhouse gases produced (the main fuel of climate change). Food in landfills does not break down properly and thus releases harmful greenhouse gases. Composting also improves overall soul quality and addresses a major environmental concern. Our program will help implement a solid, sustainable composting system and inform students on the positives of eco-conscious eating.

Sara Miller, Junior, Political Science; Bailea Grant, Freshman, Accounting; Ebone Jones, Freshman, Fashion Design; Leah Dunlevy, Sophomore, Nursing; Sahana Jayaraman, Sophomore, Nursing; Noah Hersey, Freshman, Nursing; and Ethan Lower, Sophomore, Political Science

Mentor: Sara Miller, Junior, Political Science

Flash Market

Kent State students have limited access to affordable, quality food products on the weekends, creating difficulties for students with special dietary needs. Even students with no dietary restrictions struggle to find healthy, responsibly sourced options on campus. We want to solve this issue by incorporating the thriving Haymaker Farmers' Market on campus. By incorporating the market, both parties benefit: the Haymaker Farmers' Market, a collection of local vendors, benefits via a larger space and student commerce and the student body benefits via healthier, low-cost, food options and an opportunity to promote their own products. We will utilize student, staff, and community interviews to gauge interest and develop a plan of action. Additionally, we will research the logistics of relocating and merging the farmers' market with the Kent State campus. The ideal outcome would be a vibrant blending of the Kent campus and the local community resulting in a happier, healthier campus and civic environment.

Nina Palattella, Junior, English and Samantha Horwitz, Junior, Chemistry

Mentor: Charles Malone, M.F.A.

Brainchild: Literary Magazine as Showcase of Creative Work and Learning Experience

Brainchild is the literary and arts magazine based at the Kent State University Honors College which publishes the work of honors students at schools in the Mid-East Honors Association region. Brainchild strives to share the best art created by these students within our community. Our team members fulfill this goal by compiling the best student literature and art into the annual issue of our magazine, after carefully reviewing each submission and considering which ones best fit our idea of what we want Brainchild to embody. We also engage with our audience by hosting events throughout the year. Each year, members of our staff attend literary conferences across the country to learn from other artists and magazines and to share Brainchild with a wider audience.

SadieAnn Strouse, Junior, Dance; Nicole Crowl, Senior, Dance; Bridget Langguth, Senior, Dance Studies; Kelsey Lanese, Junior, Dance; Taylor Parker, Junior, Dance; Artisha Walker, Junior, Dance Studies; Kazimir Klein, Sophomore, Dance; and Sydney Weiss, Freshman, Early Childhood Education

Mentor: Jeffrey Rockland, M.F.A.

East Meets West

In the Fall of 2018/2019, East Meets West (EMW) sponsored a program (The Thailand Dance Experience) that took 10 Kent State Dance students to Bangkok, Thailand for a 2-week program with students from Suan Sunandha Rajabhat Univeristy (SSRU). This was the third East Meets West program in Thailand. The Thai students will visit KSU for a second visit in the Fall of 2019 for a culminating exchange of collaboration of the arts, fulfilling the Five-Year Memorandum of Agreement between the two Universities.

Christopher Vadala, Junior, Biology; Taksh Dubé, Freshman, Computer Science; Lindsey Fron, Freshman, Fashion Merchandising; Emaly Hart, Junior, Computer Information Systems; Jessica Jones, Freshman, Zoology; Tabitha Ludwiczak, Freshman, Zoology; Jessica Miller, Sophomore, Visual Communication Design; Joseph Obermeier, Jr., Freshman, Zoology; Kathryn Van Arsdale, Freshman, Fashion Merchandising; and Maya Yates, Freshman, Visual Communication Design

Mentor: Christopher Vadala, Junior, Biology

Interpersonal Stress Management

Stress is a factor that hinders most college students throughout their academic and personal lives. We have found that the main issue is the availability of counseling for stressed students within Kent State University. Our solution to the problem would be to create an app that allows trained students to converse with those seeking help anonymously. We plan to survey students and faculty to gauge usage of an app in order to best create a design that will be effective. This app can help Kent State University show their dedication to mental health by helping students in need get the support they require.

PROFESSIONAL PRACTICE, OUTREACH, ENGAGEMENT

Oral Presentations

Elizabeth Schmidt, Senior, Applied Conflict Management and Amanda Schwaben, Senior, Applied Conflict Management

Mentor: Johanna Solomon, Ph.D.

At the Crossroads of Research and Community Engagement: The North Hill Listening Project

Paulo Freire's Pedagogy of the Oppressed, published in 1968, distinguishes two models of education: the traditional "banking" model, in which information is imparted on students by a teacher of a higher status, and one in which all participants co-create knowledge together as equals. The dominance of the "banking" model in Western education systems extends to research practices when research remains isolated in academia. However, such isolation is unnecessary. We examine the process and impacts of the North Hill Listening Project, which was conducted as a collaboration between The International Institute of Akron and Kent State University's School of Peace and Conflict Studies, to show how listening projects can be a method for academics to co-create and use knowledge with community members.

PSYCHOLOGY

Posters

Brooke Baker, Junior, Psychology and Lindsey Rice, Senior, Business Management

Mentor: Rachael Blasiman, Ph.D.

A Naturalistic Observation of Participation in Upper and Lower Division Classes

Participation is a crucial part of learning. It is important for students to express their opinions and ask questions to enhance their knowledge of the topic. The current study is a longitudinal, naturalistic observational study of ten different classrooms at Kent State over a period of five weeks. We hypothesize that students will participate more in upper division class than in lower division classes.

Gabriel Beadle, Senior, Psychology

Mentor: Patricia Tomich, Ph.D.

Do Stressful Life Events Impact Analytical Thinking and Acceptance of Drug Use?

Most people experience stressful events in their lives. This study assesses relations between stressful life events, analytical thinking (i.e., in-depth processing of information), and beliefs about whether substance use is acceptable. Participants were 121 undergraduates who completed online surveys. Preliminary analyses indicated that older participants experienced more stressful life events; therefore, all analyses control for age. Partial correlations indicated that a greater number of stressful events was related to less analytical thinking and more acceptance of substance use. By contrast, more analytical thinking was related to less acceptance of substance use. These findings support the notion that increasing individual ability to think analytically may be one way to reduce acceptance of substance use, which, in turn, may help reduce our country's current opioid epidemic.

Desiree Bechtol, Senior, Psychology

Mentor: Karin Coifman, Ph.D.

Longitudinal Correlation Between Cognitive Decline in Multiple Sclerosis and Rise in Depressive Symptoms

Up to 65% of Multiple Sclerosis patients have cognitive dysfunction that significantly affects their ability to function. We want to determine how damage to executive planning by MS impacts the level of depression. We examined a sample of recently diagnosed patients with MS over the course of eighteen months. We tested their cognition and level of depressive symptoms with the Tower Puzzle from the Automated Neuropsychological Assessment Metrics and the Center for Epidemiologic Studies Depression (CES-D) Scale respectively. We will use a within-subject t-test to determine if there is a sample-wide difference in performance on the Tower Puzzle; then, we will use a correlation to test if change in the tower score is associated with depression symptoms that were measured with the CES-D scale.

Claudia Bennight, Junior, Psychology

Mentor: Patricia Tomich, Ph.D.

Are Pets Our Superheroes? Pets May Help Individuals Adjust to Traumatic Events

Most people experience some traumatic event in their lifetime, such as unwanted sexual attention or personal injury. This study assesses relations between trauma exposure, pet owners' attachment to their pets, and quality of life. Participants were 156 undergraduates (77% female; 92% white; mean age: 22.47) who completed online surveys. Preliminary analyses indicated that older participants reported a greater number of previous traumas; therefore, all analyses control for age. Partial correlations indicated that more previous traumas were related to worse physical and mental health. More previous traumas, worse physical health, and worse mental health were related to stronger pet attachment. These findings support the notion that pets may provide emotional support for individuals adjusting to challenging life events, particularly those with worse physical and mental health.

Nick Berger, Junior, Psychology and Drew Ohman, Senior, Psychology

Mentor: Rachael Blasiman, Ph.D.

Classroom Size and Student Participation: How One Can Affect the Other

A student's experience of a class can be significantly influenced by the size of it. One way an experience can be influenced is through participation, specifically when it comes to the answering and asking of questions. We are studying such an influence: namely, just how can classroom size affect student participation? In this study, we are naturally observing multiple classrooms to determine if student participation depends on the number of students present in the class.

Nick Blower, Junior, Psychology

Mentor: Rachael Blasiman, Ph.D.

How Does Time of Day Affect Attentiveness and Participation in Class?

Morning or afternoon undergraduate classes may affect student participation due to fluctuations in brain activity and variations in alertness. Specifically, student participation in class may vary depending on the time of day a class is offered. The current study is an applied, naturalistic observation in which multiple observers go into the field to collect data for educational reasons. In this study, I examine the role of time of day in the rate of class participation.

Tayla Bott, Senior, Psychology; Jacqui Huebner, Junior, Psychology; and Tierra Taylor, Senior, Psychology

Mentor: Rachael Blasiman, Ph.D.

Beginning, Middle, End: When Do Students Participate More?

Class participation is the backbone of what defines a good student. Using a longitudinal, naturalistic observation design, we will compare participation in a total of 80 class sessions to determine how participation in class fluctuates over time, both within and between class sessions.

Monica Faust, Senior, Psychology; John Gunstad, Ph.D.; and Victoria Sanborn, Graduate Student, Clinical Psychology

Mentor: John Gunstad, Ph.D.; and Victoria Sanborn, Graduate Student, Clinical Psychology

Clarifying the Relationship Between Depressive Symptoms and Memory Loss in Older Adults

Studies demonstrate that depressive symptoms are associated with poorer memory test performance in older adults. We hypothesized that both subjective complaints of cognitive dysfunction and sadness would be associated with poorer performance on a memory measure. Neurocognitive testing data from 110 older adults (Mage = 81.1 +/- 6.2, 67% female) was used for the current study. Participants completed the Geriatric Depression Scale (GDS) and the Hopkins Verbal Learning Test - Revised (HVLT-R). Pearson correlation analyses examined the potential associations between reported depressive symptoms and memory performance. The current study found that a higher total GDS score was associated with poorer learning and recall. If replicated further, findings may provide researchers with a better consistency of results, helping to incorporate self-reporting to detect memory decline.

Sidney Fimiani, Junior, Psychology; John Gunstad, Ph.D.; and Victoria Sanborn, Graduate Student, Clinical Psychology

Mentor: John Gunstad, Ph.D.

History of Depression is Not Related to Cognitive Function in Healthy Middle-Age and Older Adults

Depressed middle-age and older adults exhibit higher rates of cognitive impairment and are more likely to have difficulty completing everyday tasks. Not much is known about the neurocognitive impact of history of depression, though conceptual models suggest it may also increase risk for poor outcomes. The current study examined history of depression on cognitive function in a sample of healthy middle-age and older adults. Data from 163 community-dwelling participants (Mage=64.4, +/-5.52) were used for the current analyses. Participants were asked to complete a brief medical history form and the NIH Toolbox cognitive test battery, which includes measures of attention, executive function, and memory. Independent sample t-tests showed no significant between-group differences on any measure of cognitive function. Future studies should seek to replicate this effect in a larger sample and asses treatment of depression on these trajectories.

Kellie Greene, Junior, Psychology

Mentor: Judith Gere, Ph.D.

The Role of Mindfulness in Relationship Satisfaction

Previous literature has defined mindfulness as open awareness to what is taking place in the present– both internally and externally–and observing with non-judgement. Recent research has found that mindfulness may facilitate greater romantic relationship satisfaction. However, why mindfulness may facilitate greater romantic relationship satisfaction remains unclear. Does greater mindfulness predict greater responsiveness to a romantic partner? How does mindfulness affect daily and overall stress? Participants in romantic relationships were recruited (N = 100) in order to answer these questions. Analysis is currently being performed on the collected data. We expect to find that greater levels of mindfulness will facilitate greater levels of responsiveness and lower levels of daily and overall stress and will, therefore, facilitate greater levels of relationship satisfaction.

Alexandra Henry, Senior, Psychology

Mentor: Judith Gere, Ph.D.

Attachment Styles and Their Influence on Communal Strength, Life Satisfaction, and Emotions

Communal strength is the motivation to meet a partner's needs. This study examined whether the association between communal strength, life satisfaction, and positive and negative affect depends on a person's attachment style. Results from questionnaires completed by 78 dating couples indicated that the effects of communal strength on life satisfaction and positive affect do not differ based on attachment styles. The effect of communal strength on negative affect does not depend on attachment avoidance but does depend on a person's attachment anxiety. For people with low attachment anxiety, higher communal strength predicted lower negative affect, but for people with high attachment anxiety, communal strength was not associated with negative affect. Thus, people with high attachment anxiety may not experience all of the benefits of higher communal strength.

Emma Holodnak, Senior, Psychology and Sarah Yerkey, Junior, Psychology

Mentor: Rachael Blasiman, Ph.D.

Seating Position in Relation to Classroom Participation

Previous researchers have reported that students who sit in a specific spot in the classroom tend to participate more in class. We hypothesize that students who sit in the front of the classroom will participate more in class than students who sit in the back. We will be using naturalistic observation to examine how often students in the front of the classroom participate. Ten observers will collect data over a period of five weeks in ten undergraduate classes.

Savannah N. Insana, Sophomore, Psychology

Mentor: Judith Gere, Ph.D.

Emotional Expression: Socially Anxious Individuals and Their Partners

Individuals who are socially anxious have obstacles to overcome which may affect how they communicate in their romantic relationships. This research examined socially anxious people and their partners to understand their willingness to communicate both positive and negative concerns to one another, and their tendency to use inauthentic displays of emotions to influence one another. Data from 166 couples was used to test the predictions that socially anxious people would hold back negative and positive concerns, and their partners would hold back negative but express positive information. We also predicted that anxious individuals and their partners would show inauthentic displays of emotion more frequently. Analysis and implications of findings will be presented.

Aliyah Moyé, Senior, Psychology

Mentor: Angela Neal Barnett, Ph.D.

Racism, Stress, and Anxiety Within Pregnant Black Women

Infant mortality is rampant in Ohio, with Cuyahoga County as the second-highest rated in Ohio. Additionally, Ohio has the second-highest infant mortality rate for Blacks in United States, with Wisconsin in first place. 18.7 is the rate of deaths per 1,000 live births of Black babies in Cuyahoga county, while their white counterparts have a rate of 6.1. The purpose of my poster presentation is to expand upon my research done under Dr. Angela Neal Barnett and focus on the feasibility and acceptability of running sister circles with pregnant Black women. We developed a top-down culturally infused sister circle intervention that is geared towards reducing stress, anxiety, and risk of infant mortality within pregnant Black women in the Greater Cleveland area. We administered self-report measures and obtained biomarker data (blood pressure, height/weight, BMI, cortisol biomarker measures, and psychosocial measures of worry, pregnancy-anxiety, and distress) to assess the mother's levels of stress and anxiety before and after the intervention. This intervention is still ongoing, and we are in the process of collecting post data for proper analyses. That said, we will focus on the attendance, satisfaction of the women through their session. Our results showed that on our session evaluations from the women, the responses were overwhelming positive across all sister circle groups. In the future, we hope to reduce to number of sessions as to not burden the mothers' lives, use more qualitative data to get a richer and more accurate description of their stress and anxiety, and stress the focus around low-income pregnant Black women seeing as though they are the most vulnerable population.

Steven P. Neville, Junior, Psychology; Clarissa V. Shields, Graduate Student, Clinical Psychology; Katherine E. Darling, Graduate Student, Clinical Psychology; and Amy F. Sato, Ph.D.

Mentor: Clarissa V. Shields, Graduate Student, Clinical Psychology and Amy F. Sato, Ph.D.

Examining the Relation Between Internalizing Symptoms and Weight Change Among Freshmen Transitioning to College: Does Physical Inactivity Exacerbate Risk for Weight Gain?

The transition to college is associated with higher levels of internalizing symptoms and weight gain. Our study aims to examine the relation between internalizing symptoms and weight change and if physical inactivity exacerbates these relations. College freshman (N=65, 72% female; 72% White) as part of a larger study examining stress during their first semester reported internalizing symptoms using the DASS-21 depression, anxiety, and stress subscales (α=.84,.79,.84) and physical activity frequency. The only significant positive relation was between depressive symptoms and weight change with physical activity significantly moderating this relation predicting weight gain, F(1, 61)=5.63, p.

Katrina Potter, Senior, Speech Pathology and Audiology

Mentor: Julia Huyck, Ph.D.

Perceptual Learning of Spectrally Degraded Speech May Be Impaired by Auditory Distraction in Adolescence

Adults must attend to a degraded speech signal in order to learn to understand it. Due to immature attention, adolescents may have different requirements for learning than adults. The objective of this study is to examine how adolescents (ages 10-17) learn to comprehend degraded speech when hearing it concurrently with irrelevant auditory stimuli. Three groups of listeners completed a degraded sentence comprehension task both before and after training. During training, two groups simultaneously heard degraded speech and amplitude-modulated noise and were instructed to complete a task either with the speech or the noises. A third group served as a control. Preliminary data show the group who attended to degraded speech did not benefit from training, suggesting that immature auditory attention may interfere with adolescents' perceptual learning abilities.

Jenna Ruedlinger, Senior, Psychology

Mentor: Chris Flessner, Ph.D. and Anna Luke, Graduate Student, Clinical Psychology

Childhood Sleep Quality as a Moderating Variable Between Parental Influence and Child Emotional Eating

Past research has shown that emotional eating (EE) may be predictive of parental over-involvement. Sleep has been researched along with these two factors as well. This study examines if sleep quality moderates an association between parental involvement and child EE. Parents and children were recruited as part of a larger study examining neurocognitive functioning in children with and without anxiety. Both parents and children were given several self-report questionnaires, and a hierarchical multiple regression analysis was conducted. The initial model, $F(2, 68) = .1.473$, $p = .236$ and overall model with the interaction term were non-significant, $F(3, 67) = .023$, $p = .410$. An explanation could be that other parenting practices (e.g. over-control) are more impactful on EE. Parents and children also may have been inaccurate in their estimate of sleep, involvement, and EE. The relationship between child EE and parenting is complex and should be studied from multiple directions.

Alexis Sayre, Junior, Psychology

Mentor: Christopher Was, Ph.D. and Erin Graham, Graduate Student, Psychological Sciences

Using Implicit Learning Techniques to Improve Young Students' Number Sense

Students' success in learning mathematics is largely dependent on their ability to acquire the complex series of rules and inter-numerical relationships that govern the domain. Unfortunately, existing interventions are over-reliant on techniques that can make learning difficult for students with low working memory or math anxiety. Techniques based on implicit learning could be beneficial in addressing this issue. Specifically, implicit learning techniques can help students more easily develop the mental representations of symbolic magnitude that are needed to improve performance in mathematics. The results of the current study indicate that implicit number-line training was more effective in facilitating student learning of symbolic magnitude than more traditional techniques. The role of anxiety as a predictor of intervention efficacy was also evaluated.

Hayley Shasteen, Junior, Psychology

Mentor: Monica Garcia, Graduate Student, Clinical Psychology and Douglas Delahanty, Ph.D.

Chronic Pain Conditions as a Moderator Between Pain Catastrophizing and Cognitive Functioning

This study sought to investigate the relationship between cognition and chronic pain conditions in individuals seeking detoxification treatment. Previous research suggests that individuals with a chronic pain condition demonstrate neuropsychological impairment in attentional capacity and processing speed (Hart, Martelli, & Zasler, 2000). Pain catastrophizing has been found to predict the likelihood of cognitive complaints in participants with a chronic pain condition (Roth, Geisser, Theisen-Goodvich, & Dixon, 2005). Further research suggests that those who self-report more somatic awareness have worse cognitive performance (Eccleston, Crombez, Aldrich, & Stannard, 1997). This study hypothesizes that having a chronic pain condition will moderate the relationship between pain catastrophizing and cognitive functioning, such that those with a chronic pain condition will demonstrate a stronger negative relationship compared to those without a chronic pain condition. Pain catastrophizing is assessed using the Pain Catastrophizing Scale and cognitive functioning is evaluated using the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS).

Hayley Shasteen, Junior, Psychology

Mentor: Rachael Blasiman, Ph.D.

A Longitudinal Investigation of Cognitive Symptoms and Cognitive Performance in Systemic Lupus Erythematosus

Systemic lupus erythematosus (SLE) is a multisystem inflammatory autoimmune disease that manifests in physical symptoms and central nervous system impairment. Cognitive impairment in SLE is difficult to define and can be affected by several variables, such as stress and anxiety. We surveyed three participants diagnosed with SLE over a period of ten weeks, measuring cognitive and physical symptoms via inventories, multiple environmental variables, such as temperature and sunlight exposure, and cognitive ability on tasks of working memory, short term memory, and inhibition. Self-reported cognitive symptoms did not correlate with cognitive performance on several memory tasks. However, cognitive symptoms were strongly correlated with physical symptoms, negative effect, diet, stress, sunlight exposure, and anxiety. Tasks of inhibition were influenced by sunlight exposure.

Katie Sheldon, Junior, Psychology

Mentor: Mark Whitmore, Ph.D. and Mary Hogue, Ph.D.

Understanding the Personality Facets of Grit

The element of Grit and its strong correlation to the sub-facets of Perseverance of Effort and Consistency of Interest has shown a positive relationship in the retention of long-term goals and a clear and concise focus on a subject matter. The current study is an attempt at replication of the factor structure and identification of a nomological net of Big Five factors and personality facets. The study consists of 220 MBA students at multiple universities who took the Big Five assessment, the Workplace Big Five Profile, and the Grit scale. The findings confirm the existence of the factor structure and a number and pattern of personality facets including some not previously discussed in the literature.

Alexandra Tolich, Senior, Psychology

Mentor: Patricia Tomich, Ph.D.

Strive for Balance: Deviation from a Balanced Time Perspective Mediates the Relationship Between Lifetime Trauma Exposure and Self-Esteem

Most individuals experience traumatic events, such as the unexpected death of a loved one. This study assessed direct and mediated relationships between lifetime trauma exposure and self-esteem, with deviation from a balanced time perspective as a potential mediator. Participants were 133 undergraduates (87% Caucasian, 84% female) who completed online surveys. A majority (89%) reported experiencing at least one trauma. Results indicated that deviation from a balanced time perspective partially mediates the relationship between lifetime trauma exposure and lower self-esteem (Sobel's test statistic = -2.02, $p = .043$). Overall, more trauma exposure was related to greater deviation from a balanced time perspective, which likely resulted in lower self-esteem. Encouraging individuals to strive for balance may be one way to help those adjusting to challenging life events.

PSYCHOLOGY
Artistic Pieces

Bobbi Broome, Senior, Psychology
Mentor: Dana White, M.F.A.

Make Me Divine

Make Me Divine is a short film that follows my personal narrative about dealing with how I saw myself as I relate to media. The film shines light on beauty standards in the African American community including self-esteem, body image, and how to overcome these barriers. I created this film because I felt it was necessary for my experiences to be shared with the world in a way that empowers other women and girls like myself. Many women and girls regardless of race or ethnicity have shared the same body and self-esteem issues that I have faced in my lifetime. The goal is to inspire someone else to speak out about their issues and hopefully touch someone's heart in a way that makes them feel understood and inspired to make a change in their perspective and life. The impact of sharing this film was eye-opening and impactful. I received an amazing amount of praise from women of all ages expressing that they related to the words I shared and that they touched them deeply. By sharing my film, which is the product, I have reached new heights, and I am so grateful for the opportunities I have been given.

Halimah Muhammad , Senior, Fashion Merchandising
Mentor: Dana White, M.F. A.

CHOSEN

Chosen seeks to raise awareness on the pressure for the attainment of outward validation and relationship status for girls and women across the world. A young woman for the first time reveals to her friends a poem she wrote that chronicles her journey to uncover the truth about what it means to be chosen as beautiful. Studies show that at younger and younger ages girls are taught that their greatest aim should be to be beautiful and the only way to achieve this is by being chosen by outward forces and rarely chosen for themselves. My aim is to use this film as a platform for people everywhere to envision the development of a world culture where the attainment of a healthy self image is deemed as beautiful, glorified and uplifted. A world where girls and women know that they have the power to choose the life they desire for themselves and that these choices can come from a place of love for themselves, their community and the world and not their fear for how those forces operate upon them. This film seeks to showcase that choosing yourself is beautiful

PSYCHOLOGY
Oral Presentations

Ruby Joan Callen, Senior, Psychology
Mentor: Yossef S. Ben-Porath, Ph.D. and Jessica Tylicki, Graduate Student, Clinical Psychology

Predicting Treatment Outcomes in a Batterers' Intervention Program with the MMPI-2-RF

Recently, the United States justice system has begun to play a role in the treatment of offenders and the security of victims (Sellbom et al., 2008). Given that prior research has revealed inconsistent findings regarding the success of batterers' interventions, it is important for researchers to identify predictors of treatment outcomes. The Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011) includes broad and narrow band measures of psychopathology and personality, which can provide additional insight into this population. This study analyzed correlations and computed RRR to determine which MMPI-2-RF scales predicted increased risk of poor outcomes. Results revealed elevations on several scales were associated with risk for treatment failure and recidivism. These findings indicate that the MMPI-2-RF can provide insight into identifying offenders at risk of not completing treatment and/or reoffending.

Haley Warden, Senior, Psychology

Mentor: Timothy Owens, Ph.D.

Hitting the Fun Button—Dimensions of Sensation Seeking

"Sensation seeking" describes a personality trait in which one tends to pursue experiences that are intensely stimulating and usually risky. Sensation seekers may engage in risk-taking behavior like drug use, reckless driving, or dangerous sports all for the sake of the thrill. Exploring dimensions of sensation seeking helps answer why we take risks, and what we can gain from taking them.

SOCIAL SCIENCE/EDUCATION/PUBLIC HEALTH

Posters

Michaela Broadnax, Senior, Criminology and Justice Studies and Julie Globokar, Ph.D.

Mentor: Julie Globokar, Ph.D.

Grassroots Organizations Efforts to Combat Violence

With disproportionate rates of violence in urban communities, it's important to discover nonviolent efforts taking place to combat violence. If we can invest in more efforts that are both positive and through the community, it's possible to accelerate economic development. This study begins to explore those possibilities by highlighting the efforts that are under way in high violence communities, such as Chicago's west side. Through interviews, we can get an understanding of the work taking place and the experience of those who engage in these efforts. This qualitative research helps us to gain a deeper understanding of the challenges faced and resources available to the founders and leaders of these grassroot organizations.

De'Ann Cobbs, Senior, Public Health

Mentor: Tina Bhargava, Dr.P.H.

Mental Health Associations with Juvenile Delinquents

Traumas and serious experiences in adolescents are a serious problem. More than half of adolescents struggling with mental disorders will enter adulthood battling the same conditions. This is because many of them are overlooked, are not handled properly, or are written off as negative behavior. Negative behavior and "acting out" can often lead to an adolescent being sent to a detention home, which only leads to an even more negative path for the adolescent. This secondary data analysis study looks at the association between mental health factors and juvenile delinquent behavior. The three behaviors of focus in this study are substance abuse, suicide, and fighting. These were compared to indicators of depression, measured ranging from mild depression to moderate-severe depression, and reports of use of mental health services. The data used for this study was from a survey done in a detention home/ facility in Northeast Ohio. The data analysis indicated that youth that reported using mental health services were more likely to abuse substances, participate in fighting, and attempt suicide. Juveniles that had a depression indicator of moderate-severe were more likely to abuse substances, participate in fighting, and attempt suicide.

Sheena Hanly, Junior, Public Health

Mentor: Cindy Widuck, M.P.H.

Community/School Garden

A community garden enhances mental and physical health and provides an opportunity to grow food and build relationships. The Walls Coalition began cleanup and rebuilding of an abandoned garden in 2018. The Coalition is a collaboration between Walls Elementary School and the College of Public Health. This project brought together schools, students, parents, neighbors, and the university to create a sustainable garden. The garden has numerous partners to help maintain operations. Partnerships include Community Engaged Learning, the College of Public Health, the Public Health Student Alliance, Family and Community Services, the City of Kent, and Kent City Schools. The gardeners are neighbors, teachers, students, and members of the Kent State community. In addition to the new community, garden projects are underway to create a small school garden, a garden club, and a Reduce Food Waste program. The school garden creates a safe space for teachers and students to participate in gardening.

Aaron Kessler, Senior, Public Health

Mentor: Molly Merryman, Ph.D.

Transgender Experiences in Healthcare

Transgender people often have negative experiences in healthcare including denial of services, substandard care, verbal abuse, and forced care. The purpose of this research project is to understand the experiences of transgender people interacting with healthcare systems in their own voices and to empower the community. I collected visual oral histories from transgender people in the local Kent area. The most common experiences participants discussed were being called the wrong name, being refused necessary treatment, as well as being ignored, misunderstood, and mistreated by healthcare professionals. The experiences of transgender people in the local area reflect studies done about stigma trans people face in healthcare; these problems require attention from public health in order to improve care for trans individuals.

Robert Lagunovich, Senior, Psychology and Susan Kunkle, Ph.D.

Mentor: Susan Kunkle, Ph.D.

Can Outlook Towards the Future Help Predict an Adolescent's Ability to Work?

Some criminal theorists have posited that allowing delinquent teens the ability to work a job decreases delinquent behavior. However, research on the topic remains mixed. This study seeks to understand how an adolescent's perceived outlook on life relates to their ability to work and handle stress. We predict that findings will indicate students who have a low outlook towards the future will struggle working, while those who have a higher outlook will not.

Leanna Maguire, Senior, Archaeology

Mentor: Linda Spurlock, Ph.D.

Facial Approximation of a Known Modern Person and an Unidentified Indigenous Person Using Photographs and Casts with Tissue Depth Markers

Facial approximation is employed by forensic artists to reproduce an individual's image from a description, a photograph, an x-ray, or physical remains. This technique is used by law enforcement to aid identification of individuals in criminal cases. Similarly, since the objective is to put a face to an unidentified person, facial approximation can be applied to archaeological skeletal specimens. Archaeology is the study and preservation of collective human history. Applying this method to remains enables visualizing other hominid species in the context of human evolution. Additionally, integrating reconstruction with archaeological work engenders greater connection between the work being done in this field and the general public. Such techniques were utilized to produce two reconstructions: one two-dimensional approximation of a known modern person and one three-dimensional approximation of an unidentified person.

Jonathan Markle, Senior, Biochemistry

Mentor: Clare Stacey, Ph.D.

Care and the White Coat: Perceptions of Clinical Empathy Among Pre-Med Students

Clinical empathy is defined as a provider's ability to understand a patient's situation and perspective, communicate that understanding accurately, and helpfully act on that understanding. Evidence suggests patients value physicians having clinical empathy, and it may positively contribute to clinical outcomes. However, quantitative studies (using the Jefferson Scale) show clinical empathy decreases during medical school and residency. This study uses a mixed-method design to determine if pre-medical education factors into this trajectory. Pre-med students (n=30-35) were interviewed and surveyed about their understanding of clinical empathy and stressors that may negatively impact it. Here, I present qualitative findings from phase one of this longitudinal project, demonstrating pre-med students perceive the core pre-med curriculum and the "speed-up of learning" phenomenon as unconducive to clinical empathy.

Anna Mika, Senior, Anthropology and Metin Eren, Ph.D.

Mentor: Metin Eren, Ph.D.

Were Late Woodland, Triangular, Flaked, Stone Arrow Tips from Ohio, U.S.A., Designed for Wound Size or Target Penetration?

An experimental model derived from ballistics tests has recently shown that the size of a flaked, stone arrowhead significantly influences how well an arrow penetrates a target. Namely, the smaller the arrowhead, the deeper the penetration. However, large arrowheads have advantages too: they cause bigger wounds. I collected morphometric data from hundreds of arrowheads across Ohio to see whether they fall on the smaller or larger end of the experimental model to understand whether prehistoric hunters were more concerned with target penetration or wound size.

Thimberley Morgan, Senior, Speech Pathology and Audiology

Mentor: Jennifer M. Roche, Ph.D.

First Glance: Impact of Affective Tone on the Perceptions of Friendliness and Political Ideology

A computer mouse-tracking paradigm (Freeman & Ambady, 2010) was used to evaluate action dynamics associated with positive and negative social judgements made about a social other when they were described performing a liberal or conservative behavior. Participants in this study were more liberally leaning and tended to rate individuals who behaved liberally as friendlier. Results suggest that non-positively valenced tone of voice has the potential to perturb the cognitive system regarding political affiliation and ideology.

Sydney Schwegler, Senior, Anthropology

Mentor: Daniel-Raymond Nadon, Ph.D. and Yuko Kurahashi, Ph.D.

Transition from Herbology to Hard Medicine

This independent research will discuss the transition from Greek mythology and use of herbology to the introduction of hard science and medicine. The use of herbology began during Ancient Greek times. During this time, there was an interest in how the human body functioned and how the natural world affected that function. Herbology was then used to cure sicknesses, psychological problems, and to better understand the inner workings of the human body. Once philosophy began to be studied, along with the discovery of medicine and surgery, the interest in the human body and how it functioned became a more concrete idea. I will go to Athens, Greece to get field research on this transition and a better cultural understanding. I plan to visit the original sanitarium in Kos as well as the National Archeological museum. I would also like to explore the female influences on herbology and medicine during this time period.

Taylor Sharosky, Sophomore, Marketing

Mentor: Denise Harrison, Ph.D.

Eating Disorder

This poster presentation will illustrate the effects of eating disorders as a mental health issue for young adults. The pressures of selfie perfection, photoshopped models, and six-pack abs are continuing to impact the self-esteem of our youth.

Kristen Septaric, Junior, Public Health; Carissa Smock, Ph.D.; and Sheryl L. Chatfield, Ph.D.

Mentor: Sheryl L. Chatfield, Ph.D.

Linking Parks to Primary Care Through Place-Based Exercise Referrals: Results from a Survey of Park Employees

Green spaces such as parks or zoos are excellent locations for people to engage in exercise while remaining in their communities; consequently, this motivates many physicians to provide patients with green exercise prescriptions. Parks, however, face myriad challenges in supporting these green prescriptions. The purpose of this study is to identify elements of support that parks can implement to meet the needs of patients with green prescriptions. All Metro Park employees received an online survey; 99 respondents completed all items. Results indicated that respondents lacked knowledge, skills, and/or resources to assist clients with green prescriptions. Park employees identified provision of park/trail informational materials as the most beneficial logistical resource. Use and effectiveness of green prescriptions might be improved by encouraging providers to communicate directly with park employees.

Desiree Stribling, Senior, Speech Pathology and Audiology

Mentor: Jennifer M. Roche, Ph.D. and Lisa Audet, Ph.D.

Interactive Communication Extension to Persons with Autism Spectrum Disorders

Miscommunication can be a frustrating aspect of communicating with others. A difficult kind of miscommunication to work through is an ambiguity or a referent that is open to more than one interpretation. Depending on the severity of this kind of miscommunication, conversational partners may choose to work through the miscommunication or give up altogether. Disorders of social communication such as Autism Spectrum Disorder (ASD) may inhibit the ability for individuals to work through this kind of miscommunication. Investigating the influence of various miscommunications for individuals with social communication deficits can be informative to future research in several fields. In this study, I explore the effect of globally ambiguous statements on the amount of processing effort a listener with ASD puts forth.

Deven White-Revere, Senior, Educational Studies

Mentor: Debra Clark, Ph.D.

The School to Prison Pipeline: The Disproportionate Effects on African-American Adolescents

The School to Prison Pipeline is a metaphoric phrase that defines the practices in which students who commit specific offenses are suspended or expelled and funneled into the criminal justice system. Two huge factors fuel the school to prison pipeline: school resource officers and zero-tolerance policies. Originally, in the early 1990s, these policies were designed with the intent to keep schools safer due to the fear of increasing crimes in schools like drugs, gang violence, and school shootings. These policies still remain prevalent in today's society with the same intent "to keep schools safer." However, recent research has contradicted such beliefs, showing that although school violence has decreased significantly since the early 1990s, using school resource officers and zero tolerance policies do not make schools safer; these tactics create more crime due to subjective and discriminatory reasoning. In the 2013-2014 school year, almost half of the 187,059 students who received out-of-school suspensions in Ohio were for subjective reasons like disobedient or disruptive behavior. Two years later, research found that in the 2015-2016 school year, African-American students were almost four times more likely to be suspended than their Caucasian peers, according to the Civil Rights Data Collection. Other research also shows that suspensions and expulsions create lasting effects on one's mental health, social development, and future education which will greatly increase the likelihood of dropping out of school and being introduced to the criminal justice system. This is not a logical nor an equitable way for schools to rehabilitate "misbehaving" students, especially if they care about those students graduating high school. Positive discipline policies like restorative justice efforts, a theory of justice that focuses on intervention and understanding rather than punishment, can help create positive, safer learning environments without relying heavily on suspensions and expulsions in school. With constant efforts, this method will alter the school to prison pipeline by offering encouragement and support for all students and helping them achieve in every field of human endeavor regardless of their past.

Aimee Wildrick, Senior, Psychology

Mentor: Karrie Godwin, Ph.D.

Classroom Decorations: The Effects of Aligning Visual Displays with Lesson Content

The present study examines whether it is possible to use the visual environment to teach instructional content incidentally. Elementary students watched a science lesson in both an Irrelevant Condition with unrelated visual displays and in a Relevant Condition where visual displays aligned with the lesson content. Eye Tracking technology was used to calculate total fixation duration during the lesson as a measure of attention. Evidence of incidental learning was found. Students in the Relevant Condition obtained higher scores on the visual display questions at post-test compared to pre-test, although this difference was marginally significant. Preliminary results suggest children can learn from the visual environment. Close alignment between the lesson and visual displays may lessen the negative effects of environment-based, off-task behavior.

SOCIAL SCIENCE/EDUCATION/PUBLIC HEALTH

Oral Presentations

Tristan Davis, Junior, Sociology

Mentor: Susan Roxburgh, Ph.D.

Is this Lady-like? Portrayals of Single, Career Based Women's Relationship with Food in American Sitcoms

In this paper, we report the results of a content analysis of six popular American television situation comedies depicting a single, employed woman. We are interested in the eating habits and attitudes toward food depicted because exposure to popular culture is an important dimension of gender role socialization. Our preliminary findings indicate a paucity of food in TV programs portraying single working women, especially in more recent programs. Women are rarely shown eating, and when they do eat, they are shown consuming "feminine foods" such as salads. We observe gradual shedding of any domestic roles or skills in more recent programs and an emphasis on role reversal, with men depicted as more skilled in cooking and self-care.

Tristan Davis, Junior, Sociology

Mentor: Richard Adams, Ph.D.

Police Cadet Preparedness of Ability to Cope with the Nature of the Job: An Assessment

Police officers face many difficult and stressful situations that require rapid judgement decisions. This study examined police cadets in training and is one of the first studies to do so. I sought to answer the question: "Are current police training methods sufficient to prepare police officers for their job?" The dependent variable in this study was perceived job threat, derived from the Critical Incident History Questionnaire measuring expected job stress. Results showed that social support and exposure to past traumas were significantly correlated with perceived job threat. Gender was moderately correlated with perceived job threat. These results are consistent with the literature that social support is a key social factor used to cope with stress and that women anticipate a harder time in this line of work.

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